Pond Siting Report

US 41/SR 45 AT CSX GRADE SEPARATION
FROM S OF SR 676 TO N OF SR 676

Project Development & Environment (PD&E) Study

Design Change Reevaluation

Florida Department of Transportation

District 7

Work Program Item Segment No.: 440749-1

Federal Aid Project No.: D719-029-B

ETDM Project No. 14345

Hillsborough County, Florida

March 2023

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The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Design Change and ROW Authorization Project Development and Environmental (PD&E) Reevaluation Study to evaluate the various operational improvements along US 41/SR 45/SR 599 from south of the Causeway Boulevard intersection to north of the Causeway Boulevard intersection.

The purpose of this project is to reduce traffic delays associated with the CSX railroad crossing, adequately support the safe movement of vehicle traffic, including trucks and freight, and enhance connectivity and safety for bicyclists and pedestrians.

The project limits identified along US 41 begin south of Denver Street (MP 22.578) and extend north of the Causeway Boulevard intersection to 23rd Avenue (MP 23.925). The improvements along Causeway Boulevard begin west of 45th Street (MP 3.554) and extend east of the Causeway Boulevard intersection terminating prior to the CSX crossing (624815B; MP 2.971). US 41 is currently a six-lane roadway throughout the project limits and Causeway Boulevard is currently four-lanes. US 41 and Causeway Boulevard are functionally classified by the FDOT as urban principal arterials. US 41 south of Causeway Boulevard and Causeway Boulevard west of US 41 are part of FDOT's Strategic Intermodal System (SIS), designated as a SIS Connector. The CSX railroad crossing east of US 41 is a designated SIS Railway Corridor and the CSX railroad crossing south of Causeway Boulevard is designated as a SIS Railway Connector. There is one bridge culvert south of Causeway Boulevard for US 41 over Delaney Creek (MP 23.003).

The purpose of this report is to provide a pond siting analysis for the project, in accordance with 23 CFR 650 Subpart A, Section 650.111. The report summarizes the treatment and attenuation requirements needed for the project and utilizes the Delaney Creek Watershed Hydraulic Model to evaluate risks associated with the implementation of the project, impacts on natural and beneficial floodplain values, the discouragement of incompatible floodplain development, and measures to minimize floodplain impacts. All elevations referenced within the report are in the North American Vertical Datum of 1988 (NAVD 88) unless otherwise noted.

The project study is located in Sections 27, 28, 33, and 34 of Township 29 South and Range 19 East in the Tampa Bay Watershed within the Coastal Hillsborough Bay Tributary Planning Unit. The project is split between WBID 1605D (Delaney Creek Tidal) and WBID 1615 (Drainage to McKay Bay). Both WBIDs are verified as impaired for Enterococci. WBID 1605D is also impaired for lead, copper and iron.

Based on the current effective maps, the entire project area is located within a FEMA Zone AE 100-year floodplain with a base flood elevation (BFE) which ranges between 12 and 13 feet. The FEMA BFE is based on storm surge. The riverine 100-year flood stage is based on the Delaney Creek Watershed Model and ranges from 4 to 8 feet within the project limits. An isolated Zone A exists on the north side of Causeway Boulevard east of the CSX railroad tracks that appears to be outside of the study limits. Based on preliminary modeling efforts, there are no adverse effects to the flood stages associated with the preferred alternative.

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There are three existing basins within the project limits. Basin One extends from the southern project limits on US 41 to Delaney Creek. Basin Two extends from Delaney Creek to 31st Avenue South along US 41. On-site stormwater runoff along US 41 is collected in a closed drainage system draining directly to Delaney Creek with no formal treatment or attenuation. Basin Three extends from 31st Avenue South to the northern limits of the project on US 41 and from S. 45th Avenue to approximately 900 feet east of the intersection of US 41 and Causeway Boulevard along Causeway Boulevard. On-site stormwater runoff from US 41 drains north to the Unnamed Creek approximately 800 feet north of Causeway Boulevard where it is discharged without formal treatment or attenuation. On-site stormwater runoff from portions of Causeway Boulevard is collected in a closed drainage system draining to existing stormwater management ponds in the northeast and northwest quadrants of the US 41 at Causeway Boulevard intersection. These ponds discharge to the Unnamed Creek approximately 800 feet north of Causeway Boulevard. The western portions of Causeway Boulevard from the project limits to Sagasta Street have no formal treatment or attenuation. Offsite areas adjacent to the roadway also drain to the existing cross drain, which conveys an existing ditch west to the Hillsborough Bay.

The runoff in the proposed condition will drain through a closed drainage system and outfall to a wet detention facility for formal treatment and attenuation. There are three new proposed ponds for the project. The ponds will discharge to the same outfall location as in the existing drainage conditions. Alternative pond sites were analyzed for each basin. The selected pond alternatives are summarized in **Table ES-1.**

Table ES-1: Summary of Selected Pond Sites

	Pond 1A	Pond 2B	Pond 3B
Size	2.84 ac.	2.46 ac.	1.71 ac.
Total Est. Cost	$2,082,178.57	$3,873,106.26	$1,226,086.48

The analysis in this report indicates that the recommended alternative is feasible from a hydraulic perspective. The recommended ponds will provide the required treatment and attenuation for the project. There are no significant changes to the base flood elevation or mapped floodplains anticipated.

The proposed project will not encourage floodplain development due to local (FEMA) floodplain and SWFWMD regulations. The drainage design will be consistent with FEMA, FDOT, and SWFWMD design guidelines.

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SECTION 1 INTRODUCTION

1.1 PROJECT BACKGROUND

The Florida Department of Transportation (FDOT) is conducting a Design Change and Right of Way (ROW) Authorization Reevaluation of a previous Environmental Assessment (EA) (Work Program Item Segment (WPIS) #No. 255598-1) with a Finding of No Significant Impact (FONSI) approved by the Federal Highway Administration on May 24, 1994. **Figure 1-1** shows the limits of the previous PD&E study completed along 22nd Street Causeway/Causeway Boulevard (State Road 676) from State Road (SR) 60 to US 301, in Hillsborough County, Florida. The segment currently being evaluated/advanced is shown as Segment 3 on **Figure 1-1.**

The previous study evaluated anticipated conditions for a 2015 Design Year. The FONSI documented the construction of a six-lane roadway to replace the existing 2- to 4-lane roadway beginning at SR 60 and extending approximately 7 miles east at US 301. Since the completion of the 1994 PD&E Study, Causeway Boulevard has been widened to four-lanes.

The project included a new interchange at US 41/Causeway Boulevard intersection for which the approved concept was a "compressed diamond" interchange with US 41 elevated over Causeway Boulevard. This interchange is also known as a Single Point Urban Interchange (SPUI) or a Tight Urban Diamond Interchange (TUDI). The study identified that the US 41 interchange bridge would carry three lanes of traffic in each direction with a barrier wall separating opposing traffic. The study recommended an additional grade separation of US 41 over the CSX railroad crossing south of Causeway Boulevard while the CSX railroad crossing east of US 41 would remain at-grade with Causeway Boulevard. The concept showed the SPUI ramps oriented along US 41 and one-way, one-lane frontage roads were provided in the southeast and northeast quadrants to provide local property access. Five-foot sidewalks and 4-foot bicycle lanes were proposed along both sides of Causeway Boulevard.

The current study effort being conducted under WPIS# 440749-1 is evaluating various intersection and operational improvements along Causeway Boulevard east and west of US 41 (SR 45/SR 599) along US 41 from south of the Causeway Boulevard intersection to north of the Causeway Boulevard intersection. These improvements include the construction of a grade separation of US 41/SR 45 at the CSX railroad crossing located approximately 1,400' south of the Causeway Boulevard intersection. Bicycle and pedestrian facility improvements along US 41 and Causeway Boulevard are also provided.

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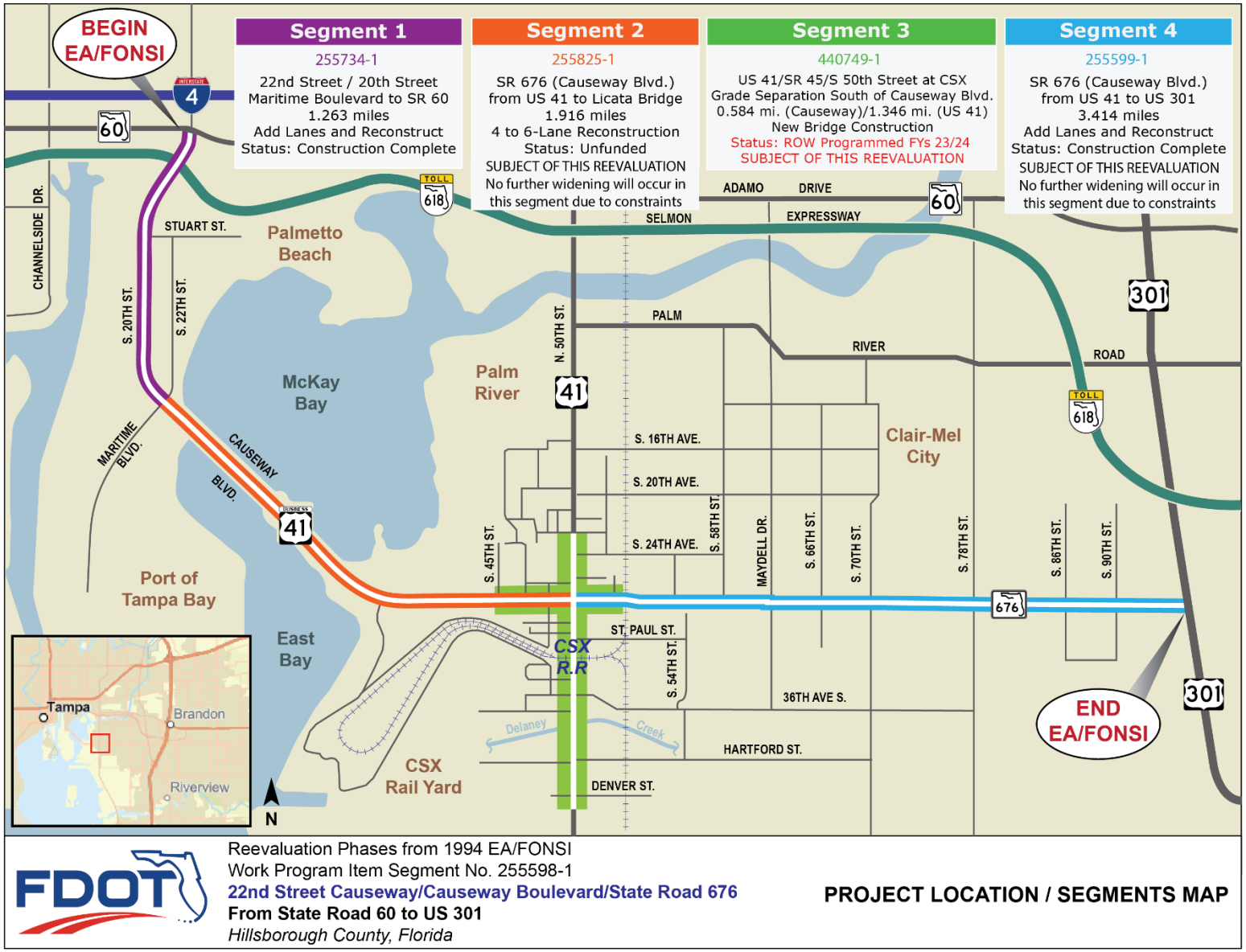

Figure 1-1. Project Location / Segments Map

1.2 PROJECT PURPOSE AND NEED

Purpose

The purpose of this project is to reduce traffic delays associated with the CSX railroad crossing, adequately support the safe movement of vehicle traffic, including trucks and freight, and enhance connectivity and safety for bicyclists and pedestrians.

Need

As expressed in the original 1994 EA/FONSI, the need for the 22nd Street Causeway/Causeway Boulevard improvements was based on the following criteria: System Linkage; Capacity; Transportation Demand; Federal, State, or Local Government Authority; Socioeconomic Demand; Modal Interrelationships; Safety; and Navigation.

For the current segment, US 41 and Causeway Boulevard are vital arterial highways which serve the City of Tampa located in Hillsborough County. The US 41/SR 45 and Causeway Boulevard intersection experiences traffic delays during the AM and PM peak periods with heavy truck traffic (approximately 13% of the daily volume) traversing through the intersection. The presence of CSX railroad crossings to the south and east of the intersection also further contribute to these traffic delays. The CSX railroad crossing located to the south of the intersection causes traffic delays particularly during the AM peak period. This project will address traffic delays associated with the CSX railroad crossing to the south of the US 41 and Causeway Boulevard intersection and will facilitate the safe movement of vehicle traffic through the project corridor.

In addition, this project will also address multimodal connectivity and safety within the area. Although there sidewalks and dedicated bicycle lanes along both sides of Causeway Boulevard within the project limits, there are only sidewalks and no dedicated bicycle facilities along US 41 within the project limits. Between 2017 and 2021, there were 10 crashes involving bicyclists or pedestrians. These 10 crashes resulted in 1 fatality as well as a total of 8 injuries.

The proposed improvements have been identified in the Hillsborough County Transportation Planning Organization's (TPO) 2045 Adopted Long Range Transportation Plan (under the Hillsborough County Freight Hot Spots), the TPO's Fiscal Year 2022/23-2026/27 Transportation Improvement Program, as well as the FDOT's Statewide Transportation Improvement Plan and Strategic Intermodal System (SIS) Adopted 1st 5-Year Program. US 41 has also been identified as a Goods Movement Roadway Corridor from I-4 to the Manatee County Line and is a priority project for the National Highway Freight Program.

1.3 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

1.3.1 Existing Facility

The project limits identified along US 41 begin south of Denver Street (MP 22.578) and extend north of the Causeway Boulevard intersection to 23rd Avenue (MP 23.925). The improvements along Causeway Boulevard begin west of 45th Street (MP 3.554) and extend east of the Causeway Boulevard intersection

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terminating prior to the CSX crossing (624815B; MP 2.971). US 41 is currently a six-lane roadway throughout the project limits and Causeway Boulevard is currently four-lanes. US 41 and Causeway Boulevard are functionally classified by the FDOT as urban principal arterials. US 41 south of Causeway Boulevard and Causeway Boulevard west of US 41 are part of FDOT's Strategic Intermodal System (SIS), designated as a SIS Connector. The CSX railroad crossing east of US 41 is a designated SIS Railway Corridor and the CSX railroad crossing south of Causeway Boulevard is designated as a SIS Railway Connector. There is one bridge culvert south of Causeway Boulevard for US 41 over Delaney Creek (MP 23.003).

US 41 from south of Denver Street to Causeway Boulevard is a divided 6-lane roadway with a 19-foot median, 10-foot outside travel lanes, 11-foot middle and inside travel lanes, curb and gutter, and a sidewalk on both sides. The inside northbound travel lane from north of St. Paul Street becomes one of the two left-turn lanes for the Causeway Boulevard intersection. The sidewalk on the east side is 6-foot wide and the sidewalk on the west side varies from 5-foot to 6-foot wide.

Along US 41 from north of Causeway Boulevard to just north of S. 23rd Avenue, the existing typical section consists of an undivided 6-lane roadway with asphalt pavement, 11-foot travel lanes, a centered 10-foot bi-directional turn lane, curb and gutter, and 4-foot sidewalk along both sides of the roadway.

Along Causeway Boulevard from S. 45th Street to Sagasta Street, the existing typical section consists of an undivided 4-lane roadway with concrete pavement, 12-foot lanes, a centered 14-foot bi-directional turn lane, curb and gutter, 4-foot bike lanes, and 6-foot sidewalks.

The existing typical section of Causeway Boulevard from Sagasta Street to US 41 consists of a divided 4-lane roadway with concrete pavement and 12-foot travel lanes, 4-foot bicycle lanes, and 6-foot sidewalks on both sides.

The existing typical section of Causeway Boulevard from US 41 to the end project limits consists of a divided 4-lane roadway with asphalt pavement, 12-foot outside lanes and 11-foot inside lanes, curb and gutter, 4-foot bicycle lanes and 6-foot sidewalks on both sides.

The majority of the existing ROW along US 41 is 100 feet wide. In the vicinity of the CSX railroad, the ROW width varies from 100 to 332-feet. CSX Transportation owns a large portion of the adjacent property along both sides of US 41 where the CSX railroad crosses at grade. Causeway Boulevard is 150 feet wide or greater west of S. 45th Street and reduces to 100 feet wide around S. 47th Street. The ROW increases around the US 41 intersection along Causeway Boulevard then reduces to 100 feet wide before the CSX railroad crossing.

1.3.2 Proposed Improvements

This Design Change and ROW Authorization Project Development and Environment (PD&E) Reevaluation study (WPIS# 440749-1), with a 2046 Design Year, is evaluating various operational improvements along US 41/SR 45/SR 599/S. Tamiami Trail (US 41) from south of the Causeway Boulevard intersection to north of the Causeway Boulevard intersection. The study will evaluate roadway widening/reconstruction, new stormwater management facilities, new bridge overpasses at Delaney Creek, the CSX railroad, and other roadways for local traffic needs. Intersection and operational improvements being evaluated include

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signalization and turn lane additions for Hartford Street, US 41/Causeway Boulevard, and 47th Street. In addition to addressing operational improvements, this project will address the need for pedestrian/ bicycle accommodations and improving connectivity and safety for these modes.

There are multiple typical sections throughout the project limits. From just south of Denver Street to north of Trenton Street, the proposed typical section includes reconstructing US 41 with concrete pavement to accommodate a 6-lane divided urban curbed section with 12-foot lanes, 7-foot buffered bicycle lanes, and 10-foot sidewalks on both sides. The median width varies from 19-22 feet to provide turn lanes with raised traffic separators between opposing directions of travel. The proposed improvements will require the acquisition of ROW beyond the existing footprint varying from 0-22 feet along the west side and varying from 0-17 feet along the east side of US 41.

From north of Trenton Street the proposed typical section grade separates US 41 to continue a concrete paved typical section to south of St. Paul Street. The proposed typical section consists of a 6-lane divided urban section with concrete pavement, 12-foot lanes and 10-foot inside and outside paved shoulders. A northbound exit ramp connects to 36th Avenue with a t-intersection configuration on the east side of US 41. The proposed concrete ramp consists of a 15-foot travel lane, 7-foot buffered bicycle lane and a 10-foot sidewalk on the eastside. The existing US 41 southbound mainline pavement will be repurposed to accommodate a two-lane undivided frontage road for local access to adjacent properties. The proposed frontage road is an urban curbed section with asphalt pavement, 12-foot travel lanes, and a 10-foot sidewalk on the west side. Bridge overpasses are proposed for the US 41 mainline over Delaney Creek, 36th Avenue, and the at grade CSX Crossing (No 624802A). The proposed improvements will require the acquisition of ROW varying from 29 to 88 feet along the west side and varying from 39 to 200 feet along the east side.

From north of St. Paul Street to the Causeway Boulevard intersection, the proposed typical section along US 41 consists of a 6-lane divided urban section with concrete pavement, 12-foot lanes, 10-foot outside paved shoulders on the west side and a 7-foot buffered bicycle lane on the east side. The median bifurcates to accommodate three 12-foot left turn lanes approaching the intersection with one 12-foot right turn lane along the outside in the northbound direction. Milling and resurfacing is proposed for the outside 22-feet of the existing southbound lanes. This area will be restriped to provide a frontage road with one 15-foot lane and a 7-foot buffered bicycle lane on the outside with a new raised curb and 10-foot sidewalk. The proposed improvements will require the acquisition of ROW varying from 0 to 160 feet along the east side only.

The proposed typical section for US 41 north of Causeway Boulevard consists of a 6-lane divided urban section with 12-foot lanes, 7-foot buffered bike lanes and 6-foot sidewalks. The northbound lanes will be asphalt and the southbound lanes will be concrete. There are two 12-foot left turn lanes and one 12-foot right turn lane shown in the southbound direction. The proposed improvements will require the acquisition of ROW varying from 30 to 45 feet along the west side and varying from 0 to 45 feet along the east side.

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The proposed typical section for Causeway Boulevard from S. 45th Street to US 41 widens the existing concrete pavement to accommodate a 4-lane divided urban section with 11-foot travel lanes, 7-foot buffered bike lanes and 6-foot sidewalks along the outside. Approaching the US 41 intersection, there are two 11-foot left turn lanes and three 11-foot right turn lanes in the eastbound direction. The proposed improvements will require the acquisition of ROW varying from 0 to 44 feet along the north side only.

The proposed typical section for Causeway Boulevard from US 41 to the end project limit just west of the CSX railroad crossing consists of a westbound concrete and eastbound asphalt 4-lane divided urban section with 11-foot travel lanes, 7-foot buffered bike lanes and 6-foot sidewalks on the outside. Approaching the US 41 intersection, there are two 11-foot left turn lanes and one 11-foot right turn lane in the westbound direction. The proposed improvements will require the acquisition of ROW varying from 0 to 4 feet along the north side only.

1.4 REPORT PURPOSE

The purpose of this Pond Siting Report is to document the pond alternatives analysis performed to support decisions related to the evaluation of the project build alternative and to summarize the required treatment and attenuation requirements needed for the project. Measures considered to avoid, minimize, and mitigate for potential impacts resulting from the proposed project are also discussed. This Pond Siting Report was conducted in accordance with the PD&E manual and applicable State and Federal natural resources regulations. All elevations referenced within the report are in the North American Vertical Datum of 1988 (NAVD 88) unless otherwise noted.

SECTION 2 DATA COLLECTION

2.1 EXISTING ROADWAY CONDITIONS

A dominant feature of the area is the CSX Railroad leading in and out of the Port of Tampa. A single railroad track currently crosses US 41 at grade approximately 1475 ft. south of the intersection and crosses Causeway Boulevard approximately 1400 ft. east of the intersection. These at-grade crossings create long delays to vehicular traffic on both US 41 and Causeway Blvd. A significant portion of this traffic is truck traffic traveling to and from the port.

The functional classification for both US 41 and Causeway Boulevard is Urban Principal Arterial -Other. Both facilities are on the State Highway System and US 41 is on the National Highway System. A portion of the project limits is designated a Strategic Intermodal System (SIS) connector along US 41 from south of the project limits to Causeway Boulevard and along Causeway Boulevard from US 41 to west of the project limits. Both facilities are considered evacuation routes. The posted speed limit is 50 miles per hour (mph) for US 41 and 45 mph for Causeway Boulevard. The context classification for both facilities is listed as C3C.

Existing land uses within the study area include commercial and vacant lots. Commercial businesses have access points to US 41 throughout the corridor. The existing topography is relatively flat within the study area with elevations averaging around 7 ft NAVD. Refer to **Figure 2-1** for a topographic map.

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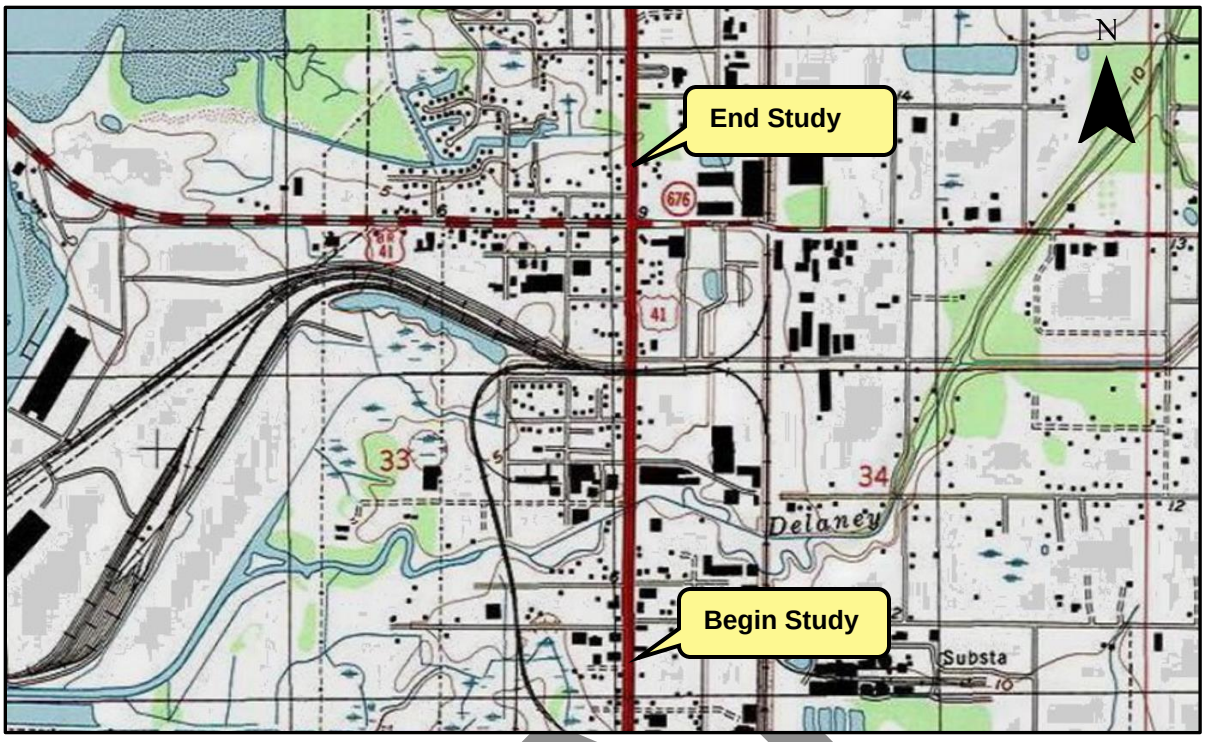

Figure 2-1: USGS Topographic Map

The proposed improvements include adding an overpass on US 41 at CSX railroad crossing south of Causeway Blvd and interchange improvements at US 41 and Causeway Blvd with the focus of improving the turning movements at the US 41/Causeway Blvd intersection. Off-site stormwater management facilities will be constructed to treat and attenuate the additional stormwater runoff from the proposed improvements.

2.2 DELANEY CREEK WATERSHED MODEL

The hydraulic modeling for the Delaney/Archie Creek (DAC) watershed was conducted using EPA SWMM version 5.2.0. Runoff was estimated by the SWMM5 Hydrology Tool Add-in provided by Hillsborough County to utilize the SCS Curve Number method. The hydraulic model allows for a more detailed analysis of cross drains and floodplain impacts allowing for floodplain compensation sites to be proposed where they will be the most effective, which can reduce the overall size of needed FPC sites when compared to the traditional cup-for-cup method.

2.3 FLOOD INSURANCE RATE MAPS (FIRMS)

The project is located within Federal Emergency Management Agency (FEMA) Insurance Rate Maps (FIRMs) 12057C0366J and 12057C0367J effective October 7, 2021 in Hillsborough County. FIRM Panel 12057C0366J covers the project area along Causeway Boulevard west of S 47th Street. FIRM Panel 120570367J covers the project limits along US 41 and on Causeway Boulevard east of 47th Street. US 41 crosses over the Delaney Creek within the project limits on FIRM Panel 12057C0367J. Based on the new

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effective maps, Delaney Creek is no longer listed as a FEMA Floodway within the project limits. The FEMA FIRMs are provided in **Appendix A**.

Based on the current effective maps, the entire project area is located within a FEMA Zone AE 100-year floodplain with a base flood elevation (BFE) which ranges between 12 and 13 feet. The FEMA BFE is based on storm surge. The riverine 100-year flood stage is based on the Delaney Creek Watershed Model and ranges from 4 to 8 feet within the project limits. An isolated Zone A exists on the north side of Causeway Boulevard east of the CSX railroad tracks that appears to be outside of the study limits.

Flood Zones A and AE represent a 1% annual change of flood, which is commonly referred to as the 100-year flood. The receiving water body (Hillsborough Bay) is tidally influenced.

2.4 FLOODING HISTORY

There are no active flood investigations documented in the vicinity of the project but there were four past flood investigations.

Investigation #1003112009174 at 4141 Causeway Boulevard filed in 2006 reported flooding of private property several times per year. The property is 5.1 feet below the FEMA effective 100-year flood elevation and substantial development has occurred in the area since the FDOT system was designed in 1978. A blocked outfall pipe on Port Authority property was identified as the likely problem. No new complaints have been issued for this location. Refer to **Appendix B** for the Flood Investigation Drainage Complaint Inventory Sheet.

Investigation #1005202009518 at 3630 South 50th Street filed in 2005 reported flooding of private property and a building from roadway runoff during larger storm events. The property is located in a low area below the 100-year floodplain with groundwater table estimated 0-1 feet below ground. Poorly maintained private swales were identified as a potential issue. Vegetation around an FDOT ditch bottom inlet was also identified and cleared. No new complaints have been issued for this location. Refer to **Appendix B** for the Flood Investigation Drainage Complaint Inventory Sheet.

Investigation #1006222010167 at 2436 South 50th Street filed in 2009 reported flooding of a business. The complainant did not report a history of flooding and believed the problem could be the recent widening project on Causeway Boulevard. No new complaints have been issued for this location. Refer to **Appendix B** for the Flood Investigation Drainage Complaint Inventory Sheet.

Investigation #1008292016754 identified standing water on 31st Avenue and 34th Avenue beside South 50th Street during a field review for an upcoming sidewalk project under FPID 439038-1. Inadequate drainage systems on the side streets were identified as the likely cause. No new complaints have been issued for these locations. Refer to **Appendix B** for the Flood Investigation Drainage Complaint Inventory Sheet.

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2.5 AGENCY COORDINATION

2.5.1 Southwest Florida Water Management District

A Pre-Application Meeting was held with the Southwest Florida Water Management District (SWFWMD) on March 12, 2020. The purpose of this meeting was to confirm design criteria for the stormwater management facilities and floodplain compensation requirements for the corridor. Treatment will be required for new travel lanes and any existing impervious areas that have previously been permitted. Attenuation will not be required for areas that directly discharge to tidally controlled water bodies. Otherwise, the post development peak discharge must be less than the predevelopment discharge for the 25-year, 24-hour storm event. Equivalent compensating storage will be required for any riverine floodplain impacts, and flood stages are not to be increased. Correspondence and additional documentation are provided in **Appendix C.**

An additional meeting was held with SWFWMD on November 19, 2020 to determine the tidal nature of the project and discuss whether attenuation and floodplain compensation would be required for the proposed improvements. It was determined that the receiving system is not tidally influenced due to the constrictions imposed by the downstream bridge structure at the railroad tracks over Delaney Creek and the downstream culvert in the Unnamed Creek. Therefore, attenuation and floodplain compensation will be required. SWFWMD will allow the use of the Delaney Creek model to show no rises to the flood stages. Meeting minutes and email correspondence are located in **Appendix C**.

On December 1, 2022 a pre-application meeting was held with SWFWMD to confirm the design criteria and discuss underdrain design for the roadway. SWFWMD confirmed that treatment of the new pavement is acceptable and that compensatory treatment will be allowed. It was also confirmed that attenuation and floodplain mitigation could be modeled within the existing Delaney Creek model by showing no stage increases at or above 0.05 feet. SWFWMD will not require nutrient loading analysis for this project as it does not directly discharge to WBIDs 1584B (McKay Bay) or 1584C (East Bay) which are within the Tampa Bay Nitrogen Consortium. They did not have any concerns with directly discharging the underdrain to Delaney Creek or the Unnamed Creek. Refer to **Appendix C** for the meeting minutes.

2.5.2 Florida Department of Transportation

A Drainage Coordination Meeting was held with the FDOT on February 25, 2020. The purpose of this meeting was to identify any preferred pond site locations and discuss the drainage needs of the project. The FDOT confirmed that a “design level” Pond Siting Report will be required for the project and that an LHR will be required to confirm any floodplain mitigation needs for the project. Regional pond alternatives were discussed and determined to be unfeasible given the industrial/urban nature along the corridor. The meeting minutes are provided in **Appendix C.**

A Pond Siting Coordination Meeting was held on October 4, 2022 with the FDOT to identify the pond sites for the preferred alternative. Three pond alternatives were selected for Basins 1 and 3 and two pond alternatives were selected for Basin 2. The selected ponds will be analyzed within the Pond Site Selection Report. The meeting minutes are provided in **Appendix C.**

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A meeting to discuss the drift clearance was held on January 19, 2023. There was concern with the estimated sea level rise over the life of the bridge and if the allowable drift clearance had taken the sea level rise into consideration. Based on the discussion in the meeting, the drift clearance would not be estimated from the predicted sea level rise and would remain at 2-feet above the design high water. Instead, it was determined that the design of the bridge would need to account for the water load that could be encountered during a storm surge event and that the design bridge scour be evaluated assuming a 10% blockage for the riverine event. Additionally, buoyancy will be evaluated for the design bridge. The meeting minutes are provided in **Appendix C.**

A Pond Site Selection Meeting was held on January 20, 2023 with the FDOT to select the final pond sites for the project. Ponds 1A, 2B, 3A and 3B were selected. The meeting minutes are provided in **Appendix C.**

2.5.3 Hillsborough County

Hillsborough County was contacted on March 8, 2021 to determine if a "no-rise" analysis will be required for the bridge over Delaney Creek. The effective FEMA maps at the time of the meeting showed Delaney Creek as a designated floodway within the project limits. The new effective maps have removed the floodway from the project limits. Hillsborough County confirmed that a "no-rise" evaluation will not be required for Delaney Creek. The email correspondence is located in **Appendix C.**

2.5.4 Florida Department of Environmental Protection

A meeting was held with the Florida Department of Environmental Protection (FDEP) on December 14, 2022 to discuss the nutrient loading criteria for the project. The project discharges to WBIDs 1615 (Drainage to McKay Bay) and 1605D (Delaney Creek – Tidal) which are not on the Verified Impaired List for dissolved oxygen. These WBIDs were however, on the Study List for dissolved oxygen. The FDEP did not believe that the dissolved oxygen concerns were caused by nutrients or pollutants, but rather the lack of flushing within the tidal waters. Therefore, they do not see a need to provide the net reduction and will defer to SWFWMD for the nutrient loading requirement. Please refer to the meeting minutes located in **Appendix C.**

2.6 DESIGN CRITERIA

The design of the stormwater management facilities for the project is governed by the rules set forth by the SWFWMD and the FDOT. An Environmental Resource Permit will need to be approved by the SWFWMD during the design phase of the project. Wet detention ponds will provide for water quality improvements as well as water quantity attenuation for the project runoff. The stormwater ponds are designed and sized for the recommended typical section for each segment. **Table 1** summarizes the criteria used for preliminary pond sizing.

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Table 1: Design Criteria

Criteria	Reference	Requirement
Water Quality	SWFWMD Applicants Handbook Section 4.5.a.2	Treat one inch of runoff from the directly connected impervious area
Water Quantity	SWFWMD Applicants Handbook Section 4.1	Post-development discharge rate less than or equal to pre-development discharge rate for the 25-year 24-hour design storm
Pond Configuration	SWFWMD Applicants Handbook Section 5.7	Configurations which create stagnant water conditions are prohibited.
	FDOT Drainage Manual Section 5.4.4.2	• Maintenance Berm minimum 15-ft at 1:8 slope or flatter • Minimum 30-ft radius along inside edge of maintenance berm • Provide a minimum 1-ft of freeboard above the maximum design stage (0.5-ft for linear treatment swales) measured to the inside berm

2.7 SOILS DATA AND SHGWT DETERMINATION

The Natural Resources Conservation Service (NRCS) Web Soil Survey classifies seven soil types along the project limits, which are shown in **Figure 2-2** and listed in **Table 2**.

Table 2: NRCS Soil Survey Information

Map Unit and Name		Drainage Class	Hydrologic Soil Group	Depth to Water Table (ft)
5	Basinger, Holopaw, and Samsula soils	Very poorly drained	A/D	+2.0-1.0
29	Myakka fine sand	Poorly drained	A/D	0.0-1.0
30	Myakka fine sand	Very poorly drained	A/D	0.0-1.0
38	Pinellas fine sand	Poorly drained	B/D	0.0-1.0
57	Winder fine sand	Poorly drained	C/D	0.0-1.0
59	Winder fine sand	Poorly drained	C/D	0.0-1.0
99	Water	-	-	-

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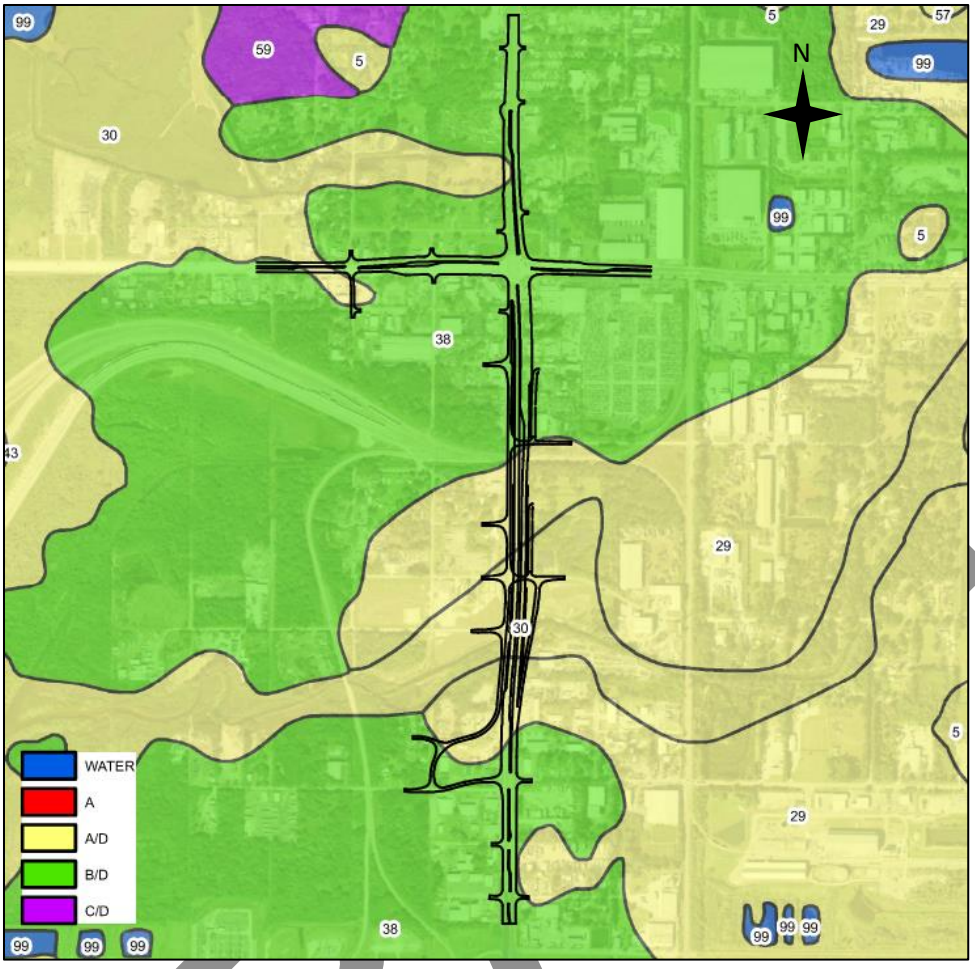

Figure 2-2: NCRS Soil Survey Information

Seasonal high groundwater table elevations were determined for the project based on geotechnical investigations and existing surface water information. All elevations are in NAVD88 datum unless otherwise stated.

Tierra, Inc. performed geotechnical soil borings to determine seasonal high groundwater table (SHGWT) elevations along the roadway alignment and within the ponds. A copy of the geotechnical report is provided in **Appendix D**. The seasonal high water table elevations range between 3.30 and 7.8 feet along the corridor.

SECTION 3 EXISTING DRAINAGE CONDITIONS

The project study area is located in the Tampa Bay Watershed within the Coastal Hillsborough Bay Tributary Planning Unit. The project is split between WBID 1605D (Delaney Creek Tidal) and WBID 1615 (Drainage to McKay Bay). Both WBIDs are verified as impaired for Enterococci. WBID 1605D is also impaired for lead, copper and iron. The project does not directly discharge to WBIDs 1584B (McKay Bay) and 1584C (East Bay). These WBIDS are directly connected to Tampa Bay which is designated as a Category

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4b water body and does not meet water quality standard for nitrogen. Meetings were held with SWFWMD and FDEP to determine if net reduction of nitrogen would be required for the project. Based on the proposed discharge locations that are significantly upstream from the Bay and no direct discharges to WBIDs 1584B and 1584C, it was determined that the nutrient loading analysis would not be required for this project. The project does not discharge to an Outstanding Florida Water (OFW) and therefore additional 50% of treatment volume will not be required. Refer to **Appendix A** for a map of the existing WBIDs and **Appendix C** for the corresponding meeting minutes with the regulatory agencies. Along US 41, the stormwater runoff is collected by curb and gutter and conveyed either to Delaney Creek or the Unnamed Creek located north and south of Causeway Boulevard respectively. Formal water quality is not currently provided along US 41. Causeway Boulevard from the begin project area to east of 47th Street sheet flows to the existing roadside ditches and outfalls directly to East Bay with no formal water quality treatment. Causeway Boulevard from east of 47th Street to the end of the project area is collected by curb and gutter and conveyed to existing FDOT SMFs located at the northwest and northeast corners of US 41 and Causeway Blvd. intersection.

The project traverses two subwatersheds within the Delaney Creek Watershed. The northern portion of the project is within the Palm River Coastal subwatershed and the southern portion of the project is within the Delaney Creek subwatershed. The Palm River Coastal subwatershed begins north of the project limits and drains southwest to an existing channel south of 24th Avenue and outfalls at McKay Bay. The southern boundary of the subwatershed is Causeway Boulevard. The Delaney Creek Subwatershed begins at Causeway Boulevard and drains southwest to Delaney Creek and outfalls to East Bay. The southern boundary of the subwatershed is Santa Fe Road. Both subwatersheds ultimately outfall to Hillsborough Bay. Refer to **Figure 3-1** for a map of the existing watersheds.

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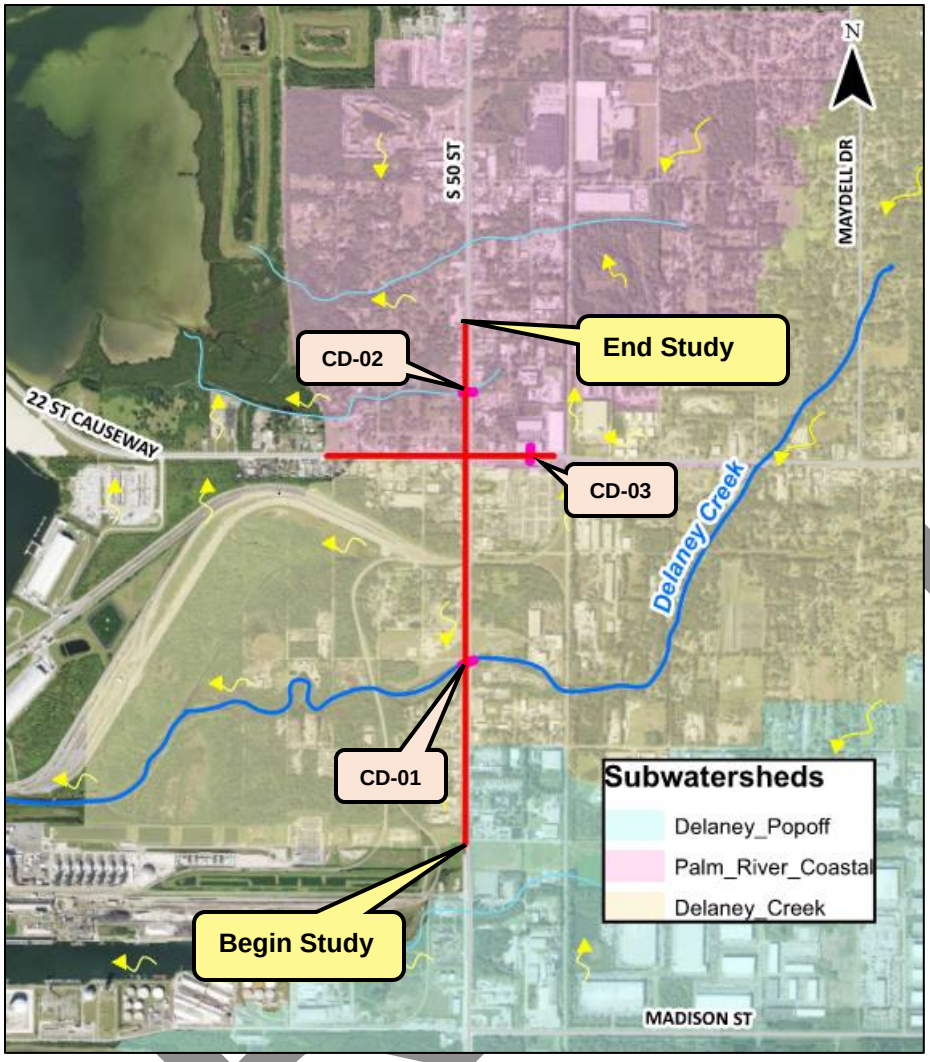

Figure 3-1 Watershed Map

3.1 EXISTING CROSS DRAINS

The Straight Line Diagram (SLD) for US 41 (SR 45/SR 599) and Causeway Blvd. (SR 676/SR 45), existing plans (FPID 439038-1-52-01), The Delaney /Archie Creek Watershed Masterplan, and field reconnaissance were used to identify existing cross drains within the corridor. Runoff crosses US 41 from the east to the west through two existing cross drains (CD-01 and CD-02) and from south to north along Causeway Blvd through one existing cross drain (CD-03). The existing cross drain locations are shown in **Table 3**. CD-02 was not identified in the SLD. It was within a section not inventoried due to ongoing construction. The locations of the existing cross drains are shown on the Map in **Figure 3-1**. The cross drain photos and review checklist are located in **Appendix E**.

Table 3: Summary of Existing Cross Drains

Cross Drain	Size	Length	Location		Road
			Milepost	Station	
CD-01	(3) 11' X 8' RCBC	120 ft	23.003	71+35	US 41
CD-02	(2) 42" RCP	103 ft	23.735	110+00	US 41
CD-03	24"X 38" RCP	151 ft	2.918	304+00	Causeway Blvd.

3.2 EXISTING DRAINAGE BASINS

3.2.1 Basin One

Basin One is approximately 2,345 feet long extending from the southern project limits on US 41 to Delaney Creek (Station 218+44 to Station 71+20). On-site stormwater runoff is collected in a closed drainage system draining directly to Delaney Creek with no formal treatment or attenuation. Offsite areas adjacent to the roadway also drain north into Delaney Creek. An existing triple 11-ft by 8-ft concrete box culvert (CBC) conveys Delaney Creek under US 41 as it drains west to the Hillsborough Bay.

3.2.2 Basin Two

Basin Two is approximately 2,130 feet long extending from Delaney Creek to 31st Avenue South. (Station 71+20 to Station 92+50). On-site stormwater runoff is collected in a closed drainage system draining directly to Delaney Creek with no formal treatment or attenuation. Offsite areas adjacent to the roadway also drain south into Delaney Creek. An existing triple 11-ft by 8-ft concrete box culvert (CBC) conveys Delaney Creek under US 41 as it drains west to the Hillsborough Bay.

3.2.3 Basin Three

Basin Three is approximately 2,850 feet long extending from 31st Avenue South to the northern limits of the project on US 41 (Station 92+50 to Station 121+00). The basin also extends along Causeway Boulevard from S. 45th Avenue to approximately 900 feet east of the intersection of US 41 and Causeway Boulevard (Station 280+00 to Station 310+77). On-site stormwater runoff from US 41 drains north to the Unnamed Creek approximately 800 feet north of Causeway Boulevard where it is discharged without formal treatment or attenuation. On-site stormwater runoff from portions of Causeway Boulevard is collected in a closed drainage system draining to existing stormwater management ponds in the northeast and northwest quadrants of the US 41 at Causeway Boulevard intersection (Pond 1A and Pond 1B, ERP 4327063.000). These ponds discharge to the Unnamed Creek approximately 800 feet north of Causeway Boulevard. The western portions of Causeway Boulevard from the project limits to Sagasta Street have no formal treatment or attenuation. Offsite areas adjacent to the roadway also drain to the existing cross drain, which conveys an existing ditch west to the Hillsborough Bay.

3.3 TAILWATER

The existing project is discharging to tidally influenced canals that ultimately outfall to the Hillsborough Bay. The Delaney Creek Watershed Model was used to determine the tailwater elevations for the pond alternatives. Additionally, the ponds were placed into the watershed model for additional assurance.

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Section 3.4.1 of the 2022 FDOT Drainage Manual requires all coastal projects to incorporate sea level rise analysis and assess the vulnerability of flooding over the design life of the facility. According to sea level trends and historical data gathered by the National Water Level Observation Network (NWLON), a mean sea level rise of 0.109 inches per year for the St. Petersburg area (Station 8726520) is expected. Major cross drains, such as the bridge culvert at Delaney Creek, have a design service life of 100 years. The mean sea level is anticipated to rise 0.91 feet during the service life of this cross drain. Because the area is tidal in nature and the water levels within the creek are much lower than the control elevations within the proposed ponds, the anticipated sea level rise is not expected to have a significant effect on the ponds. Additionally, the outfall locations are over a mile upstream from the bay and not likely to see much change in the tailwater elevations. During the design of the ponds, the tailwater will be modeled to include an additional 0.91 feet for the projected sea level rise to make sure that the ponds will not overtop.

3.4 FLOODPLAINS

The entire project is located within FEMA Zone AE with a base flood elevation (BFE) which ranges between 12 and 13 feet. The FEMA BFE is based on storm surge. The riverine 100-year flood stage is based on the Delaney Creek Watershed Model and ranges from 4 to 8 feet within the project limits.

Development within the 100-year floodplain has the potential for placing citizens and property at risk of flooding. The placement of fill within the floodplain can also increase the flooding potential due to decreasing the available flood storage capacity. Any work within a regulatory floodway will require coordination with FEMA and local agencies to ensure that the project is developed consistent with local floodway plans and floodplain management programs. Due to the map revision, the project is no longer within a designated floodway. A meeting with Hillsborough County staff also confirmed that additional coordination would not be required. Refer to **Appendix C** for the correspondence.

SECTION 4 PROPOSED DRAINAGE CONDITIONS

The runoff in the proposed condition will drain through a closed drainage system and outfall to a wet detention facility for formal treatment and attenuation. The ponds will discharge to the same outfall location as in the existing drainage conditions.

4.1 CROSS DRAINS

This project includes two cross drains and one bridge culvert over Delaney Creek as documented in **Table 4**. CD-03 meets the required clearzone width for both the existing and proposed conditions and will not require an extension. There are no documented deficiencies for any of the cross drains.

The Delaney Creek Watershed Model was used to evaluate the existing and proposed conditions for CD-02 (Node 230040). The proposed improvements were input within the Revised Model and varied sizes and lengths were analyzed for the cross drain. The scenario that resulted in no significant rises for the improvements was a double barrel 48” RCP. Refer to **Table 4** for a summary of the resultant design

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highwater elevations. The complete results and summary of changes to the model can be found in **Appendix G**.

A Bridge Hydraulics Report will be performed for the existing bridge culvert to document the bridge alternatives over Delaney Creek. Therefore, the analysis for CD-01 is not included in this report.

Table 4: Summary of Cross Drain Hydraulics

Node		DHW 50-yr 24-hr (Feet)		DHW 100-yr 24-hr (Feet)		DHW 500-yr 24-hr (Feet)	
		Existing	Proposed	Existing	Proposed	Existing	Proposed
CD-02	Upstream (230040)	5.85	5.43	6.11	5.7	7.15	6.77
	Downstream (230030)	4.17	4.18	4.29	4.31	4.85	4.87

4.2 BRIDGE STRUCTURES

The existing bridge culvert over Delaney Creek (Bridge No. 100048, CD-01) is proposed for replacement. A Bridge Hydraulics Report will be performed during the design phase of the project to analyze two bridge alternatives. Therefore, analysis for the Delaney Creek crossing was not performed for this report. The existing 50 year elevation for the creek at this crossing is 7.88 ft based on results from the Delaney Creek Watershed Model (Node 210050).

Based on Section 5.1.4 of the 2022 Drainage Design Guide and Chapter 260.8.1 of the FDOT Design Manual (FDM), FDOT requires a two foot drift clearance from the design highwater to the low member elevation of the bridge for the riverine analysis. In coastal areas, the minimum vertical clearance is 1 ft above the 100-year design wave crest elevation including storm surge. This is intended to protect the bridge from wave action. FEMA FIRM Panel 12057C0366J shows the Limits of Moderate Wave Action (LiMWA) line one mile west of the Delaney Creek Bridge and the crossing is outside of the VE floodplain. Therefore, coastal criteria will not apply to this crossing. Navigational vertical clearances will not be required as the existing bridge culvert has been determined to be non-navigable in the ETDM.

Section 3.4.1 of the 2022 FDOT Drainage Manual requires all coastal projects to incorporate sea level rise analysis and assess the vulnerability of flooding over the design life of the facility. According to sea level trends and historical data gathered by the National Water Level Observation Network (NWLON), a mean sea level rise of 0.109 inches per year for the St. Petersburg area (Station 8726520) is expected. Major cross drains, such as the bridge culvert at Delaney Creek, have a design service life of 100 years. The mean sea level is anticipated to rise 0.91 feet during the service life of this cross drain. This stage increase is expected to increase the peak stages in the Delaney Creek Watershed Model by 0.91 feet throughout the project limits. The profile along US 41 will be elevated to accommodate the bridge over the CSX facility well above the 100-year riverine flood stages and the expected sea level rise. Therefore, the anticipated rises will have no impact on the proposed bridges along the project. A meeting was held with the

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Department on January 19, 2023. During this meeting the sea level rise and allowable drift clearance was discussed. It was determined that if a bridge was the preferred alternative, additional analysis will be required for the superstructure in terms of buoyancy and protection measures against large debris. The bridges will be designed to accommodate the projected water load from a storm surge event and will be evaluated for buoyancy. The bridge will also assume a 10% blockage for the scour calculations to account for any reduction in the opening due to sea level rise.

4.3 POND SITE SELECTION

The entire area adjacent to the project was evaluated for potential pond sites. All viable sites were presented to the FDOT during a Pond Siting Coordination Meeting that was held on October 4, 2022. Refer to the meeting minutes in **Appendix C.** Three pond alternatives were selected for Basins 1 and 3 and two pond alternatives were selected for Basin 2. Basin 2 only included two sites due to the known contamination issues within the basin and the limited number of viable sites. The selected ponds were analyzed and evaluated based on the following criteria:

- Right of way acquisition cost
- Number of parcels impacted
- Environmental Impacts
- Geotechnical considerations
- Contamination
- Archaeological involvement
- Hydraulic feasibility
- Existing topography

4.4 STORMWATER POND EVALUATION

Pond alternatives were evaluated for each basin. Please refer to **Appendix F** for the pond sizing calculations utilized for the pond site alternatives.

4.4.1 Basin One

Basin One is approximately 2,345 feet long extending from the southern project limits on US 41 to Delaney Creek (Station 218+44 to Station 71+20). On-site stormwater runoff from US 41 will be collected in a closed drainage system draining to a proposed wet detention facility for formal treatment and attenuation. The total basin area is 13.64 acres with an additional impervious area of 2.88 acres. The required treatment volume for the basin is 0.24 ac-ft.

Pond 1A

Pond 1A is a wet detention pond located west of US 41 within the infield area of the new Frontage Road and realigned Hartford Street. The elevations within this area range from 3.8 to 7.9 ft NAVD88. The seasonal high elevation is estimated to be 4.35 feet. This pond site will impact 4 parcels (0469180000, 0469400000, 0469410000, and 0469420000). Some of the parcel impacts are

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required for the roadway realignment and will not be considered new impacts for the pond. The pond will outfall to Delaney Creek along an existing utility easement.

Pond 1B

Pond 1B is a wet detention pond located east of US 41 and north of Trenton Street. The elevations within this area range from 2.2 to 8.3 ft NAVD88. The seasonal high elevation is estimated to be 4.45 feet. This pond site will impact 2 parcels (0471950000 and 0471990000). The pond will outfall to Delaney Creek along the new frontage road adjacent to US 41. Due to known contaminants, the shallow seasonal high water table, and distance from the Delaney Creek this pond is anticipated to need an impermeable liner.

Pond 1C

Pond 1C is a wet detention pond located east of US 41 and south of Delaney Creek. The elevations within this area range from 0.7 to 9.9 ft NAVD88. The seasonal high elevation is estimated to be 4.0 feet. This pond site will impact 1 parcel (0471230000). This parcel impact is expected to acquire the eastern portion of the site. The pond will outfall directly to Delaney Creek. Due to known contaminants, the shallow seasonal high water table, and distance from the Delaney Creek this pond is anticipated to need an impermeable liner.

4.4.2 Basin Two

Basin Two is approximately 2,130 feet long extending from Delaney Creek to 31st Avenue South (Station 71+20 to Station 92+50). On-site stormwater runoff from US 41 will be collected in a closed drainage system draining to a proposed wet detention facility for formal treatment and attenuation. The total basin area is 19.80 acres with an additional impervious area of 5.41 acres. The required treatment volume for the basin is 0.44 ac-ft.

Pond 2A

Pond 2A is a wet detention pond located west of US 41 between Towaway Avenue and S. 34th Street. The elevations within this area range from 3.8 to 9.13 ft NAVD88. The seasonal high elevation is estimated to be 4.0 feet. This pond site will impact 1 parcel (0468160000). The pond will outfall to Delaney Creek along Sagasta Street. Due to known contaminants, this pond is anticipated to need an impermeable liner.

Pond 2B

Pond 2B is a wet detention pond located east of US 41 and south of the CSX railroad. The elevations within this area range from 3.1 to 9.3 ft NAVD88. The seasonal high elevation is estimated to be 4.8 feet. This pond site will impact 1 parcel (0471150000). The pond will outfall to Delaney Creek along the new frontage road adjacent to US 41.

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4.4.3 Basin Three

Basin Three is approximately 2,850 feet long extending from 31st Avenue South to the northern limits of the project on US 41 (Station 92+50 to Station 121+00). The basin also extends along Causeway Boulevard from S. 45th Avenue to approximately 900 feet east of the intersection of US 41 and Causeway Boulevard (Station 280+00 to Station 310+77). On-site stormwater runoff from US 41 will continue to drain north to Unnamed Creek approximately 800 feet north of Causeway Boulevard where it is discharged without formal treatment or attenuation. Compensatory treatment for the US 41 pavement will be provided by collecting the pavement from the previously untreated portions of Causeway Boulevard within the project limits. On-site stormwater runoff from Causeway Boulevard will be collected in a closed drainage system draining to a combination of existing stormwater management ponds (Pond 1A and Pond 1B, ERP 4327063.000) in the northeast and northwest quadrants of the US 41 at Causeway Boulevard intersection and a new wet detention facility. These ponds will discharge to Unnamed Creek approximately 800 feet north of Causeway Boulevard. The total basin area is 19.25 acres with an additional impervious area of 2.41 acres. This will require an additional 0.23 ac-ft of treatment volume for the basin. The existing treatment volume to be replaced from the existing Ponds 1A and 1B 0.75 ac-ft.

Pond 3A

Pond 3A will be comprised of the existing Ponds 1A and 1B on the northwest and northeast corners of the Causeway and US 41 intersection as well as a few additional parcels to the west of US 41 that will be impacted by the widening of Causeway Blvd. This Pond will be required for all alternatives as it is restoring the volumes of the existing ponds that will be impacted by the improvements. The elevations within the area range from 3.9 to 7.1 ft NAVD88. The seasonal high elevation is estimated to be 3.7 feet. The control elevation was assumed to be 2.82 feet to match the permitted control elevation of existing Pond 1B. This pond site will impact the existing Pond 1B parcels (0463570000 and 046355200), the existing Pond 1A parcel (0466470000), and three new parcels (0466420000, 0466430000, and 0466430100). These parcel impacts are required for the roadway realignment and will not be considered new impacts for the pond. The pond will outfall to the Unnamed Creek through the existing pipe running along US 41. The existing Pond 1B was constructed with an impermeable liner. This liner will likely remain in the pond.

Pond 3B

Pond 3B is a wet detention pond located adjacent to Pond 3A. The elevations within this area range from 3.9 to 7.1 ft NAVD88. The seasonal high elevation is estimated to be 3.7 feet. The control elevation was assumed to be 2.82 feet to match the permitted control elevation of existing Pond 1B as it will be an expansion of Pond 3A into the adjacent parcels. This pond site will impact 4 parcels and Sagasta Street (0466390000, 046640000, 0466405000, and 0466410000). These parcel impacts are required for the roadway realignment and will not be considered new impacts for the pond. The existing connection of Sagasta Street at the north side of Causeway Boulevard will be removed. The pond will outfall to the Unnamed Creek through the existing pipe running along US 41. In the case

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that additional pond volume will be required based on design changes along Causeway Boulevard, the pond can be potentially be expanded into the right of way along El Camino Blanco Boulevard.

Pond 3C

Pond 3C is a wet detention pond located west of S. 47th Street. The elevations within this area range from 3.9 to 6.9 ft NAVD88. The seasonal high elevation is estimated to be 3.7 feet. This pond site will impact 4 parcels (0466340000, 0466360000, 0466590000, and 0466600000). These parcel impacts are expected to acquire the entire site. The pond will outfall along S. 45th Street. An easement will be required to outfall through the existing TECO property to the Unnamed Creek.

Pond 3D

Pond 3D is a wet detention pond located west of S. 47th Street. The elevations within this area range from 3.9 to 6.9 ft NAVD88. The seasonal high elevation is estimated to be 3.9 feet. This pond site will impact 3 parcels (0466610000, 0466600000, and 0466590000). These parcel impacts are expected to acquire the entire site. The pond will outfall along S. 45th Street. An easement will be required to outfall through the existing TECO property to the Unnamed Creek.

4.5 FLOODPLAIN COMPENSATION

The preferred alternative will have transverse and longitudinal impacts to the existing floodplain. The longitudinal impacts will result from filling the floodplain areas associated with proposed roadway widening and improvements. The transverse impacts will result from the replacement and extension of the existing cross drains and bridge culvert. These impacts cannot be avoided as the entire project is within the floodplain. Coastal transects 76 and 78 are within the project limits and storm surge has a major impact on the project area.

The Hillsborough County Delaney/Archie Creek Watershed Masterplan was updated November of 2016. Hillsborough County and SWFWMD consider this model the best available data and therefore, the modeled 100yr floodplain will be used to determine the anticipated floodplain impacts for the Preferred Alternative. A copy of this model was obtained from Hillsborough County. This copy is considered the Effective Model for the analysis.

The Effective Model was copied and saved as the Corrected Effective Model. The model was updated using EPA SWMM Version 5.2.0 to reflect the surveyed conditions for the corridor. These updates included the length and size of the existing cross drains and the cross sections for Delaney Creek. A complete summary of the changes can be found in **Appendix G.**

The Corrected Effective Model was copied and saved as the Revised Model. The model was updated to reflect the proposed changes within the corridor. The stormwater management facilities were added, and the storage areas and curve numbers were updated to reflect the additional pavement. The weirs along the roadway were also updated to reflect the elevated profile. The cross drain at the Unnamed Creek was updated to proposed double 48” pipes and a 92-foot long single span bridge was assumed over Delaney Creek. A bridge culvert alternative will also be evaluated for the BHR and was not included in this analysis. The complete summary of changes can be found in **Appendix G.** There are no rises above the 0.04-ft

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threshold required by SWFWMD demonstrated by the modeled improvements. Therefore, additional floodplain compensation will not be required at this time.

The design phase of this project should refine this model with design-level proposed floodplain impacts, and stormwater management facilities.

SECTION 5 NATURAL CHARACTERISTICS

RK&K performed natural resources desktop and field reviews which included formal wetland delineations for the assessment of the pond alternatives that were selected during the Pond Siting Coordination Meeting, which was held on October 4, 2022 with the FDOT. The findings and conclusions of the project natural resources assessments are summarized in the Natural Resources Evaluation (NRE). Final impacts will be determined during the project permitting. Project research included review of the FDOT ETDM Environmental Screening Tool, NRCS SSURGO Database, SWFWMD land use data, and various datasets from the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Florida Fish and Wildlife Conservation Commission. The natural resources involvement for each assessed pond alternative is summarized in the pond matrix in **Table 5,** and the analysis can be found in **Appendix H.**

SECTION 6 CULTURAL RESOURCES

Janus Research conducted a desktop review for the cultural resources analysis of the pond site alternatives that were selected during the Pond Siting Coordination Meeting was held on October 4, 2022 with the FDOT. The analysis is intended to provide information regarding the location of recorded cultural resources within the study area and determine preliminary zones of archaeological site potential within each alternative. The risks are identified in the pond matrix in **Table 5.** The complete memo is located in **Appendix I.**

SECTION 7 CONTAMINATION

Tierra, Inc. performed a preliminary desktop review for the contamination analysis of the pond alternatives that were selected during the Pond Siting Coordination Meeting which was held on October 4, 2022 with the FDOT. The research was conducted using a 600-foot contamination screening buffer using Map Direct database and figures from Exide Technologies/Golder & Associates that were provided by the FDOT. Regulatory files were not found for most of the pond sites, and it is possible that groundwater impacts may be present at or near any of the proposed pond sites. Following the pond site selection meeting on January 20, 2023, a Contamination Screening Evaluation Report (CSER) was completed for the selected pond sites. The contamination risks are summarized in the pond matrix in **Table 5** and a summary of the analysis can be found in **Appendix J.** The complete CSER has been submitted under separate cover.

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SECTION 8 RIGHT OF WAY COST ESTIMATES

Right of way estimates were requested from the FDOT for the pond alternatives. The right of way costs are summarized in the pond matrix in **Table 5** and the complete analysis can be found in **Appendix K.** Portions of the impacts for Ponds 1A, 2B, 3A, and 3B are necessary for the proposed roadway improvements. This was factored into the total right of way costs that were included in the cost comparison.

SECTION 9 SELECTED ALTERNATIVE

The pond alternatives were evaluated for the risk factors identified in Sections 5 thru 8. The risks are summarized in **Table 5.** The selected alternatives are highlighted in yellow. Pond 3A will be required in all scenarios and therefore costs were not included for comparison. The areas shown in the table are reflective of the actual parcel and not the minimum sizes calculated in the pond sizing calculations included in the Appendix.

9.1 BASIN ONE

Pond 1A is the selected alternative. Pond 1A provides a more direct outfall to Delaney Creek and is the best hydraulic alternative for the basin. Pond 1A is located in the middle of the realigned Hartford Street and Frontage Road where the parcels are already being impacted. The wetland and species impacts associated with the alternative are limited to the outfall at the creek and are expected to be minimal. Ponds 1A, 1B, and 1C were all ranked moderate for contamination risk. Pond 1A overall appears to be less contaminated than Pond 1B and Pond 1C. Pond 1B is currently a junk yard and a known contamination site, and includes a HAZMAT placard on the south side of the building. Pond 1C is currently being used as an auto parts store and junk yard, and assumed to be at a slightly higher contamination risk than Pond 1A.

9.2 BASIN TWO

Pond 2B is the selected alternative. Pond 2B is not expected to have any wetland impacts and minimal to no species impacts. Pond 2B is assumed to be at a lower contamination risk than Pond 2A. Pond 2A is a known contamination site and is located within the Exide Technologies Brownfield areas where abatement is currently being performed. Pond 2B is currently a paintball park.

9.3 BASIN THREE

Pond 3A will be required for all alternatives as it will retore the lost volume within the existing ponds that will be impacted by the proposed roadway improvements.

Pond 3B is the selected alternative. Pond 3B has no species or wetland impacts and will be within parcels already impacted by the proposed roadway improvements. The contamination identified in Pond 3B is due to the presence of a gas station and will be remediated with the proposed improvements.

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Table 5: Pond Evaluation Matrix

	Basin 1			Basin 2		Basin 3			
	1A	1B	1C	2A	2B	3A**	3B	3C	3D
Size	2.84 ac.	2.51 ac.	2.50 ac.	2.53 ac.	2.46 ac.	1.36 ac.	1.71 ac.	1.77 ac.	1.57 ac.
Archaeological Risk	Low to Moderate	Low	Low to Moderate	Low to Moderate	Low to Moderate	Low	Low	Low	Low
Contamination Risk	Low	Moderate	Moderate	Moderate	Low	High	High	Low	Low
Wetland Risk	Moderate*	Low	Low	Moderate*	None	Low	None	Moderate*	Moderate*
Species Risk	Moderate*	None	Moderate*	Moderate*	Low	Low	None	Moderate*	Moderate*
Wetland Mitigation Cost	$1,468.82*	-	-	$10,281.74	-	-	-	$1,468.82	$1,468.82
Const. Cost	$602,709.75	$1,276,803.41	$1,368,886.96	$1,513,350.86	$1,526,606.26	-	$170,886.48	$764,865.06	$650,175.79
Right of Way Cost	$1,478,000	$1,993,200	$4,509,500	$2,763,800	$2,346,500	$771,900	$1,055,200	$1,827,600	$1,583,000
Total Est. Cost	$2,082,178.57	$3,270,003.41	$5,878,386.96	$4277,150.86	$3,873,106.26	-	$1,226,086.48	$2,592,465.06	$2,233,175.79

* The risks are isolated to the outfall location at Delaney Creek
**Pond 3A will be required for all alternatives to replace the impacted volume within the existing ponds

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SECTION 10 CONCLUSIONS AND RECOMMENDATIONS

The analysis in this report indicates that the recommended alternatives are feasible from a hydraulic perspective. The recommended ponds will provide the required treatment and attenuation for the project. There are no significant changes to the base flood elevation or mapped floodplains anticipated.

The proposed project will not encourage floodplain development due to local (FEMA) floodplain and SWFWMD regulations. The drainage design will be consistent with FEMA, FDOT, and SWFWMD design guidelines.

10.1 RISK EVALUATION

There is no significant change in flood "Risk" associated with this project. The encroachments will not have a significant potential for interruption or termination of transportation facilities needed for emergency vehicles or used as an evacuation route. In addition, no significant adverse impacts on natural and beneficial floodplain values are anticipated, and no significant impacts to highway users are expected. Per the FDOT PD&E Manual Part 2, Chapter 13.2.2.5, the following items must be documented:

A. General description of the project including location, length, existing and proposed typical sections, drainage basins, and cross drains.
Refer to Section 1 of this report for the project description and typical sections. Section 3 of this report discusses the existing drainage patterns and Section 4 discusses the proposed drainage.

B. Determination of whether the proposed action is in the base floodplain.
The entire project is located within the base floodplain. Refer to Section 3.4 of this report.

C. The history of flooding of the existing facilities and/or measures to minimize any impacts due to the proposed improvements.
The history of flooding within the project is discussed in Section 2.4 of this report. The proposed improvements will be designed in accordance with the latest version of the FDOT Drainage Manual. Additionally, the proposed improvements were modeled within the Delaney Creek Watershed Model to demonstrate no rises within the floodplain.

D. Determination of whether the encroachment is longitudinal or transverse, and if it is a longitudinal encroachment, an evaluation and discussion of practical avoidance alternatives.
Refer to Section 4.5 of this report.

E. The practicability of avoidance alternatives and/or measures to minimize impacts.
The proposed floodplain impacts are unavoidable. The ponds that are to be constructed as part of this project will double as floodplain mitigation for the roadway improvements. The modeled improvements do not show any adverse effects to the roadway corridor or the surrounding areas.

F. Impact of the project on emergency services and evacuation.
This project will not have any effect on emergency services or evacuation. The flood stages are not changing in the proposed condition, and the profiles along both US 41 and Causeway Boulevard are being raised where feasible.

DRAFT

G. Impacts of the project on the base flood, likelihood of flood risk, overtopping, location of overtopping, backwater.
The proposed project will not impact or change the items mentioned above.

H. Determination of the impact of the project on regulatory floodways, if any, and documentation of coordination with FEMA and local agencies to determine the requirements for the project to be developed consistent with the regulatory floodway.
The project is not located within a FEMA regulatory floodway. Refer to Section 2.5.3 and 3.4 of this report.

I. The impacts on natural and beneficial floodplain values, and measures to restore and preserve the natural and beneficial floodplain values impacted by the project.
There are no adverse impacts proposed to the natural and beneficial floodplain values. The majority of the floodplain is due to the tidal influence and storm surge.

J. Consistency of the project with the local floodplain development plan or the land use elements in the Local Government Comprehensive Plan (LGCP), and the potential of encouraging development within the base floodplain.
The proposed project is mostly comprised of operational improvements within an industrial corridor. There is minimal risk of encouraging additional development adjacent to the corridor within the base floodplain.

K. Measures to minimize floodplain impacts associated with the project, and measures to restore and preserve the natural and beneficial floodplain values impacted by the project.
Bridges and MSE walls were proposed throughout the corridor to minimize impacts to the floodplain. The existing intersection at Causeway Boulevard and US 41 will remain in place as will a significant amount of the existing pavement. The proposed improvements were modeled in the Delaney Creek Watershed Model to demonstrate no adverse impacts to the floodplain.

L. A map showing project location, and impacted floodplains. A FIRM Map should be used if available. If not, other maps (e.g., US Geological Survey (USGS), U.S. Army Corps of Engineers (USACE), Soil Conservation Service (SCS), Bureau of Land Management, U.S. Forest Service, or best available information from the WMDs) may be used. Copies of applicable maps should be included in the appendix.
*Refer to Section 1 and **Appendix A** of this report.*

M. Results of any risk assessments performed.
Refer to Section 10.1 of this report.

10.2 PROJECT CLASSIFICATION

The floodplain encompasses the entire project area. Based on preliminary modeling efforts, there are no rises to the flood stages associated with the preferred alternative. There will be minimal impacts to Delaney Creek and the Unnamed Creek due to the replacement and extension of the existing cross drains. Minimal encroachments on a floodplain occur when there is floodplain involvement, but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist

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of applying the Department's drainage design standards and following the Water Management District's procedures to achieve results that will not increase or significantly change the flood elevations and/or limits.

The proposed structures will perform hydraulically in a manner equal to or greater than the existing structures, and backwater surface elevations are not expected to increase. Thus, there will be no significant or adverse impacts on natural and beneficial floodplain values. There will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant.

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APPENDICES

Appendix A – Exhibits

Appendix B – Flood Investigations

Appendix C – Correspondence

Appendix D – Geotechnical Analysis and Soil Data

Appendix E – Cross Drain Pictures and Review Checklist

Appendix F – Pond Sizing Calculations and Cost Estimates

Appendix G – SWMM Model Analysis

Appendix H – Environmental Desktop Review

Appendix I – Cultural Resources Desktop Review

Appendix J – Contamination Desktop Review

Appendix K – Right of Way Cost Determination

DRAFT

APPENDIX A

Exhibits

Exhibit 1 – Location Map
Exhibit 2 – Topographic Map
Exhibit 3 – Existing Drainage Map
Exhibit 4 – Soils Map
Exhibit 5 – Land Use Map
Exhibit 6 – FEMA Map
Exhibit 7 – SLD US 41
Exhibit 8 – WBID Map
Exhibit 8 – SLD Causeway Blvd
Exhibit 9 – Typical Section Package
Exhibit 10 – FEMA Firm Maps

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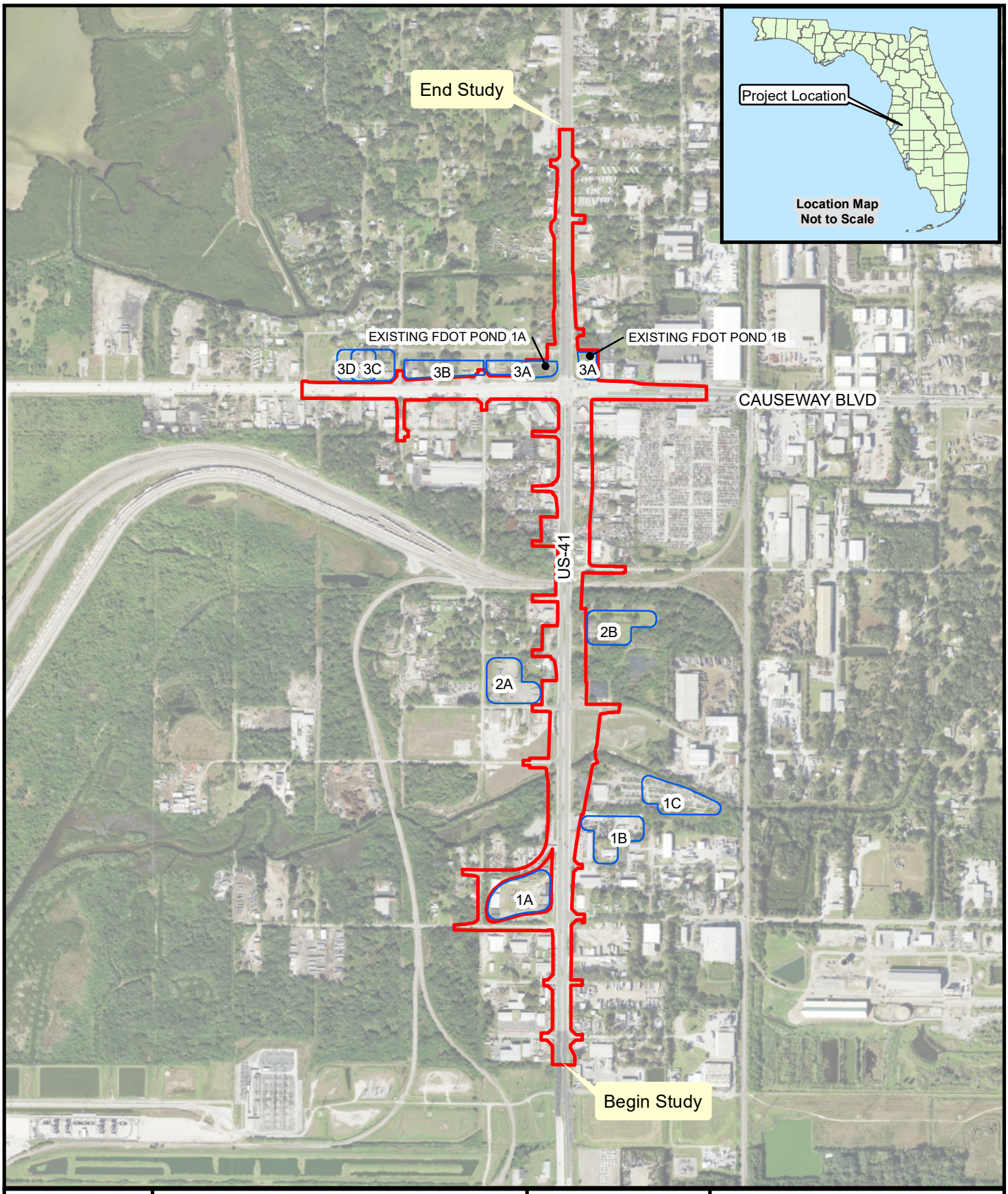


Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

POND SITE

Project Limits

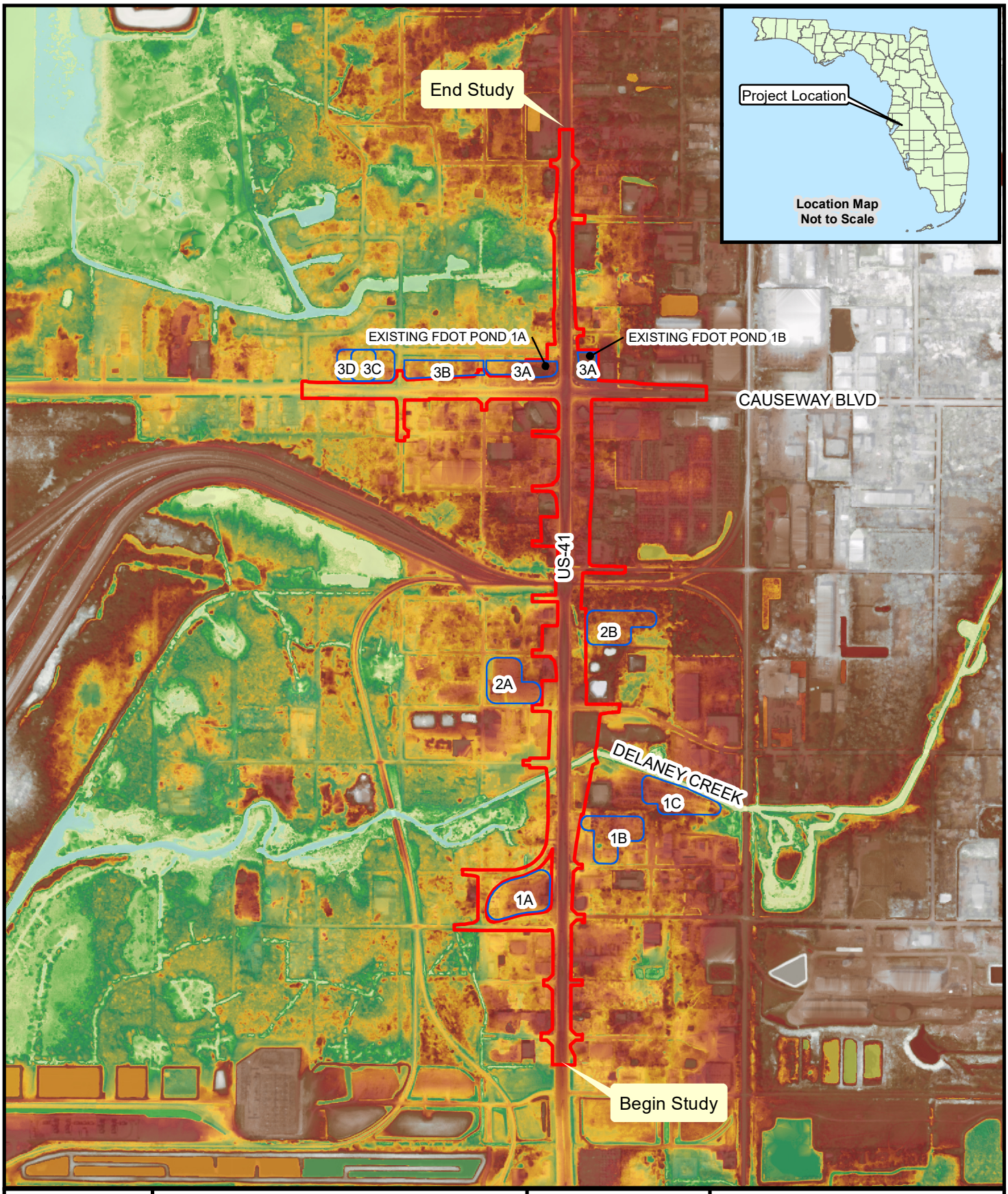
0 1,000

1" = 1000'

RK&K

Figure 1
Location Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\LocationMap.mxd



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

POND SITE

Project Limits

High : 21.2331

Low : -1.92852

0 1,000

1" = 1000'

RK&K

Figure 2
Topographic Map
US41 at CSX
440749-1
Hillsborough County, FL

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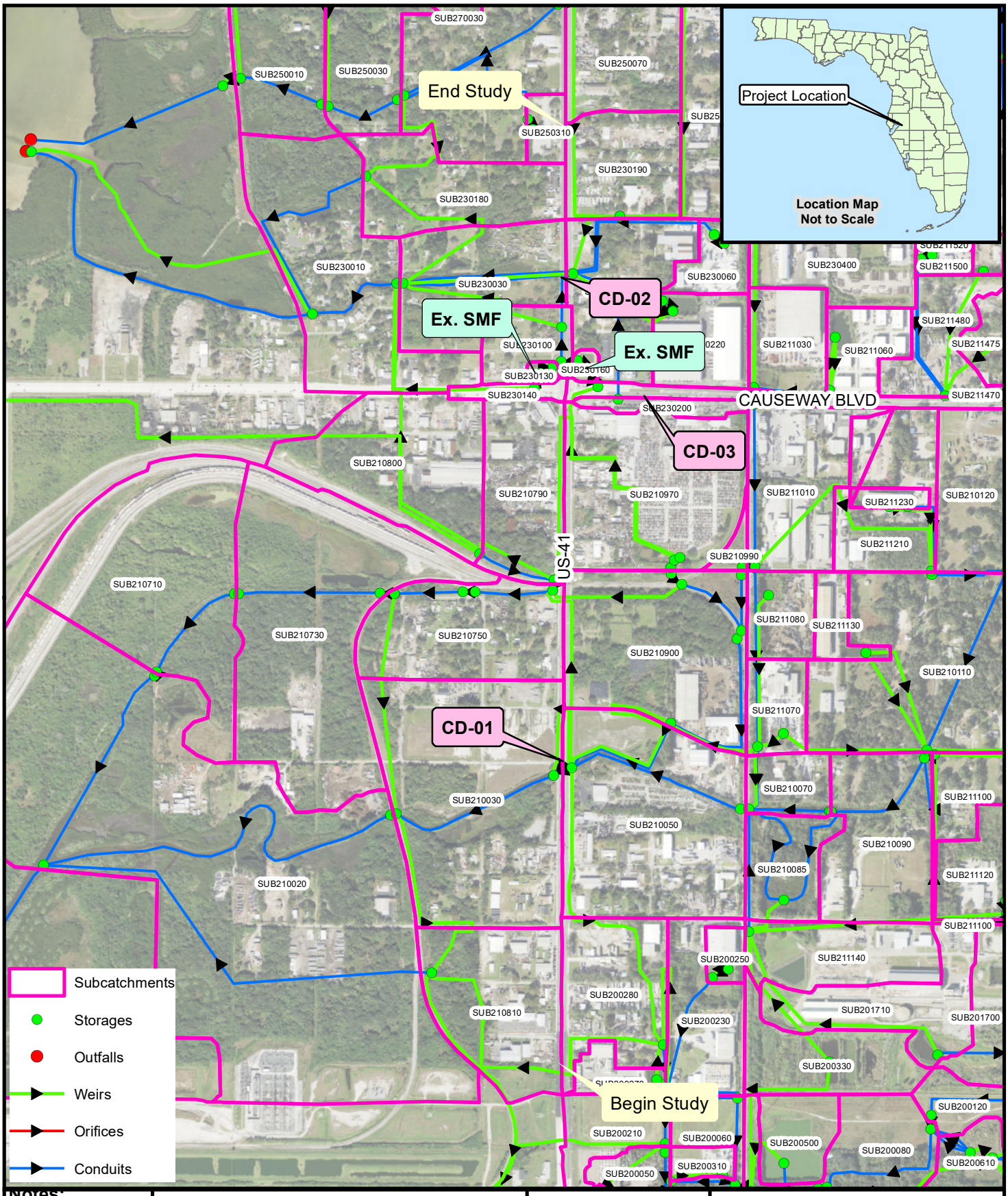

Notes:

A- Project: 18033

B- Data From - Imagery, Esri
Dalaney Creek Model

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 1,000
1" = 1000'

RK&K

Figure 3
Existing Drainage Map
US41 at CSX
440749-1
Hillsborough County, FL

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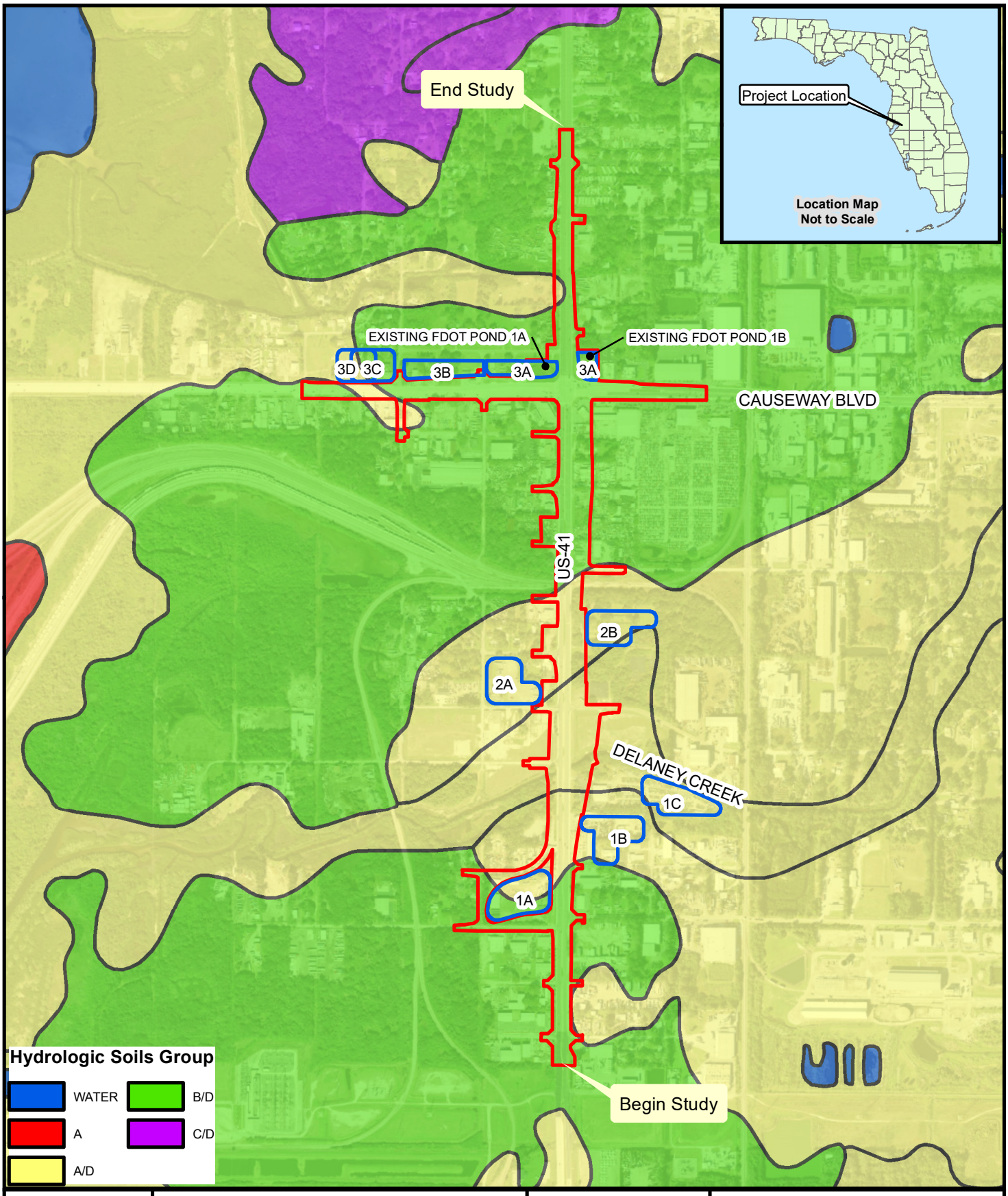


Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

POND SITE

Project Limits

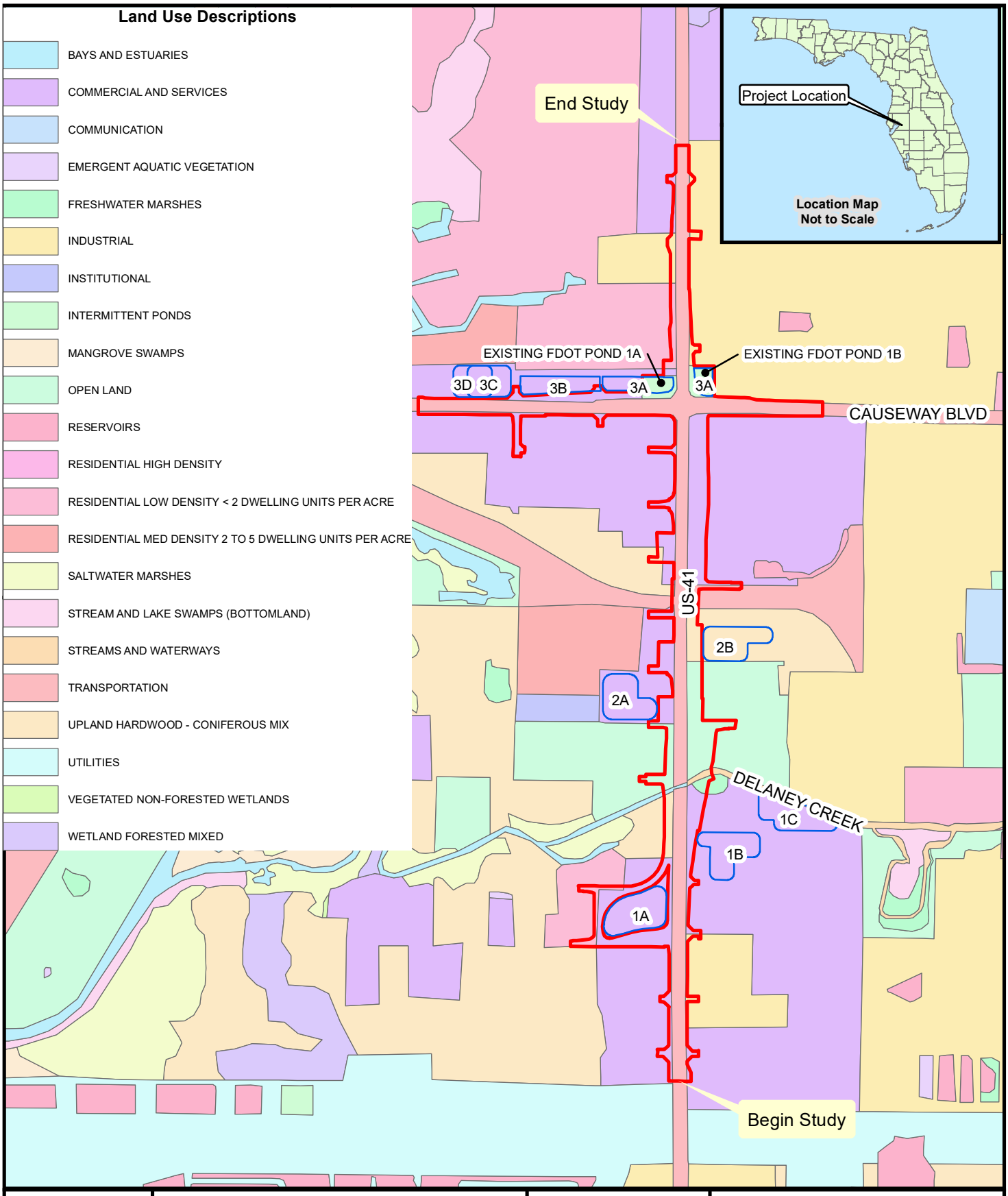
0 1,000

1" = 1000'

RK&K

Figure 4
Soils Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\SoilsMap.mxd



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

POND SITE

Project Limits

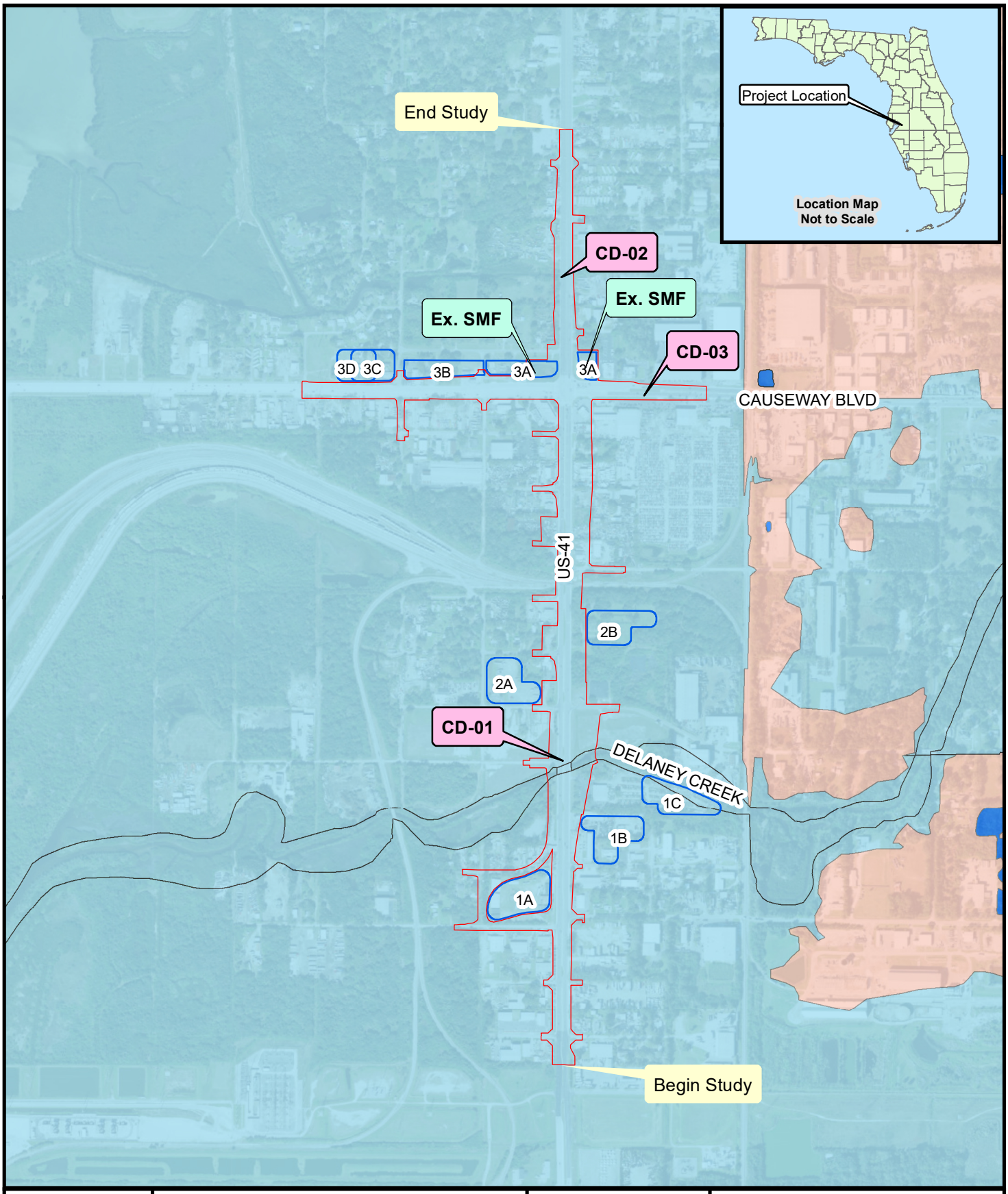
0 1,000

1" = 1000'

RK&K

Figure 5
Land Use Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\LandUseMap.mxd



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

Flood Zone

- A
- AE
- X

- POND SITE
- Project Limits

0 1,000

1" = 1000'

RK&K

Figure 6
FEMA Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\FEMAMap.mxd

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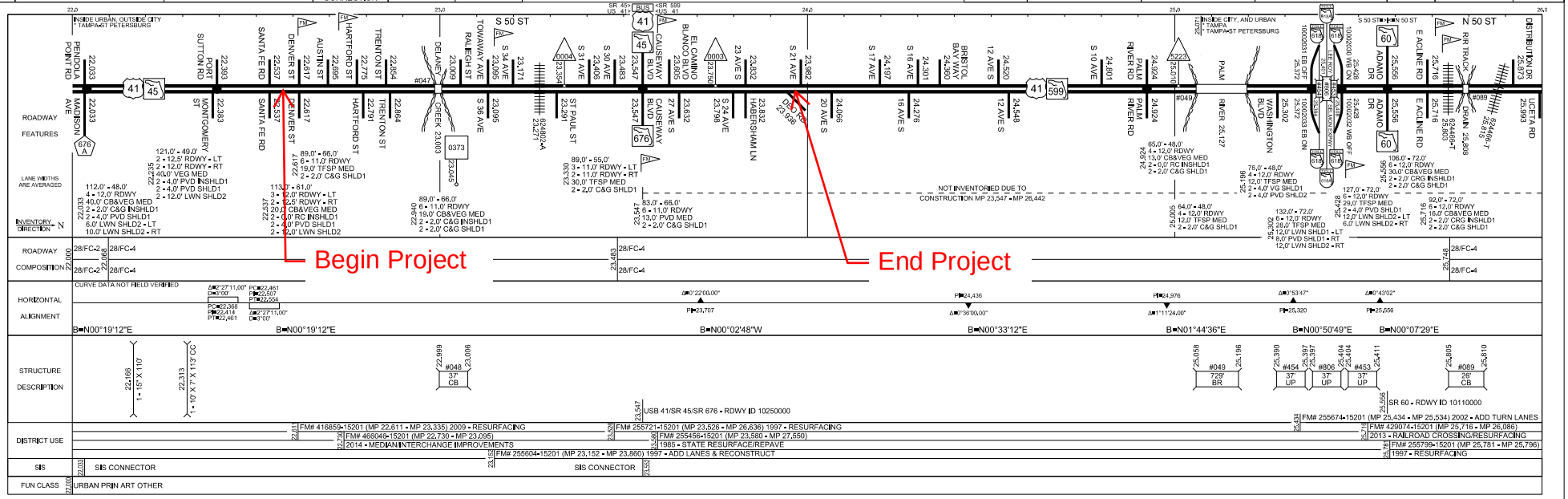
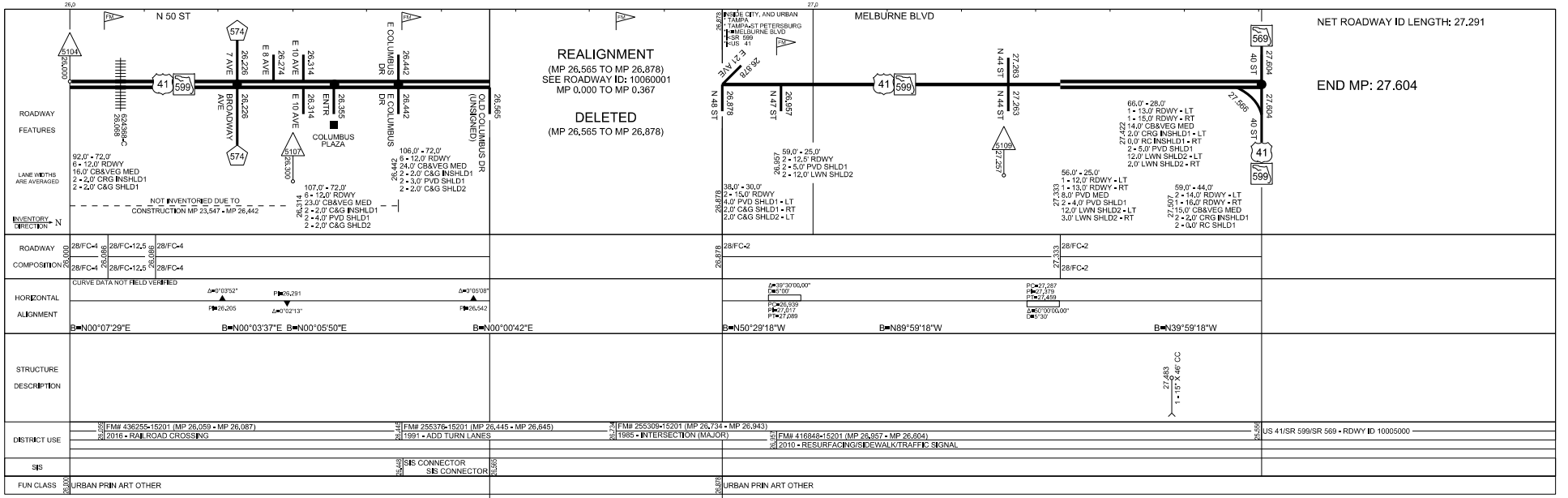
DATE	03/13/2015	03/25/2015	25.716	25.716		08/16/2017
BY	FTE / JW-JR	FTE / KA	CONST FM#			FTE/KA
			CORRECTION			

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	US 41	SR 45/SR 599	HILLSBOROUGH	07	10 060 000	4 OF 7





Version: 1.4.2.24 03/23/2015

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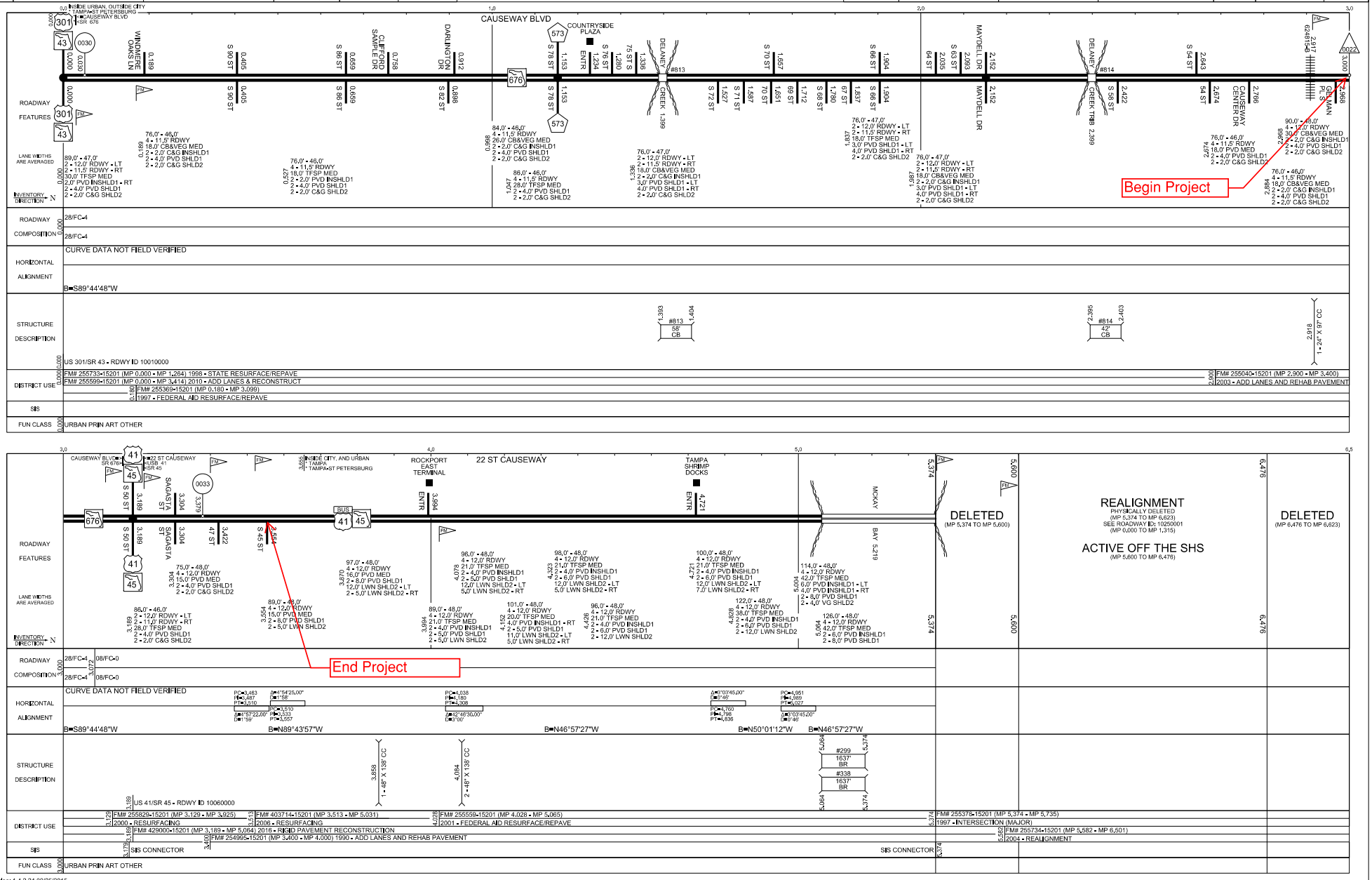
BY	FTE / KA-JR	FTE / KA	CONST ACCEPT & RDWY TRANSFER		FTE/JR-JM	FTE/KA

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	USB 41	SR 676/SR 45	HILLSBOROUGH	07	10 250 000	1 OF 5



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US 301/SR 43 - RDWY ID 10010000

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FM# 255599-15201 (MP 0,000 - MP 3,414) 2010 - ADD LANES & RECONSTRUCT

FM# 255369-15201 (MP 0,180 - MP 3,099) 1997 - FEDERAL AID RESURFACE/REPAVE

FM# 255040-15201 (MP 2,900 - MP 3,400) 2003 - ADD LANES AND REHAB PAVEMENT

URBAN PRIN ART OTHER

US 41/SR 45 - RDWY ID 10060000

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FM# 403714-15201 (MP 3,513 - MP 5,031) 2006 - RESURFACING

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SIS CONNECTOR

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SIS CONNECTOR

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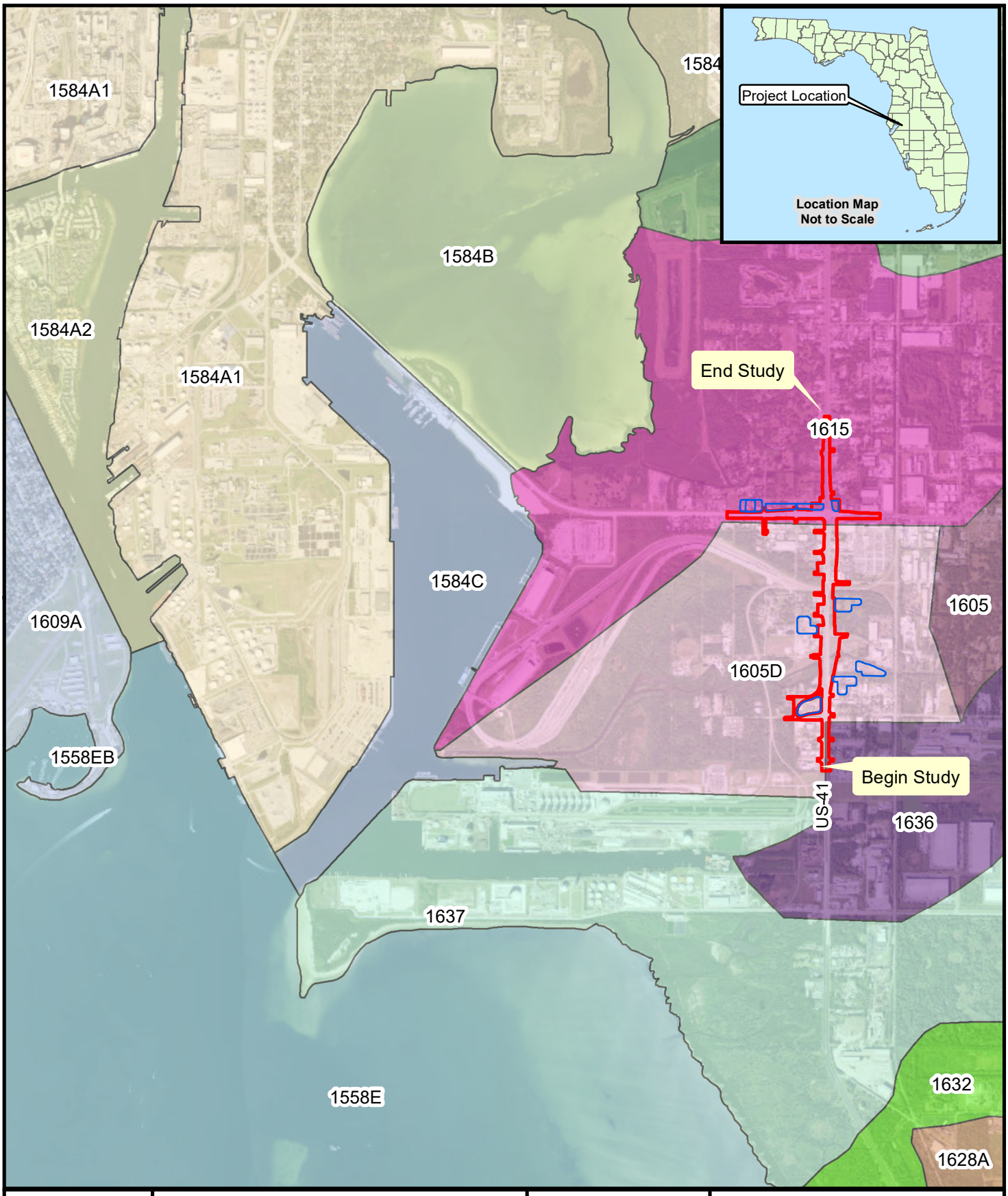
Version: 1,4,2,24 09/25/2015



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

POND SITE

Project Limits

0 0.5
Miles

RK&K

WBID Map
US41 at CSX
440749-1
Hillsborough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\WBIDMap.mxd

STATE OF FLORIDA

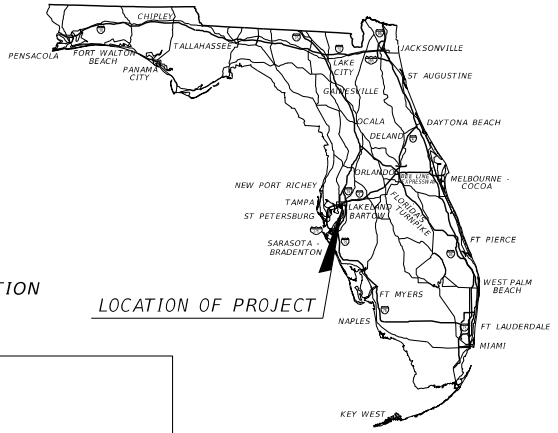
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 440749-1-52-01

HILLSBOROUGH COUNTY (1006000)

US 41/SR 45/SR 599 FROM SOUTH OF SR 676/CAUSEWAY BOULEVARD INTERSECTION
TO NORTH OF THE SR 676/CAUSEWAY BOULEVARD INTERSECTION



PROJECT LOCATION URL:	https://tinyurl.com/2bushcz6
PROJECT LIMITS:	BEGIN MP 22.578 TO END MP 23.925
EXCEPTIONS:	NONE
BRIDGE LIMITS:	BR#1 MP 22.999 TO MP 23.015 BR#2 MP 23.076 TO MP 23.104 BR#3 MP 23.228 TO MP 23.306
RAILROAD CROSSING:	CSX CROSSING: 624802A – MP 23.271

FDOT DISTRICT DESIGN ENGINEER CONCURRING WITH: TYPICAL SECTION ELEMENTS TARGET SPEED DESIGN & POSTED SPEEDS	FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER CONCURRING WITH: TARGET SPEED DESIGN & POSTED SPEEDS
FDOT DISTRICT INTERMODAL SYSTEMS DEVELOPMENT MANAGER CONCURRING WITH: CONTEXT CLASSIFICATION TARGET SPEED	FDOT DISTRICT STRUCTURES DESIGN ENGINEER CONCURRING WITH: TYPICAL SECTION ELEMENTS
FHWA TRANSPORTATION ENGINEER CONCURRING WITH: TYPICAL SECTION ELEMENTS	LOCAL TRANSPORTATION ENGINEER CONCURRING WITH: TYPICAL SECTION ELEMENTS
NOT USED CONCURRING WITH:	NOT USED CONCURRING WITH:

APPROVED BY:

BRANAN A. ANDERSON LICENSE No 78438 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

Branan R Anderson

2022.10.14 13:02:40 -04'00'

ON THE DATE ADJACENT TO THE SEAL

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

INDEX OF SHEETS

SHEET NO	SHEET DESCRIPTION
1	COVER SHEET
2	TYPICAL SECTION NO. 1
3	TYPICAL SECTION NO. 2
4	TYPICAL SECTION NO. 3
5	TYPICAL SECTION NO. 4
6	TYPICAL SECTION NO. 5
7	TYPICAL SECTION NO. 6
8	TYPICAL SECTION NO. 7
9	TYPICAL SECTION NO. 8
10	TYPICAL SECTION NO. 9
11	TYPICAL SECTION NO. 10
12	TYPICAL SECTION NO. 11

SHEET NO. 1

10/14/2022 11:11:51 AM jstone
c:\pwworkingdir\kca-pw.bentley.com kca-pw-01\jacob stone\dms07001\TYPDRD101.dgn

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

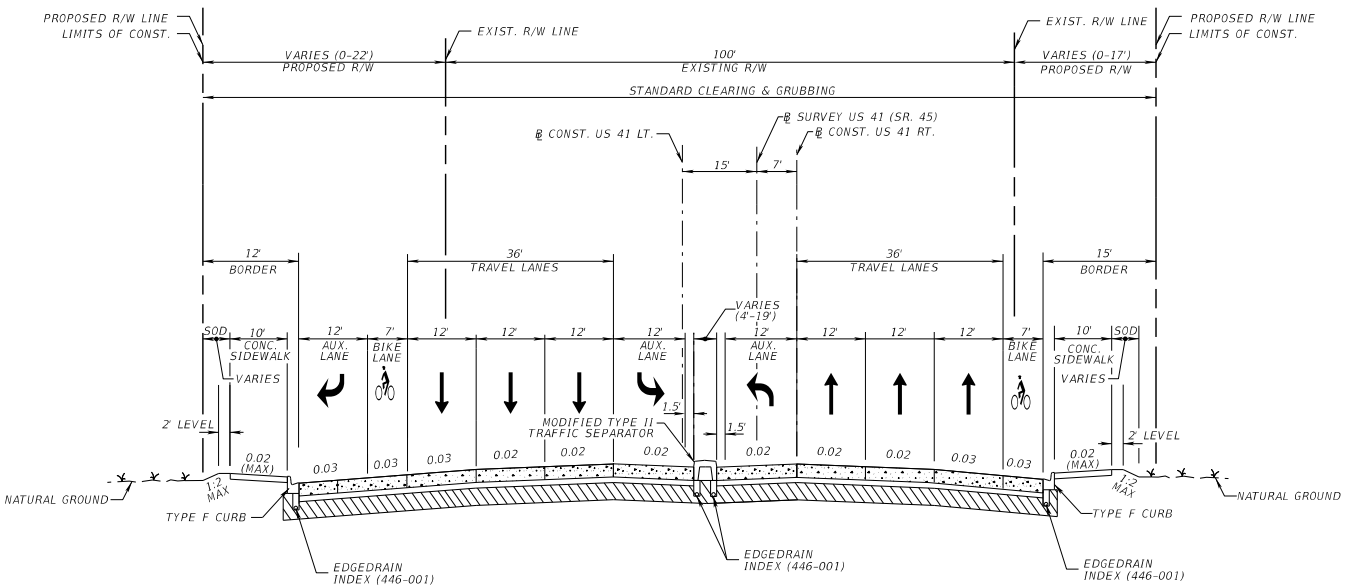
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) CURB ON HIGH SPEED FACILITY
2) BORDER WIDTH
3) MEDIAN WIDTH

TYPICAL SECTION No. 1



US 41 (SR 45)
MP 22.578 TO MP 22.927 ℄ CONST. US 41 LT.
MP 22.578 TO MP 22.961 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	2

10/14/2022 12:32:55 PM

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

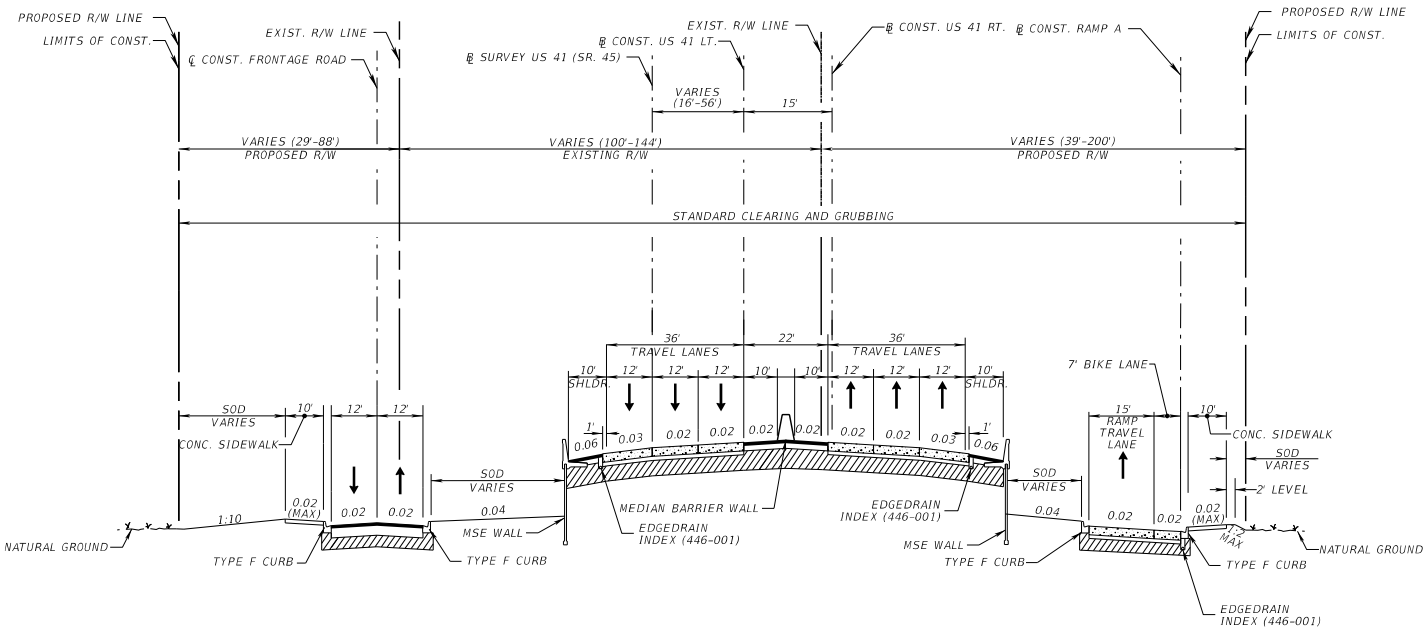
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) SHOULDER CROSS SLOPE

TYPICAL SECTION No. 2



US 41 (SR 45)
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MP 23.104 TO MP 23.228 ℄ CONST. US 41 LT.
MP 22.961 TO MP 23.001 ℄ CONST. US 41 RT.
MP 23.017 TO MP 23.076 ℄ CONST. US 41 RT.
MP 23.104 TO MP 23.228 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

FRONTAGE ROAD
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

RAMP
DESIGN SPEED = 40 MPH
POSTED SPEED = 40 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	3

10/14/2022 12:56:56 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

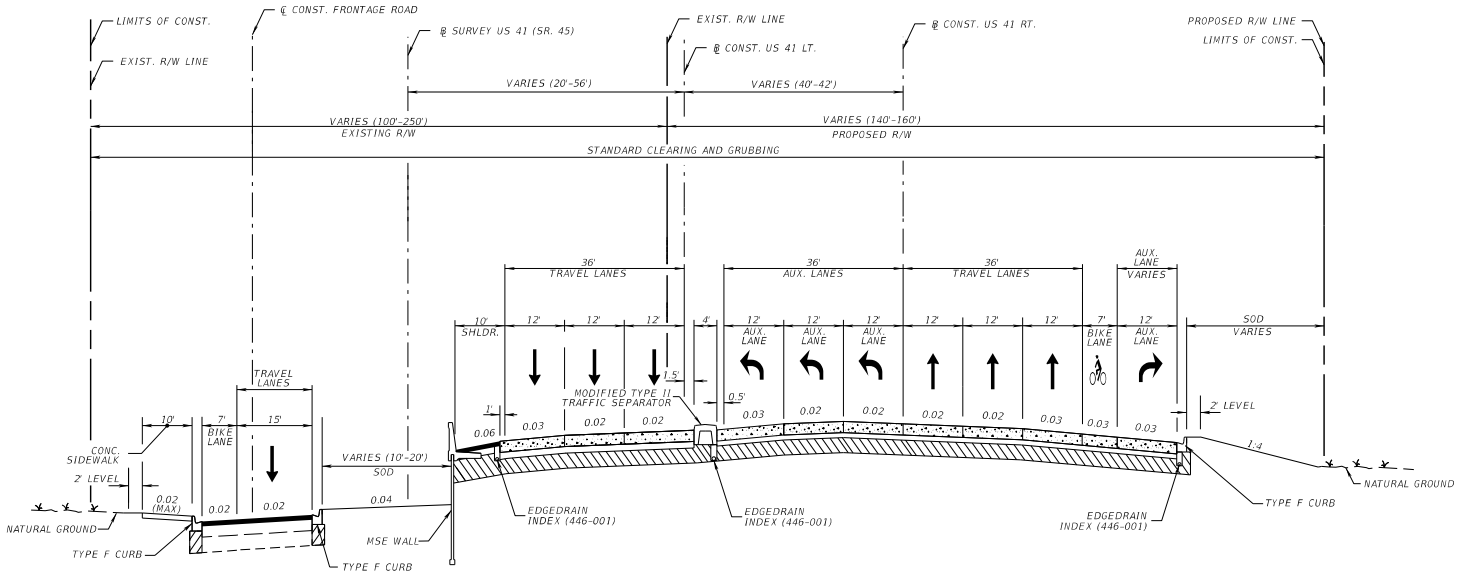
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) CURB ON HIGH SPEED FACILITY

TYPICAL SECTION No. 3



US 41 (SR 45)
MP 23.306 TO MP 23.555 ℄ CONST. US 41 LT.
MP 23.306 TO MP 23.555 ℄ CONST. US 41 RT.

FRONTAGE RD.
MP 0.194 TO MP 0.375 ℄ CONST. FRONTAGE RD.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

FRONTAGE ROAD
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	4

10/14/2022 12:33:28 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- (X) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- (X) 7 - BOTH MEDIAN TYPES

CRITERIA

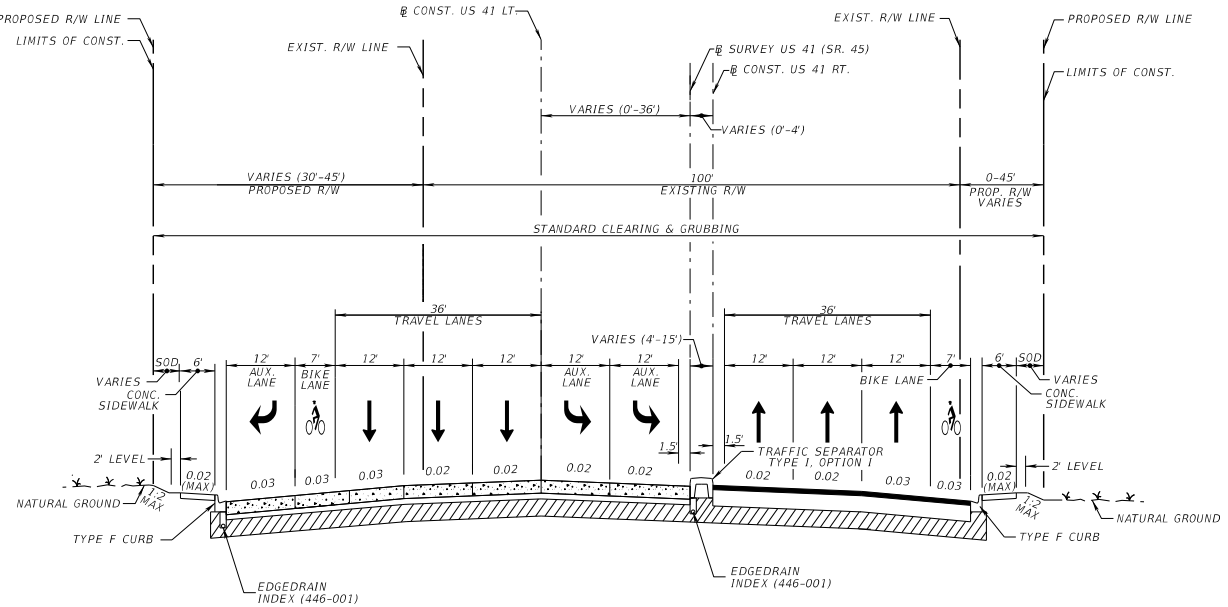
- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) CURB ON HIGH SPEED FACILITY

TYPICAL SECTION No. 4



US 41 (SR 45)
MP 23.555 TO MP 23.925 ℄ CONST. US 41 LT.
MP 23.555 TO MP 23.925 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	5

10/14/2022 12:33:40 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

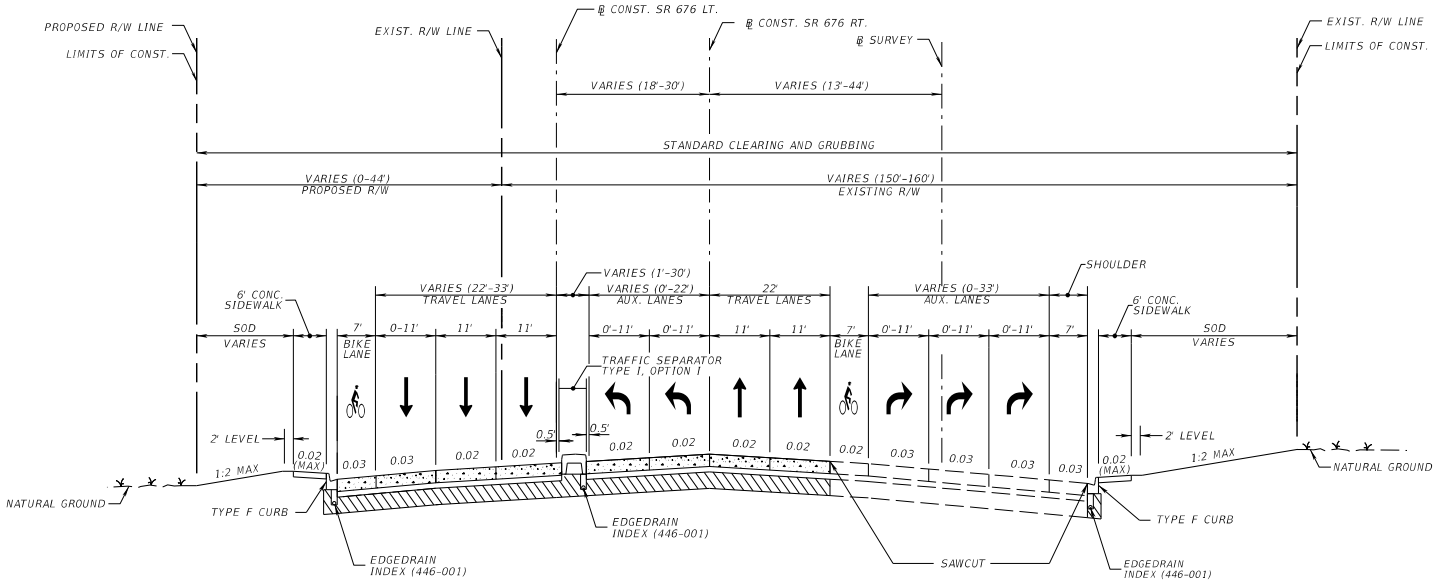
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 5



SR 676 (CAUSEWAY BLVD.)
MP 3.554 TO MP 3.176 ℄ CONST. CAUSEWAY LT.
MP 3.554 TO MP 3.175 ℄ CONST. CAUSEWAY RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 28,000
ESTIMATED OPENING YEAR = 2026 AADT = 42,600
ESTIMATED DESIGN YEAR = 2046 AADT = 65,900
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 304

SR 676 / CAUSEWAY BLVD.
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	6

10/14/2022 12:33:53 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

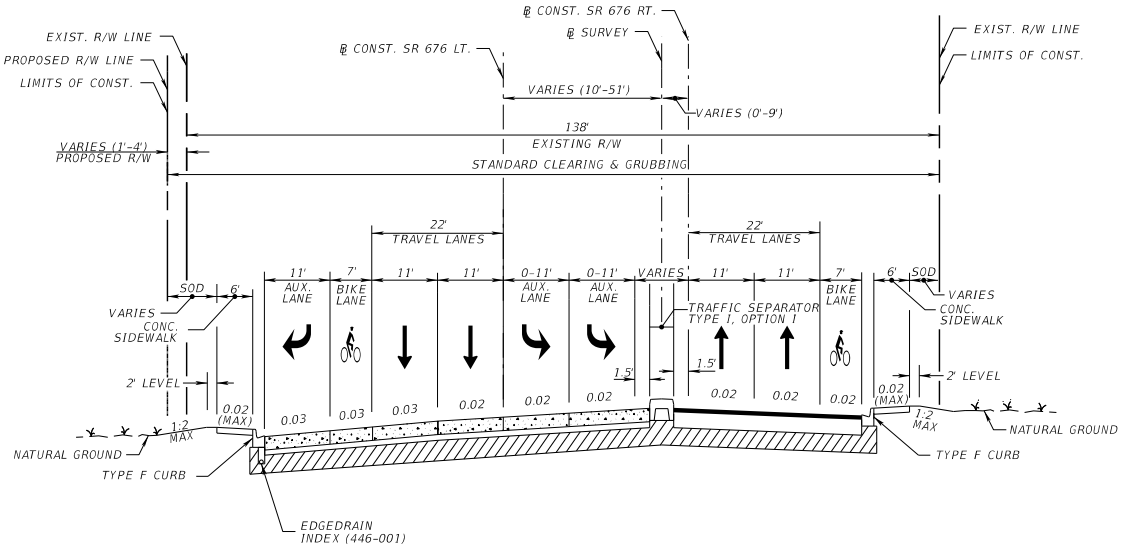
- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 6



SR 676 (CAUSEWAY BLVD.)
MP 3.176 TO MP 2.971 ℄ CONST. CAUSEWAY LT.
MP 3.175 TO MP 2.971 ℄ CONST. CAUSEWAY RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 28,000
ESTIMATED OPENING YEAR = 2026 AADT = 42,600
ESTIMATED DESIGN YEAR = 2046 AADT = 65,900
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 304

SR 676 / CAUSEWAY BLVD.
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	7

10/14/2022 12:34:07 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

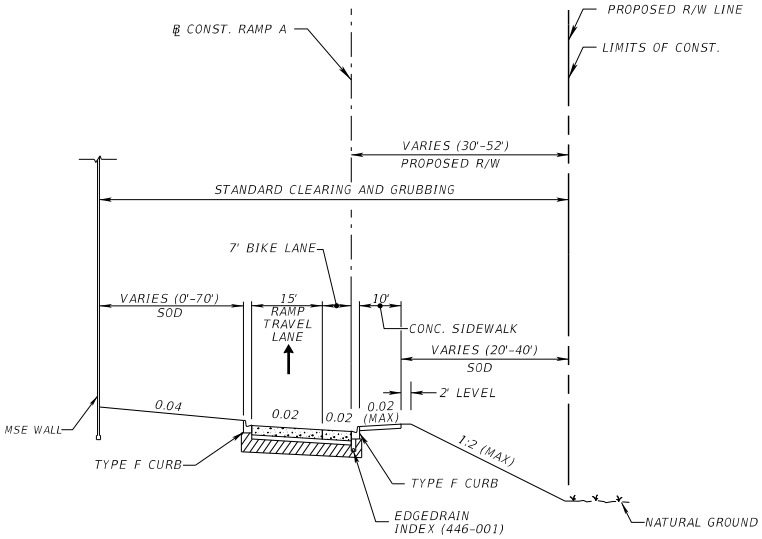
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 7



RAMP A - US 41 TO 36TH AVE S.
MP 0.000 TO MP 0.228 ℄ CONST. RAMP A

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

RAMP A
DESIGN SPEED = 40 MPH
POSTED SPEED = 40 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	8

10/14/2022 12:34:21 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	(X)	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
(X) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

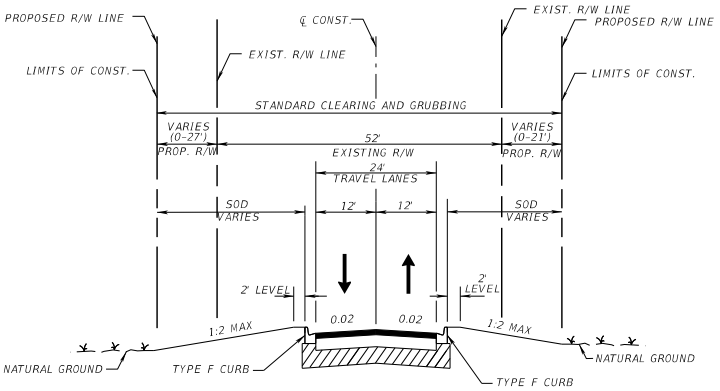
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1) BIKE LANE WIDTH

TYPICAL SECTION No. 8

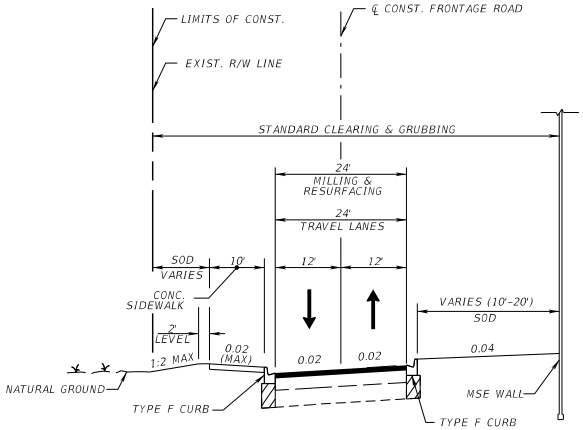


HARTFORD ST.
MP 0.000 TO MP 0.189 ℄ CONST. HARTFORD ST.

TOWAWAY AVE. / 36TH AVE.
MP 0.000 TO MP 0.122 ℄ CONST. 36TH ST.

ST PAUL ST.
MP 0.000 TO MP 0.09 ℄ CONST. ST PAUL ST.

FRONTAGE RD.
MP 0.000 TO MP 0.194 ℄ CONST. FRONTAGE RD.



FRONTAGE RD.
MP 0.375 TO MP 0.758 ℄ CONST. FRONTAGE RD.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

HARTFORD ST.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

TOWAWAY AVE. / 36TH ST.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

ST. PAUL ST.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

FRONTAGE RD.
DESIGN SPEED = 35 MPH
POSTED SPEED = 30 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	9

10/14/2022 12:34:33 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

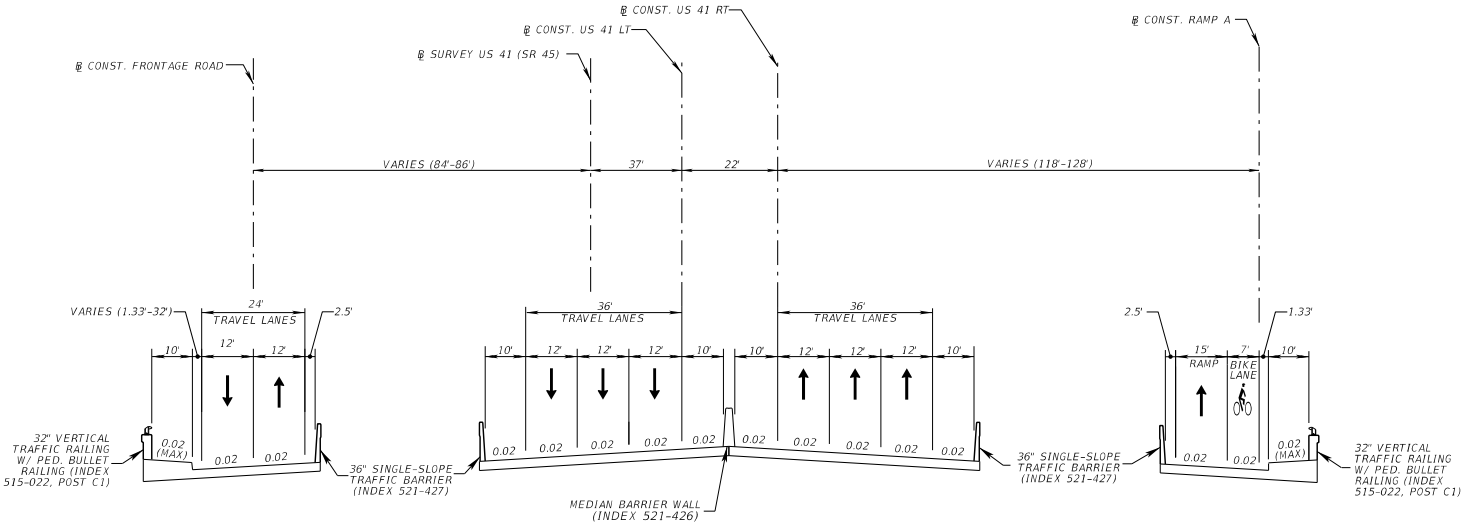
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 9



US 41 (SR 45) OVER DELANEY CREEK
MP 22.999 TO MP 23.015 ℄ CONST. US 41 LT.
MP 23.001 TO MP 23.017 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	10

10/14/2022 12:38:47 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

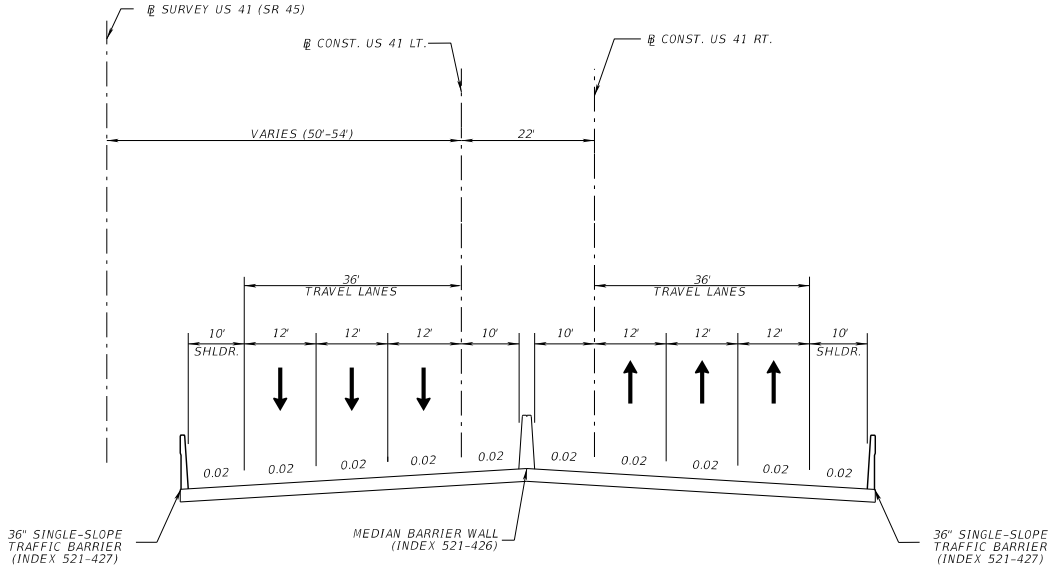
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 10



US 41 (SR 45) OVER 36TH AVE. S.
MP 23.076 TO MP 23.104 ℄ CONST. US 41 LT.
MP 23.076 TO MP 23.104 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	11

10/14/2022 12:35:01 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

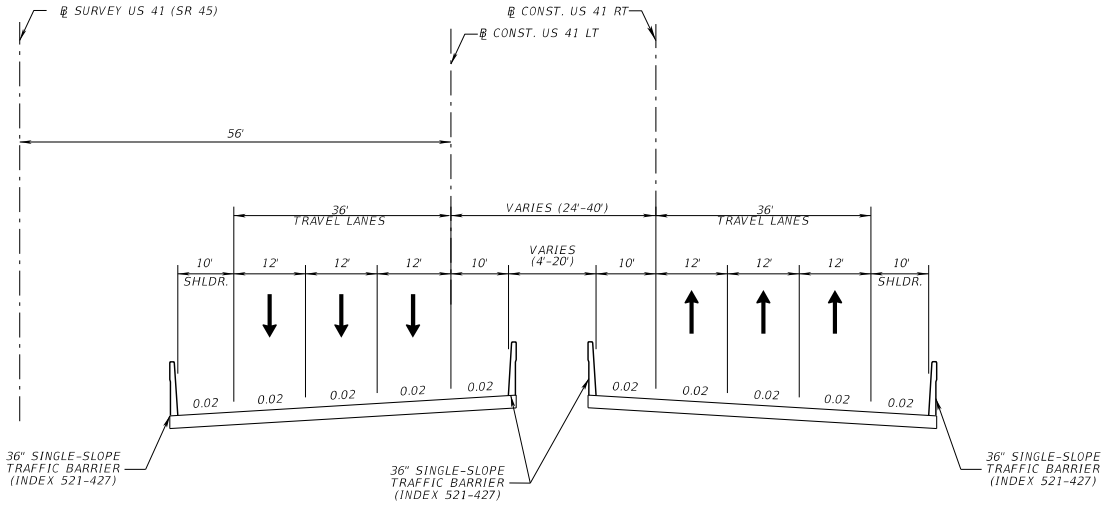
( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 11



US 41 (SR 45) OVER CSX
MP 23.228 TO MP 23.306 ℄ CONST. US 41 LT.
MP 23.228 TO MP 23.306 ℄ CONST. US 41 RT.

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 39,000
ESTIMATED OPENING YEAR = 2026 AADT = 49,600
ESTIMATED DESIGN YEAR = 2046 AADT = 72,600
K = 9% D = 72.4% T = 13% (24 HOUR)
DESIGN HOUR T = 7.0%
2046 TRUCK DDHV = 331

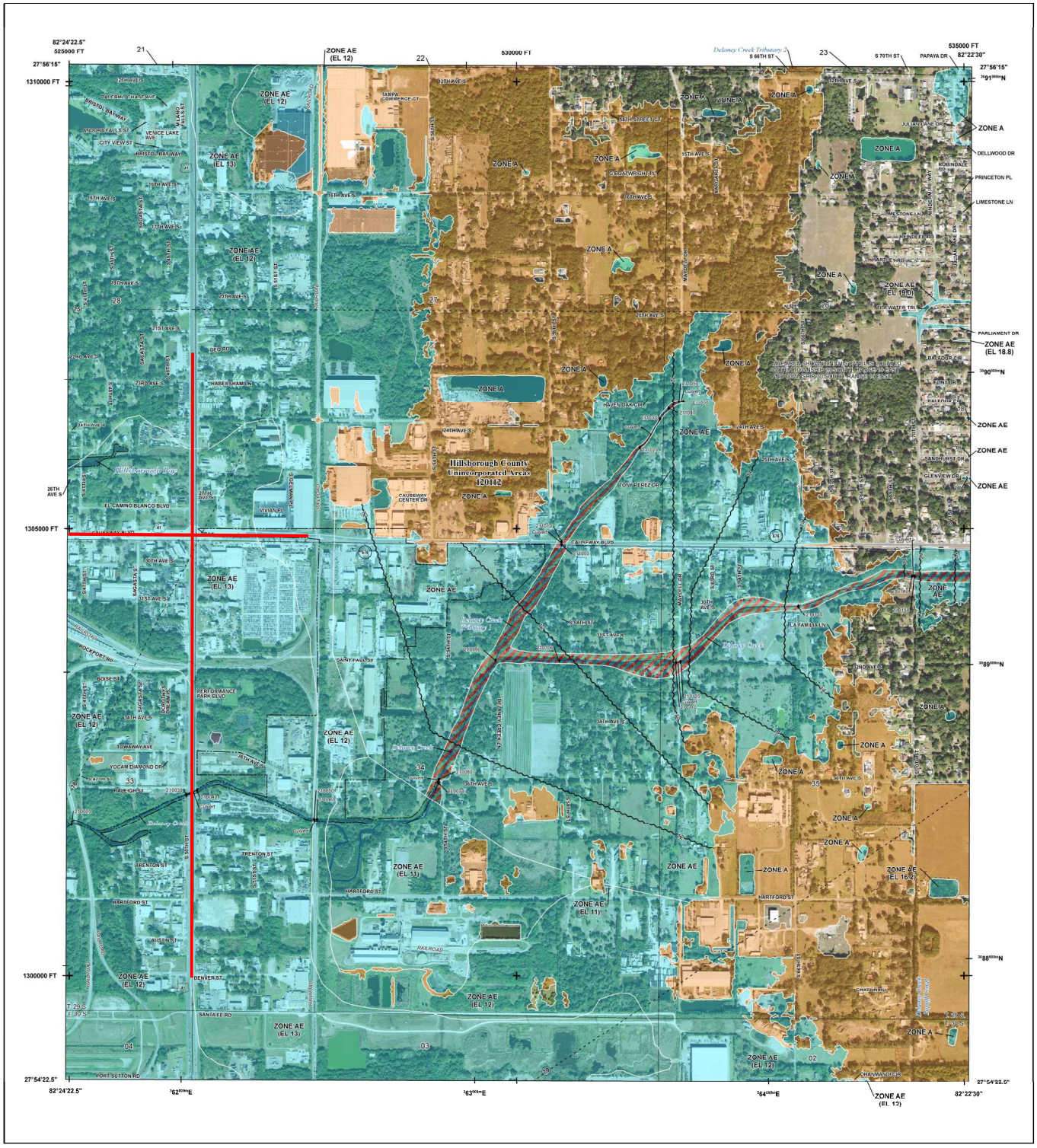
US 41 / SR 45
DESIGN SPEED = 50 MPH
POSTED SPEED = 50 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
440749-1-52-01	12

10/14/2022 12:35:11 PM

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTPS://MSC.FEMA.GOV

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*
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall
- 18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- 513 Base Flood Elevation Line (BFE)

OTHER FEATURES
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Mapping and Insurance eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at https://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to 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.

Base map information shown on this FIRM was provided by Hillsborough County, dated 2008 and 2018; the Florida Department of Transportation, dated 2017; the Florida Resources and Environmental Analysis Center, dated 2003; and the U.S. Department of Agriculture, dated 2018.

SCALE

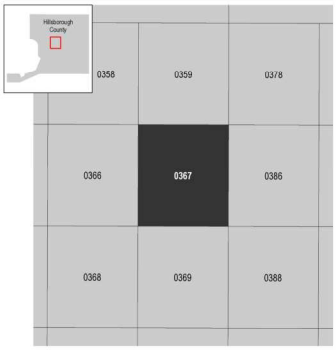
Map Projection: State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL 367 OF 801

FEMA

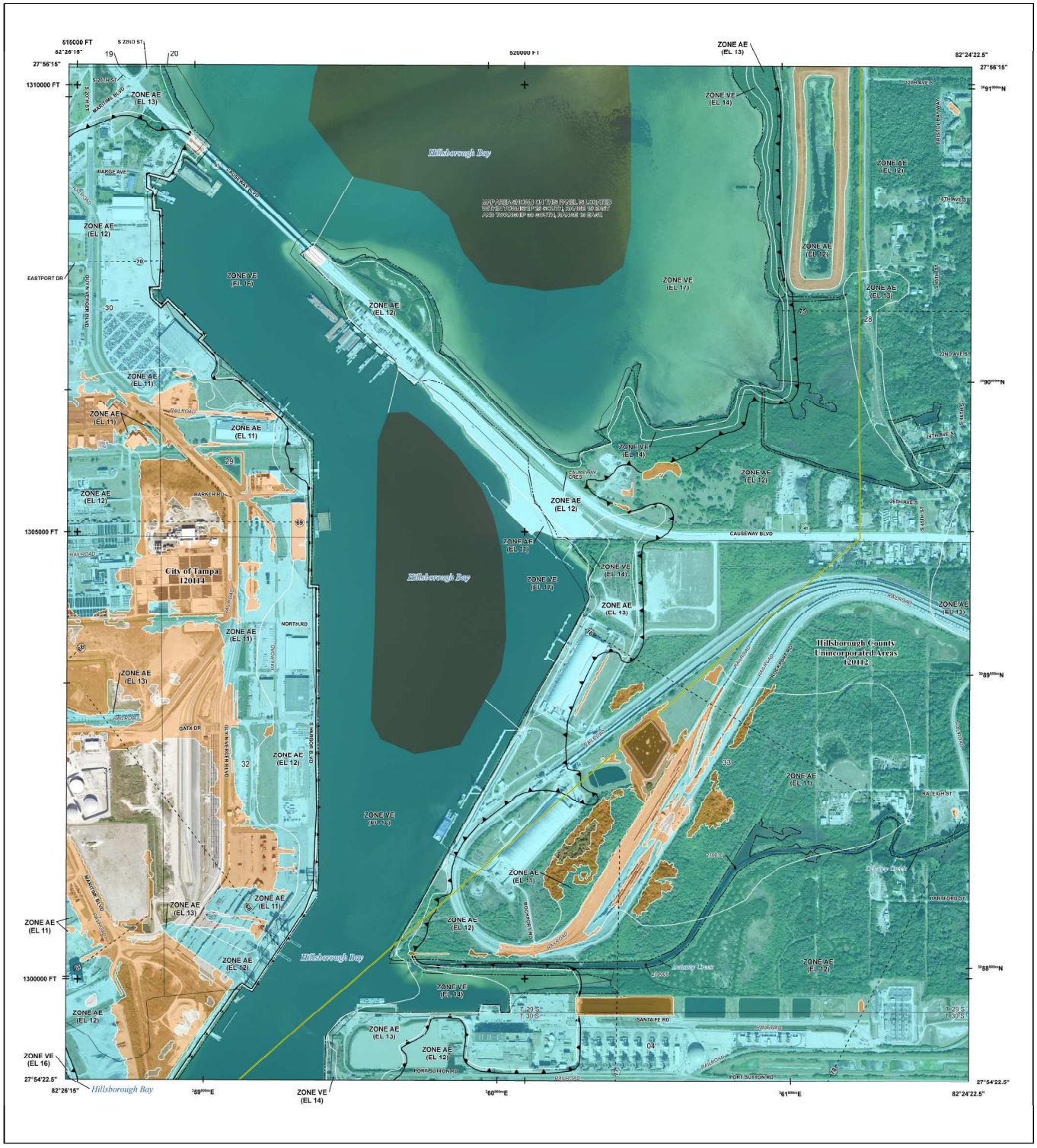
Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0367	J

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0367J

MAP REVISED
OCTOBER 7, 2021



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Base map information shown on this FIRM was provided by Hillsborough County, dated 2008 and 2018; the Florida Department of Transportation, dated 2017; the Florida Resources and Environmental Analysis Center, dated 2003; and the U.S. Department of Agriculture, dated 2018.

LIMIT OF MODERATE WAVE ACTION: Zone AE has been divided by a Limit of Moderate Wave Action (LiMWA). The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between Zone VE and the LiMWA (or between the shoreline and the LiMWA for areas where Zone VE is not identified) will be similar to, but less severe than, those in the Zone VE.

Limit of Moderate Wave Action (LiMWA)

SCALE

N

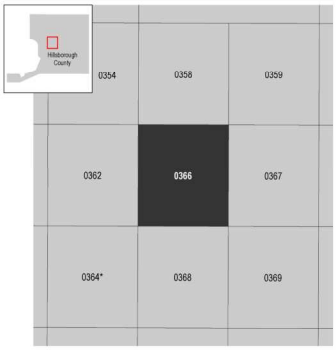
Map Projection: State Plane Transverse Mercator, Florida West Zone 0902; North American Datum 1983; Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 250 500 750 1,000 2,000 feet

0 125 250 500 meters

PANEL LOCATOR



*PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
and Incorporated Areas

PANEL 366 OF 801

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0366	J

VERSION NUMBER
2.4.3.5

MAP NUMBER
12057C0366J

MAP REVISED
OCTOBER 7, 2021

APPENDIX B

Flood Investigations

DRAFT

Persons Interviewed and Attended Field Review-
08/30/06
Harry of Harry's Auto Body Located at 4141 Causeway Blvd.

09/11/06
Jennifer Green (FDOT Drainage), John Mauthner (FDOT Drainage), Robert Zaccaro (FDOT Maintenance), Donnie (FDOT Maintenance), and Mr. Bill Hess (Property Owner).

FDOT Maintenance cleaned the swale on 9/11/06. Maintenance noted that the swale was at the correct elevation. Mr. Hess stated that he was satisfied with the cleaning of the swale. We advised Mr. Hess to contact Tampa Maintenance if the swale is in need of cleaning in the future. We also advised Mr. Hess that his property is below the 100-yr flood elevation and that his property may experience flooding during major storm events.

SECTION III, PROBLEM ANALYSIS

Responsible Entity for Maintenance of Outfall- FDOT Maintenance

Previous Efforts to Remedy- None. No previous complaints have been made to FDOT Maintenance or the District Office.

SECTION IV, PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

- Review of engineering documents and construction plans indicate that the property is in a low area and subject to ponding. The most recent widening of Causeway Blvd. along the property occurred in 1990 and was resurfaced in 2003, however no changes were made to the existing drainage system during either project.

- The Department's Tampa Maintenance Office has no record of flooding complaints at this site purchased in December 2005. During an onsite field review it was noted by a local business owner, who has been in the area for 20 years, that this condition has existed on this site for the past 20 years. Standing water on the driveway has not changed due to Department resurfacing projects.

- Water flows from the high point on the east side of the property along the right of way, across the driveway and into a swale in Department Right of Way. This swale fills during intense storm events which causes the water to pond in the swale. As the swale fills it connects to the ponded water on the property due to existing flat terrain in the vicinity of the property.

- The soils along Causeway Blvd. are hydrologic soil group Type B/D which is described as very poorly drained with very slow infiltration rate. The undrained areas frequently pond for very long periods of time due to the seasonal high

ground water table (SHGWT) elevation which is within 10 inches or less of the ground surface elevation.

- The property, with an estimated low ground elevation of 5.9 ft., is 5.1 ft. below the Federal Emergency Management Agency (FEMA) 100 year flood elevation of 11.0 ft and is subject to flooding in major storm events. (Information from April 17, 1984 Flood Insurance Rate Map (FIRM) Panel No. 120112 0366 C)

RECOMMENDATIONS:

Based on the above findings and the flat terrain within the property area, Department construction activities along Causeway Blvd. have not changed existing flow patterns.

Maintenance staff has cleaned the ditch to allow for the driveway to drain to the swale. If the ditch should require cleaning in the future, we advised Mr. Hess to contact the Tampa Maintenance office.

BACKUP CORRESPONDENCE:

CLICK IT or TICKET FLORIDA

Thomas W Gaffney/D7/FDOT
08/30/2006 11:11 AM

To Jennifer Green/D7/FDOT@FDOT
cc
bcc
Subject Re: Flooding Complaints at 4141 Causeway Blvd.

History: This message has been replied to.

No, what is the problem?

Tom Gaffney
Florida Department of Transportation
Operations Manager
813-744-6038
Be Safe and watch for Motorcyclists
Jennifer Green/D7/FDOT

Jennifer Green/D7/FDOT
08/30/2006 08:50 AM

To Thomas W Gaffney/D7/FDOT@FDOT
cc
Subject Flooding Complaints at 4141 Causeway Blvd.

Tom,
Are you aware of any flooding complaints or maintenance issues at 4141 Causeway Blvd.

Thank you.
Jennifer Green, E.I.
FDOT District 7 Drainage Design
Phone: 813-975-6227
Fax: 813-975-6150
jennifer.green@dot.state.fl.us

Bill Hess
4141 Causeway
787-8200
Floods all the time.

Per Megan,
John.
Set up meeting w/
Gaffney + Mr. Hess
for next week - after
meeting revise letter
and then send.
Bill Hess
(813) 787-8200 Jen.
Called @ 9:00 AM 9/8/06 jm
Called @ 2:45 PM 9/8/06 jm

Returned

No we have The Dept. or Eng

Standing water in ditch

September 11, 2006 Dugas

Mr. Bill Hess
P.O. Box 585
Seffner, FL 33583

business owner who in area last 20 yrs was interviewed and stated standing water elev has not changed. discuss in old project

mentions date acquired.

RE: Flooding complaint at 4141 Causeway Blvd.

Dear Mr. Hess:

We have completed the investigation of the Department's drainage system in the vicinity of 4141 Causeway Blvd. Review of engineering documents, aerial maps, construction plans, and field reviews reveal that the accumulation of water on your site is not the result of inadequacies in the design of the Department's drainage system. A summary of our investigation is as follows:

- We have no record of flooding complaints at this location. During an onsite field review it was noted by a local business owner that this condition has existed at this site for the past 20 years that he has been in the area, the standing water has not changed due to Department construction projects.

discuss final outfall ditch is tidally influenced

- Water flows from the high point on the east side of the property along the right of way, across the driveway and into a swale on Department Right of Way. This swale fills during intense storm events which causes the water to pond in the swale. As the swale fills it connects to the ponded water on the property due to existing ~~flat~~ surface conditions in the area.

flat terrain

- The soils along Causeway Blvd. are hydrologic soil group Type B/D which is described ~~as nearly level~~ and very poorly drained with very slow infiltration rate ~~when wet~~. The undrained areas frequently pond for very long periods of time due to the The seasonal high ground water table (SHGWT) for is typically within 10 inches or less of the ground surface elevation, leaving insufficient storage for rain events.

- The property, with an estimated low ground elevation of 5.9 ft., is 5.1 ft. below the FEMA 100 year flood elevation of 11.0 ft and is subject to flooding in major storm events.

Add panel #

Based on the above findings and the flat terrain within the property area, Department construction activities along Causeway Blvd. have not changed existing flow patterns. Maintenance staff has cleaned the ditch to allow for the driveway to drain to the swale. If the ditch should require cleaning in the future, please contact the Tampa Maintenance office at (813) 740-4166.

We would be glad to discuss our findings in detail should you desire. Please feel free to contact me at (813) 975-6162.

Sincerely,

~~Megan Arasteh, P.E.~~ Jennifer Hess
District Drainage Engineer

cc: ~~Dwayne Kile, P.E., District Design Engineer~~
~~Marion Scorza, Public Information Officer~~
Tom Gaffney
Harvey Hunt
Megan Arasteh

Show limits of

show the limits of the flooding on the pictures.

September 11, 2006

Mr. Bill Hess
P.O. Box 585
Seffner, FL 33583

RE: Flooding complaint at 4141 Causeway Blvd.

Dear Mr. Hess:

is it just the driveway

The Department has

We ~~have~~ completed the investigation of the Department's drainage system in the vicinity of 4141 Causeway Blvd. Review of engineering documents, aerial maps, construction plans, and field reviews reveal that the accumulation of water on your site is not the result of inadequacies in the design of the Department's drainage system. A summary of our investigation is as follows:

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when was the Dept last Project

who? ~~is this an adjacent property~~ owner

- Water flows from the high point on the east side of the property along the right of way, across the driveway and into a swale on Department Right of Way. This swale fills during intense storm events which causes the water to pond in the swale. As the swale fills it connects to the ponded water on the property due to existing flat ~~surface conditions~~ in the area.

where is the final out fall. Do you have a tailwater condition

terrane ?

adjacent or vicinit of the property

- The soils along Causeway Blvd. are hydrologic soil group Type B/D which is described as ~~nearly level and~~ very poorly drained with very slow infiltration rate ~~when wet.~~ The undrained areas frequently pond for very long periods of time. The seasonal high ground water table (SHGWT) for is typically within 10 ~~inches~~ or less of the ground surface elevation, leaving insufficient storage for rain ~~events~~.

due to the (SHGWT) elevation which is within 10 inches or less of the ground surface

- The property, with an estimated low ground elevation of 5.9 ft., is 5.1 ft. below the FEMA 100 year flood elevation of 11.0 ft and is subject to flooding in major storm events.

Spell out

Add panel #

~~Is this property located in the low area of the basin per SWFWMD Aerials).~~

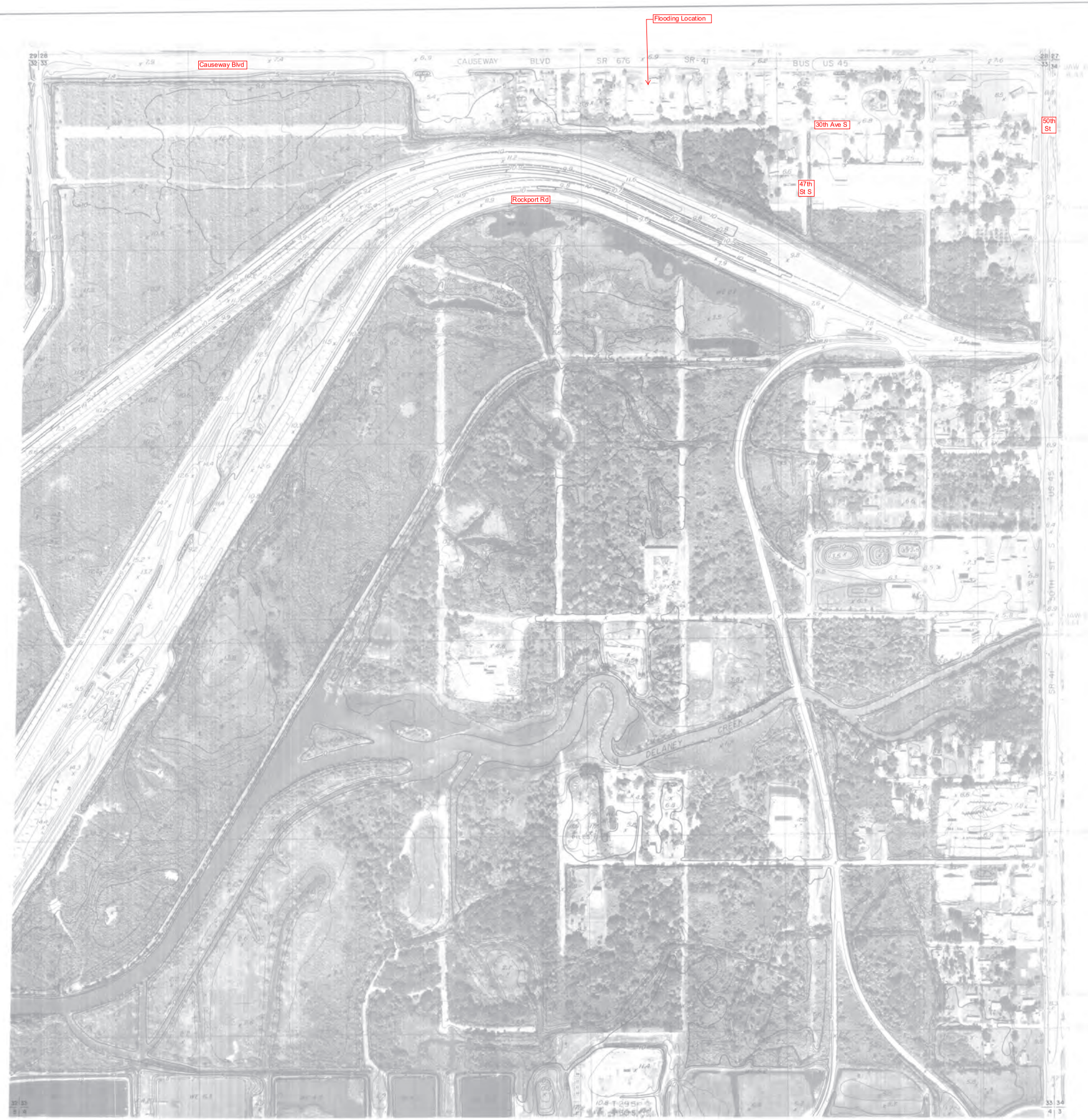
Map of 27.922657,-82.408165

YAHOO! LOCAL Maps

North

Flooding Location

When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.



COMPILED BY PHOTOGRAMMETRIC METHODS
BY
ABRAMS
AERIAL SURVEY CORPORATION OF FLORIDA
ST. PETERSBURG, FLORIDA

LEGEND

- HORIZONTAL CONTROL U.S.C.&G.S.
- FLORIDA STATE DEPT OF TRANSPORTATION
- TRAVERSE STATIONS
- VERTICAL CONTROLS
- SECTION CORNERS
- CONTOURS
- DEPRESSION CONTOURS
- SPOT ELEVATIONS
- 1927 DATUM

KEY MAP

NOTE: ACCURACY: IT IS INTENDED THAT THIS MAPPING CONFORM WITH U.S. NATIONAL MAP ACCURACY STANDARDS WHEREVER SUCH ACCURACY, OR ANY OTHER LEVEL OF ACCURACY, IS NOT GUARANTEED BY THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT.

LAND LINE INFORMATION SHOWN HEREON IS COMPILED FROM THE BEST AVAILABLE DATA AND DOES NOT NECESSARILY REPRESENT TRUE LAND LINE LOCATION.

DASHED CONTOURS AND UNDERLINED ELEVATIONS INDICATE STANDARD VERTICAL ACCURACY REDUCED BY TREE COVER.

THIS SHEET MAY NOT BE REPRODUCED IN PART OR IN FULL WITHOUT SPECIFIC APPROVAL OF THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT 2379 BROAD STREET, BROOKSVILLE, FL 34609-6899

COPYRIGHT © BY SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT. ALL RIGHTS RESERVED.

GRID BASED ON FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE 1983 DATUM

ELEVATIONS BASED ON U.S.C. & G.S. DATUM

200 0 200 400 600
SCALE 1" = 200' CONTOUR INTERVAL 1'

DATE OF BASE PHOTOGRAPHY OCTOBER 1990
DATE OF MAPPING PHOTOGRAPHY DECEMBER 1990

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

ALAFIA RIVER BASIN
ALAFIA RE-MAP

AERIAL PHOTOGRAPHY WITH CONTOURS

SWFWMD PROPERTY NO. 204 II

SHEET NO. 33-29-19

A.A.S.C. 2371

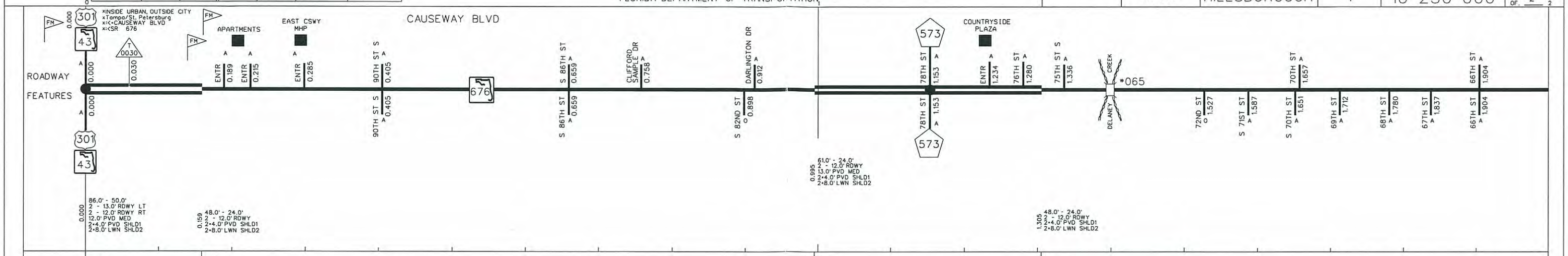
	5 YR INV	SLD REV
DATE	08/20/2001	11/19/2001
BY	URS/PWB&NKA	FDOT/PJL

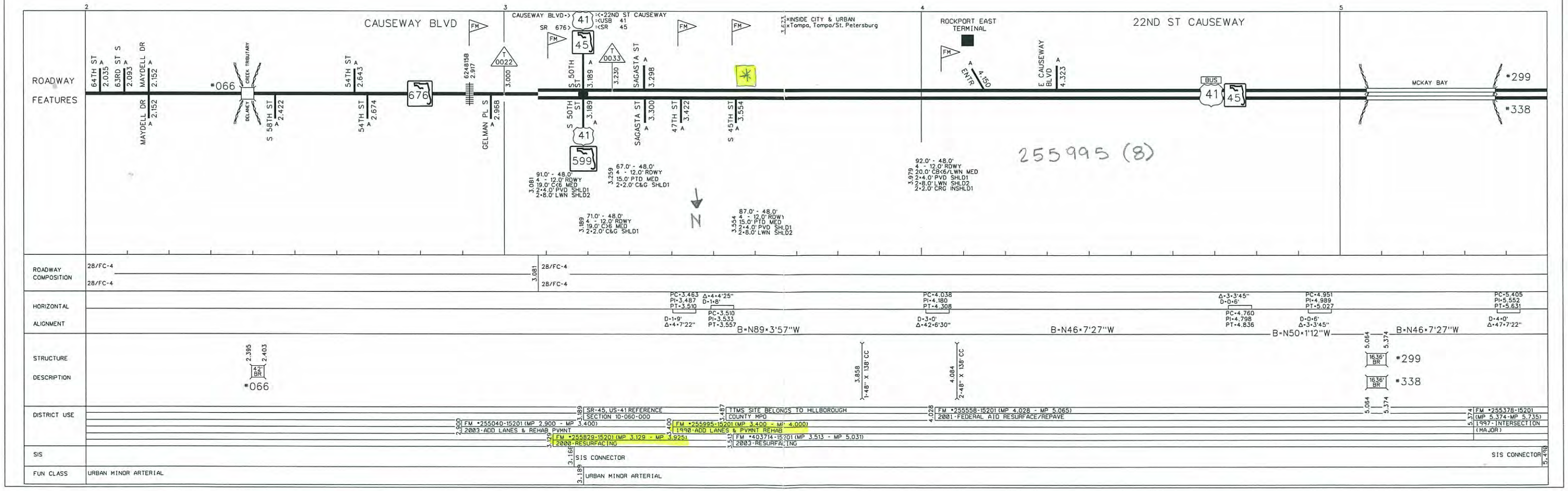
INTERIM REVISIONS			
BMP	EMP	INV	SLD REV
0.775	4.084	3/15/2006	4/19/2006
ADDED CROSSDRAINS		FDOT	MEV/JLB

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION

INT. or US ROUTE NO	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET
	SR 676	HILLSBOROUGH	7	10-250-000	NO. 1 OF. 2





Investigation #1005202009518

DRAINAGE COMPLAINT INVENTORY SHEET

SECTION I, LOCATION

County: Hillsborough

State Road: SR 45 (US 41) / S. 50th Street

Location: 3630 S. 50th Street

Road Description: 6-lane, Urban.

Section/Township/Range: S34 T29S R19E

North and East coordinate: N27°54'52" / W82°24'6"

SECTION II, PROBLEM DESCRIPTION

Problem: Heavy drainage runoff and flooding of the 3630 S. 50th Street property. The roadway runoff apparently drains from the roadway onto the subject property and ultimately makes its way into the building structure. Because this property is the low point of a larger delineated area, it receives offsite runoff from the larger section of the subject property to the east, and some minor offsite flow from the abutting properties to the north and south. The contributing area has been delineated based on the field review, 1-foot aerial contour maps and the FDOT roadway drainage map; this is shown on the 1-foot aerial contour map provided in **Section A, Exhibit-A6**.

Site description and existing conditions:

The problem is primarily confined to the smaller section (west section) of the subject property located immediately adjacent to S. 50th Street; in **Section A, Exhibit-A2 and A3** show the parcel information for the subject property. The site has a centrally located building that is surrounded by an asphalt drive and parking area. The perimeter of the site outside of the parking area, which includes the poorly defined swale, is vegetated with grass and other low lying ground cover, see **Section A, Exhibit-A7**. Drainage within the subject property sheetflows out from the center of the property to the poorly defined, inadequately maintained perimeter swale; this swale provides conveyance and some

minor storage capacity. Additionally, the swale also intercepts the offsite runoff from the surrounding properties. Historically, the subject property was described as "open pasture' on the 1958 FDOT drainage map and drained west through two small drainage ditches to the FDOT DBI's (station 236+12, 60' RT & station 237+71, 60' RT from 1958 roadway plans); shown on **Exhibits D2 & D3**. The east section of the subject property has been developed, with a number of established businesses, which has resulted in the alteration of the property characteristics. The current site is estimated to be 50% covered with impervious surfaces based on the field review and the aerial photo.

Generally, the drainage pattern appears to be consistent with the historical pattern shown on the FDOT drainage map; the runoff from the east section of the subject property drains to the north and west to the swale along the north side of the subject property where it is conveyed to the FDOT DBI. Historically, the runoff was directed to the FDOT DBI's through the two small drainage ditches, however, the east section of the subject property now almost entirely drains to the swale along the north property line, which may be a symptom of the mentioned drainage problem.

The smaller, east section of the site is poorly graded and has numerous small depressional areas which pond water; the noted pavement failure appears to be the result of standing water along with heavy wheel loading from frequent truck traffic. The 1958 roadway plans indicate that the site was originally a gas station which was confirmed by the current owner. The poor grading may have resulted in part when the underground storage tanks were removed some number of years ago. When the tanks were removed the reconstructed driveway and parking may have been poorly re-graded and or may have experienced settlement as a result of insufficient backfill compaction leading to depressional areas.

Soils – According to the NRCS USDA Soil Survey for Hillsborough County, the site lies entirely within soil unit 29 (Myakka soil) which is a B/D classified hydrologic soil group having a seasonal high ground water table (SHGWT) that is generally 0-1' below exiting grade; the soil survey is provided in **Section A, Exhibit-A5**.

Frequency – According to the owner, flooding occurs frequently following heavy rainfall events.

Estimated High Water – The Estimated High Water elevation for Delaney Creek, according to the FDOT 1958 roadway plans drainage map, is 6.0-feet. This is within 1-foot of the existing ground/site elevations within the subject property.

History of Problem – The owner and current business tenant both agreed that this has been an ongoing problem that occurs during large storm events. The owner has owned the property since at least 1987 and has indicated that the problem has become more prevalent in the last few years. The west section of the subject property and infrastructure appears to be unchanged, when compared to the 1958 FDOT roadway plans, with the exception of additional pavement. Mr. Martinez did not have or take photos documenting the mentioned flooding within the property.

- **Section B** contains photos taken of the subject property and surrounding properties.

Outfall Description – FDOT storm sewer system with discharge to Delaney Creek approximately 300' north of subject property. The tailwater (TW) for the FDOT storm sewer system is subject to the water surface profile of Delaney Creek, a tidally influenced water body.

Correspondence and Participants of Field Review:

- Mike Jaroch (HDR, Inc.) phoned Mr. Thomas Gaffney (FDOT-7 Maintenance Supervisor) 09/07/05 (813-744-6038). He indicated there is no recorded history of a flooding at this location. He stated that FDOT Maintenance had twice cleaned inside and around the existing Ditch Bottom Inlet (DBI) located just north of the north driveway for the subject property. A photo of the inlet is provided in **Section B, Photo 5**.
- Mike Jaroch phoned Mr. Martinez (813 679-9735) on Friday, September 2, 2005 and to arrange a field meeting. Mr. Martinez agreed to meet at the property and also briefly addressed the drainage/flooding problem. He indicated that he had

contacted the County and got very little help. The County eventually informed Mr. Martinez that 50th Street was a State owned roadway which led to a phone call to the FDOT-7 Maintenance Office. A record of field notes memo has been included in **Section F**.

Scheduled Field Visit on Wednesday, September 07, 2005:

- Mike Jaroch met and spoke with:
  - Alex Martinez - Subject Property Owner
  - Thomas Gaffney – FDOT-7 Maintenance Supervisor
  - Tina Letchworth – Current Business Tenant; 4-Play Adult Video
  - Ken Adams – Owner Adams Used Auto Parts, Inc; Adjacent property to the north of subject property, (813) 247-3958.

SECTION III, PROBLEM ANALYSIS

Responsible Entity for Maintenance of Outfall - Although no formal outfall exists at the site, the DBI in the northwest corner of the subject property (See 1958 FDOT roadway plans, sheet 24, Station 237+61, 60' RT) serves as the primary means for disposition of the subject property onsite runoff. This structure sets within a 10-foot by 12-foot drainage easement that allows FDOT to access it for required and periodic maintenance. Currently, the DBI has some debris buildup and vegetation that should be cleared away. It is also noted that a DBI structure was proposed along what appears to be the south property line of the subject property (See 1958 FDOT roadway plans, sheet 24, station 236+12, 60' RT); this structure was not able to be located. The 1958 proposed grate elevations are 5.9 and 5.7 for the south (Station 236+12, 60' RT) and north (Station 237+61, 60' RT) DBI's respectively.

Previous Efforts to Remedy - Mr. Gaffney stated that the Department, on at least two occasions, has cleaned out and cleared away vegetative debris from and around the DBI at station 237+61, 1958 FDOT roadway plans. It appears as though the owner tried to create a drainage improvement to move water from the front driveway and paved area, via a 4" diameter PVC pipe, to the north ditch. The 4" diameter PVC pipe is clogged and is not providing the desired conveyance; see **Section B, Photo 13**.

Problem Analyses - in addition to the field reviews and interviews a number of documents have been gathered to better analyze the problem. A listing of the reviewed documentation and observations is as follows:

- Study Site Location Map (**Section A, Exhibit-A1**)
- USGS Quad Map – Tampa, Florida, (**Section A, Exhibit-A4**)
- SWFWMD Aerial Maps, Section 34/ Township 29S/ Range 19E, August 1986, & Section 33/ Township 29S/ Range 19E, August 1986. The SWFWMD aerial contour map shows the subject property to be the low point for the delineated area draining to and through it. See **Section A, Exhibit-A6**.
- Hillsborough County Parcel Information Map (**Section A, Exhibit-A2 & A3**)
- NRCS USDA Soil Survey – Hillsborough County (**Section A**)
- SPN 1006-208, selected sheets from the latest construction set of plans for SR 45 (US 41 / S. 50th Street), provided in **Section C**. The project constructed in 1958 included full reconstruction of SR 45 from 2 to 4 lanes and included a complete storm sewer system for both onsite and offsite runoff. The 1958 roadway plans proposed DBI's that were located strategically to collect offsite runoff and convey it to the nearest outfall point.
- Historic FDOT Roadway Drainage Maps, Project No. 971, date unknown; Estimated High Water reported in 1941. Map shows minimal development and limited information regarding the project area (**Section D**).

  The project site was originally a gas station with underground storage tanks. The subject property site was originally located well away from S. 50th Street prior to the widening. Additionally the original driveway area for the gas station was comprised of shell material as shown in the 1958 FDOT roadway plans and would allow for some percolation of runoff whereas the paved driveway and parking area do not allow any infiltration of stormwater runoff. The gas station was separated from the S. 50th Street roadway runoff by an existing roadside ditch that conveyed the roadway and offsite runoff to Delaney Creek through a combination of ditch and pipe conveyance. Based on the 1958 plans, offsite runoff from the properties located east of the road was conveyed west through small drainage swales to the DBI structures that are tied to the FDOT storm sewer system.

- Drainage Connection Permit Documentation: No Drainage Connection Permit exists for this site.

- SWFWMD Permit: None.

SECTION IV, PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

RECOMMENDATIONS:

It appears that the subject property is the low area of a delineated basin and also lies below the roadway profile. Although a minor amount of roadway runoff may drain into the this property, the major cause for the stated drainage/flooding problem is a due to the elevation of the property, the finished floor (FF) elevation of existing building structure, and the poor onsite grading and drainage. Calculations of the FDOT roadway contributing area are included in **Section E**.

The building FF and surrounding paved parking are at an elevation where achieving positive drainage is difficult. Both appear to be at or just above the grate elevation of the existing DBI (Grate El. 5.7) at station 237+61, 60'RT. Given a large storm event that coincides with high or mean high tide, the resultant hydraulic grade line within the FDOT storm sewer system could be at or above the grate elevation of the DBI. For example, During Hurricane Francis (September 2004), SR 45 (US 41 / S. 50th Street) was under water in the vicinity of the Delaney Creek crossing; this indicates a water elevation at or above elevation 8.0. Given this condition, the subject property immediately adjacent to the road would be inundated with 1-3 feet of water. The minor amount of runoff from the road and the onsite runoff are not the problem, but rather the tidally influenced tailwater creates the drainage or flooding condition on the subject property. Modeling data from the Hillsborough County Delaney / Archie Creek Watershed model has been included in **Section G** of this report. The model indicates that the peak stage at the US 41 crossing (Node 210040) is between elevation 5.19, for the 3-year storm event, and elevation 8.98 for the 100-year storm event. This indicates that, under the exsiting conditions, the FDOT storm drain system will be in a submerged condition for storm events greater than or equal to the 5-year storm event.

Solutions to this condition:

1. Suggest owner document observed flooding conditions with photos of the inlet and site, and note dates in order to determine if the flooding is backwater related. Raise the building to a suitable FF elevation and re-grade the site to create positive drainage away from the building towards the FDOT DBI at station 237+61, 60'RT (1958 FDOT roadway plans). Adams Used Auto Parts, Inc. constructed a new building on their site in approximately 1991. Hillsborough County requires an approved civil site plan prior to beginning construction and one of the criteria is to set the FF of any habitable building 1-foot above the established 100-year flood elevation. During Hurricane Francis, the new building on the Adams site did not experience any flooding, while an existing structure on their site that had been constructed prior to needing Hillsborough County approval did become inundated. Also see Solution 3 regarding additional DBI at station 236+12, 60'RT.

   This solution requires action by the Owner of the subject property at 3630 S. 50th Street.

2. To prevent roadway runoff from entering site, re-grade the driveway openings to contain the FDOT roadway runoff within the curb and gutter section. Re-grade onsite the subject property to create positive drainage away from the building and towards the perimeter of the property. Additionally, re-establish the swale along the perimeter to maximize the storage capacity and conveyance to the FDOT DBI. To prevent debris build-up and vegetative growth around the inlet, place a concrete apron (for non-traversable slotted inlets) around the existing DBI(s) in accordance with FDOT Standard Index 232. Suggest owner document observed flooding conditions with photos of the inlet and site, and note dates in order to determine if the flooding is backwater related. See solution 3 regarding an existing DBI.

   This solution requires action by both FDOT and the Owner of the subject property at 3630 S. 50th Street.

3. Determine if the DBI in the 1958 roadway plans at station 236+12, 60'RT, was actually constructed. If it is determined that the DBI exists, then it should be cleaned out to accept offsite runoff. Additionally, the subject property should be re-graded to create positive drainage away from the building and towards the perimeter of the property and the swale along the perimeter of the property should be re-establish to maximize the storage capacity and improve conveyance to the two FDOT DBI's at stations 236+12, 60'RT & 237+61, 60'RT (1958 FDOT roadway plans). To prevent debris build-up and vegetative growth around the inlets, Place a concrete apron (for non-traversable slotted inlets) around the existing DBI(s) in accordance with FDOT Standard Index 232. Suggest owner document observed flooding conditions with photos of the inlet and site, and note dates in order to determine if the flooding is backwater related.

This solution requires action by both FDOT and the Owner of the subject property at 3630 S. 50th Street.

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1006222010167

Entry Date: 6/22/2010 7:38:09 AM
Revised Date:
Completed By: Stephanie Hildreth, HDR

SECTION I: LOCATION

County - Hillsborough
State Road - SR 45, SR 599
Road Section Number -
Mile Post -
Road Description - 5 lane(s), Principal Arterial, Roadside Ditches
Roadway Separation - Undivided
Direction of Travel - Two-Way
Functional System of Road - Urban
Specific Classification of Road - Principal Arterial
Roadway Drainage - Roadside Ditches

Flooding Condition - On-System

Local Road Subject to Flooding -

Upcoming Projects -
Business Name: Chavez Auto Transport
Business/Private Property Address Subject to Flooding -
2436 South 50th Street
Tampa , FL 33619

Location:
Latitude: 27.924915
Longitude: -82.401379

Section/Township/Range - 27 / 29S / 19E
FPID -
Project is Active - Yes

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SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint - 5/26/2009
Complainant Name - Tania Chavez
Problem Description -

Details of the Problem - A business arrived to work to find the place under water due to the previous night's rain. They believe the FDOT's Causeway Boulevard widening project was the issue.

Frequency of Flooding - New problem
Source for Frequency Data - Local Resident/Person Interviewed

Historic High Water - No historic high water data was available.

Flooding Event High Water - No event high water was recorded.

History of Problem -
Nearest wetland, lake or pond -

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SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
Tampa business floods.pdf	Other Data	Internet story by WTVT Fox 13
map_ chavez auto.pdf	Site Map	Aerial map

Damages or Harm Result -

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 1008292016754

Entry Date: 8/29/2016 5:22:49 PM
Revised Date: 9/5/2018 7:02:39 AM
Completed By: Anita Wang, FDOT

SECTION I: LOCATION

County - Hillsborough
State Road - SR 45, SR 599
Road Section Number -
Mile Post -
Road Description - 7 lane(s), Principal Arterial, Curb and Gutter Inlets/Storm Drain System
Roadway Separation - Divided w/Non-Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Urban
Specific Classification of Road - Principal Arterial
Roadway Drainage - Curb and Gutter Inlets/Storm Drain System

Flooding Condition - Off-System

Local Road Subject to Flooding - 31st Ave S

Upcoming Projects -
Business Name: Shell Gas Station
Business/Private Property Address Subject to Flooding -
3103 S 50th Street
Tampa , FL

Location:
Latitude: 27.92095
Longitude: -82.40198

Section/Township/Range - 33 / 29N / 19E
FPID -
Project is Active - No

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SECTION II: PROBLEM DESCRIPTION

SECTION III: PROBLEM ANALYSIS

Previous Analysis

Previous Analysis By: , on unknown date.

Previous Analysis: Adding inlets at this intersection may resolve ponding/flooding concern

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Attachments

Attachment	Attachment Type	Attachment Description
email-Closure.pdf	Other Data	closure email

Damages or Harm Result -

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation:

Recommendation Date:

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	2
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0

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Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**20**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	2
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**20**

Solution Cost:
Hyperlinks:

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APPENDIX C

Correspondence

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Meeting Minutes

Date: February 28, 2020
To: Craig Fox
From: Erik Fleming
Re: WPI Segment No. 440749-1

Meeting: Drainage Coordination Meeting
Date: February 25, 2020
Time: 8:30 am
Location: District 7 Office (11201 N. McKinley Drive, Tampa, FL 33612)
Attendees: FDOT – Kirk Bogen, Craig Fox, Robin Rhinesmith, Anthony Celani, Bill McTeer
FDOT GEC – Amber Russo
RK&K – Liz Lorello, Joe Baan, (Erik Fleming on phone)
KCA – (Mike Campo on phone)

Meeting Notes:

Introduction

- The meeting began with an introduction of the participants.
- Erik provided a brief overview of the project. He summarized each of the four project alternatives evaluated thus far and presented at the Alternatives Public Workshop on November 19, 2019:
  - Alternative 1 (Flyover)
  - Alternative 2 (Quadrant)
  - Alternative 3 (Diverging Diamond Interchange – DDI)
  - Alternative 4 (Single Point Urban Interchange – SPUI)
- Erik discussed a modified Alternative 4 (SPUI) with two flyover ramps for NB US 41 to WB Causeway Blvd and EB Causeway Blvd to SB US 41 that would improve future operations. This Alternative 5 would be a Modified Alternative 4. Erik mentioned that these ramps could be single lane ramps to minimize the proposed ROW footprint.
- Erik discussed a potential new alternative being developed but RK&K was waiting on Department's direction.
- Craig will be the PD&E PM and Tim O'Brien will be the design PM moving forward.
-

Preferred Alternative

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- Kirk said that the Department has identified a modified version of Alternative 1 as its preferred alternative:
  - FDOT sent an email from Allan Urbonas stating a design speed of 45 mph for the flyover with a radius and shoulder widths.
  - US 41 and Causeway Boulevard intersection improvements will be modified to be all at-grade. (Remove the US 41 northbound grade separation over Causeway Boulevard)
  - NB to WB flyover will be modified to one lane with ability to be widened in the future.
  - The flyover will still land in the median of Causeway Boulevard.
  - US 41 will remain a grade separation over CSX.
  - Triple right-turn lanes for EB to SB movement will remain under signal control
- Erik asked for clarification on the frontage road configuration. Based on one-way frontage roads shown at the Alternatives Public Workshop or two-way frontage road operations revised following the workshop. Erik will provide to the Department the frontage road configuration concepts for review and final determination.
- Traffic analysis will need to be updated for the preferred alternative.
- The Department desires to construct the ultimate configuration if sufficient funding is available.

Concrete Funding

- Department believes that the use of concrete funding will be better determined during the design phase but will have an internal meeting to determine final action. Based on an email from the previous PM the deadline for the concrete funding is February. Erik will forward the email to Craig.

Drainage

- RK&K to schedule pre-application meeting with SWFWMD to determine permitting requirements and include PMs and drainage staff.
- Anthony asked if basins were impaired. RK&K to confirm and notify the Department of the status.
- Anthony stated that the department does not prefer the use of pond liners for hydraulic reasons. Liners are allowed if needed to prevent contamination from seeping into wet ponds.
- RK&K will move forward with a design level PSR and confirm process during scoping under Optional Services. Two or three-3 pond sites will be evaluated for each basin.
- FPID 430056-2 to the south was included within a previous SEIR and will not need to be addressed within this project.
- An LHR will be completed after meeting with WMD to confirm if any floodplain mitigation will be required.
- Kirk would prefer to postpone the public hearing until after 60% plans are complete.
- Bill reviewed the handout provided and gave comments on possible site locations:
  - Verizon property cannot be impacted

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- Consider the properties on the east side of US 41 south of Causeway Boulevard and north of CSX. They are currently being purchased by the department.
- Consider the properties along south side of Causeway west of US 41 that require partial takes for the recommended widening. They will be impacted by the improvements.

Action Items:

1. FDOT staff to discuss internally and provide RK&K direction on concrete funding
    a. Erik to forward Craig email regarding previous coordination.
2. FDOT staff to discuss internally and provide RK&K direction on frontage road configuration
    a. Erik to provide graphics of concepts for frontage road configurations.
3. RK&K to setup Pre-application Meeting with SWFWMD.
4. RK&K to provide verification of impairment status.

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US 41/SR 45/South 50th Street at CSX Grade Separation Re-evaluation

From South of Causeway Boulevard to North of Causeway Boulevard

Work Program Segment No. 440749-1

Hillsborough County, Florida

PLEASE SIGN-IN

Drainage Meeting on February 25, 2020 at 8:30 am			
Name	**Organization**	**Email**	**Initial**
Craig Fox	FDOT D7	Craig.Fox@dot.state.fl.us	C.F.
Amber Russo	FDOT D7 GEC	Amber.Russo@dot.state.fl.us	
Kirk Bogen	FDOT D7	Kirk.bogen@dot.state.fl.us	KB
Robin Rhinesmith	FDOT D7	Robin.Rhinesmith@dot.state.fl.us	
Abdul Waris	FDOT D7	Abdul.Waris@dot.state.fl.us	
Anthony Celani	FDOT D7	Anthony.Celani@dot.state.fl.us	
Bill McTeer	FDOT D7	Bill.Mcteer@dot.state.fl.us	BM
Erik Fleming	RK&K	efleming@rkk.com	
Liz Lorello	RK&K	llorello@rkk.com	
Joe Baan	RK&K	jbaan@rkk.com	
Mike Campo	KCA	Michael.Campo@kisingercampo.com	
Anthony Celani	FDOT D7 Drainage		

February 25, 2020

From:	Celani, Anthony L.
To:	Joseph Baan
Cc:	Liz Lorello
Subject:	RE: 440749-1 // US 41 at CSX // Sea Level Rise
Date:	Thursday, February 25, 2021 1:23:39 PM
Attachments:	image008.png image012.png

Hey Joe,

We can look at the SLR scenario and document it in the drainage report. Since this is an existing corridor, retrofitting it to meet SLR criteria may not be feasible or practical.

Thanks,

Anthony L. Celani, P.E.

District Seven Drainage Department
11201 N. McKinley Drive MS 7-800
Tampa, FL 33612
(813) 975-6783 Fax 813-975-4206
anthony.celani@dot.state.fl.us

Please note: Florida has a very broad public records law. Most written communications to or from state officials regarding state business are public records available to the public and media upon request. Your e-mail communications may therefore be subject to public disclosure.

From: Joseph Baan <jbaan@rkk.com>
Sent: Thursday, February 25, 2021 12:42 PM
To: Celani, Anthony L. <Anthony.Celani@dot.state.fl.us>
Cc: Liz Lorello <llorello@rkk.com>
Subject: 440749-1 // US 41 at CSX // Sea Level Rise

EXTERNAL SENDER: Use caution with links and attachments.

Anthony,

We are in the early stages of design on US 41 at CSX, which is about 1.5 miles up Delaney Creek from East Bay. Most of our drainage design (ponds, cross drains, FPC) will be done in the Delaney Creek Watershed Model, which ends at East Bay. This project is on the border between coastal and non-coastal. It is outside the VE floodplain but it is still within FEMA coastal transects. I'd like to confirm how sea level rise should be incorporated into the project as it could have significant impacts on our pond sizes and roadway profiles.

Section 3.4.1 of the Drainage Manual (DM) requires coastal projects to "incorporate sea level rise analysis to assess the vulnerability of flooding over the design life of the facility." DM Section 4.5

states that tidally influenced culverts should “adjust the MHW elevation for sea level rise…” Assuming a design service life of 50 years (DM Table 4.1) and the MSL trends in DM Table 3.2, we could experience a rise of approximately 0.454 ft.

Increasing the design stage of East Bay would have a significant impact on the project. It would likely increase pond sizes and require raising the profile of US 41 and even Causeway Boulevard. I don’t see SWFWMD requiring an increase in the stage of East Bay for our permitted analysis.

Should we increase the stage of East Bay in the Delaney Creek Watershed Model for our design analysis to represent potential conditions in 50 years or do we just need to include a section in the drainage report summarizing the potential impacts of sea level rise on the proposed conditions?

Thanks,

JOE BAAN, PE, CFM
Project Manager | Transportation

RK&K
402 S. Kentucky Avenue, Suite 400
Lakeland, FL 33801

863.333.4583 P | 863.670.9361 C
www.rkk.com

Responsive People | Creative Solutions

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THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER:

PA 407537

Date:	03/12/2020		
Time:	10:00		
Project Name:	PD&E on US41		
District Engineer:	Buddy Wood		
District ES:	Al Gagne		
Attendees:	Elizabeth Lorello, Joe Baan (RK&K), Tony Celani, Craig Fox (FDOT)		
County:	Hillsborough	**Sec/Twp/Rge:**	27, 28, 33, 34/29/19
Total Land Acreage:	< 40 acres	**Project Acreage:**	< 40 acres

Prior On-Site/Off-Site Permit Activity:

- ERP 27063 (Causeway) and ERP 41528 (US 41)

Project Overview:

- Widening and expansion of Causeway Boulevard and US 41 intersection and intersection improvements.

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- Project may impact surface waters and wetlands associated with Delaney Creek to the south and the unnamed creek to the north of the intersection. There may also be impacts associated with roadside ditches.
- Project is located in the Tampa Bay and Coastal Areas ERP Basin. Mitigation banks that serve this area include the Tampa Bay, Mangrove Point and Nature Coast mitigation banks.
- Provide the limits of jurisdictional wetlands and surface waters. Roadside ditches or other water conveyances, including permitted and constructed water conveyance features, can be claimed as surface waters per Chapter 62-340 F.A.C. if they do not meet the definition of a swale as stated under Rule 403.803 (14) F.S
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- If the wetland mitigation is appropriate and the applicant is proposing to utilize mitigation bank credit as wetland mitigation, the following applies: Provide letter or credit availability or, if applicable, a letter of reservation from the wetland mitigation bank. The wetland mitigation bank service area and current ledgers can be found out the following link: https://www.swfwmd.state.fl.us/business/epermitting/environmental-resource-permit, Goto "ERP Mitigation Bank Wetland Credit Ledgers"
- Demonstrate elimination and reduction of wetland impacts.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- Existing roadway/intersections
- Watersheds- Unnamed Ditch (WBID 1615)- does not appear to be impaired for nutrients, Delaney Creek (Tidal) (WBID 1605D)- does not appear to be impaired for nutrients.
- WBIDs need to be independently verified by the consultant
- Possibly discharging to impaired waters.
- Document/justify SHWE's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands.

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- Determine 'pop-off' locations and elevations of wetlands.
- Provide documentation to support tailwater conditions for quality and quantity design
- Minimum flows and levels of receiving waters shall not be disrupted.
- Contamination issues need to be resolved with the FDEP. Check FDEP MapDirect layer for possible contamination points within/adjacent to the project area. FDEP MapDirect Link
  - FDEP Site ID Nos. **XXXXXX and XXXXXX** located within or adjacent to site. Please verify with FDEP if any have current contamination issues. FDEP MapDirect appears to indicate **XXXXXX** has contamination issues.
  For known contamination within the site or within 500' beyond the proposed stormwater management system:
  - after the application is submitted, please contact FDEP staff listed below and provide them with the ERP Application ID # along with a mounding analysis (groundwater elevation versus distance) of the proposed stormwater management system that shows the proposed groundwater mound will not adversely impact the contaminated area. FDEP will review the plans submitted to the District and mounding analysis to determine any adverse impacts. Provide documentation from FDEP that the proposed construction will not result in adverse impacts. This is required prior to the ERP Application being deemed complete.
  - If a SWMS is to be constructed within a contamination zone area, a groundwater sample collected from the first aquifer water bearing zone (i.e. zone of saturation or first zone that the water table is encountered) will most likely be required.
  For known offsite contamination between 500' and 1500' beyond the site:
  - FDEP may also require a mounding analysis (groundwater elevation versus distance) for the proposed stormwater systems. SWFWMD will issue the permit when contamination sites are located outside the 500 ft radius prior to concurrence from DEP, however, it is the Permittee's responsibility to resolve contaminated site assessment concerns with the FDEP prior to beginning any construction activities. A permit condition will be used to reiterate this. You are advised to contact DEP as soon as possible, preferably during permit application period.
  FDEP Contacts:
  - For projects located within Citrus, Hernando, Pasco, Hillsborough, Pinellas, Manatee, Polk and Hardee Counties: Yanisa Angulo yanisa.angulo@floridadep.gov
- Stormwater retention and detention systems are classified as moderate sanitary hazards with respect to public and private drinking water wells. Stormwater treatment facilities shall not be constructed within 100 feet of an existing public water supply well and shall not be constructed within 75 feet of an existing private drinking water well. Subsection 4.2, A.H.V.II.
- District GIS identifies existing Well Construction Permits (WCP) near the project.
- Any wells on site should be identified and their future use/abandonment must be designated.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event. Would not be required if it can be demonstrated that the discharge is to a tidally-controlled waterbody with no restrictions and no adverse impacts to adjacent properties.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable. Providing cup-for-cup storage in dedicated areas of excavation is the preferred method of compensation if no impacts to flood conveyance are proposed and storage impacts and compensation occur within the same basin. In this case, tabulations should be provided at 0.5-foot increments to demonstrate encroachment and compensation occur at the same levels. Otherwise, storage modeling will be required to demonstrate no increase in flood stages will occur on off-site properties, using the mean annual, 10-year, 25-year, and 100-year storm events for the pre- and post-development conditions.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for new travel lanes and any existing impervious area that has been previously permitted to be treated.
- Also, replace treatment function of existing ditches to be filled.
- Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:
  -Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.

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-Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.
-All co-mingled existing & new impervious that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
-However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II); if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious only. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
-Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts.
-Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.

- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- Coordination with the Tampa Port Authority for projects located in Hillsborough County is recommended.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.

Application Type and Fee Required:

- SWERP new Individual– Sections A, C, and E of the ERP Application.
- < 40 acres of project area and < 3 acre of wetland or surface water impacts - $2,491.50 Online Submittal
- Consult the fee schedule for different thresholds.

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

  ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies*

  DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here; Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.*
- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall

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not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

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THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER:

PA 408072

Date:	11/19/2020
Time:	11 am
Project Name:	BAR PA 408072 US 41 and Causeway/CSX
District Engineer:	Bob Dasta
District ES:	Chaz LaRiche
Attendees:	Joseph Baan, RK&K (Drainage), Liz Lorello, RK&K (Drainage), Erik Fleming, RK&K (Roadway), Branan Anderson, KCA (Roadway), Craig Fox, FDOT (Project Manager), Abdul Waris, FDOT (Drainage), Anthony Celani, FDOT (Drainage)

County:	Hillsborough	**Sec/Twp/Rge:**	27,28,29,33,34/29/19
Total Land Acreage:		**Project Acreage:**	acres

Prior On-Site/Off-Site Permit Activity:

- ERP – 27063.000
- ETDM – 14345

Project Overview:

- From US 41 at Trenton Street to US 41 at S. 23rd Ave
- Capacity and operational improvements on US 41/SR45/SR 599 from south of the SR 676/Causeway Boulevard intersection to north of the SR 676/Causeway Boulevard intersection
- ~100 ft span bridge at railroad crossing over Delaney creek. Based on LIDAR, this measured approximately 70 ft from top of bank to top of bank.
- Pre/post modeling shows rises downstream between railroad track along Delaney Creek (0.05 ft). No rises further modeled west of the railroad track. This would be considered an adverse impact since the system is not tidal, especially prior to the span bridge at CSX (and the culvert at the unnamed creek to the north).
- Discussed with staff (Monte Ritter) after the pre-application to determine if tidal.
    - It was determined that the receiving system is not tidally influenced due to the constrictions imposed by the bridge at the railroad crossing at Delaney Creek and then to East Bay and the culvert constriction at the unnamed creek to McKay Bay; the large contributing basin areas to each of these locations, and the narrow channels to each of the bays.
    - Another consideration is the mean high tide levels in the channels. If the mean high tide levels for the bays are above the top of bank of the channels to the bay, this would be an indication that the system is tidal at that point. However, this is only with regards to the channels themselves this does not consider constrictions such as culverts. If the mean high tide levels for the bays are less than the top of bank of the channels to the bay then the channelized flow with head losses is not considered tidal (i.e., riverine).
    - The mean high tide would be the minimum tailwater to model the boundary nodes at each of the bays.
    - East Bay. Site 8726674. Mean high tide appears to be 0.52 ft NAVD88
    - McKay Bay. Site 8726667. Mean high tide appears to be 0.52 ft NAVD88
    - It is possible the some of the project on the west most side (i.e., Causeway Blvd) may drain without constrictions (i..e, culverts, bridge, narrow channels) to each of the bays.
- This area is within a brownfield site with FDEP.
- Consultant discussed that floodplain compensation difficult to provide without additional wetland impacts and FDEP brownfield issues and site will peak far earlier than the channels.
- East Bay is in the Tampa Bay nitrogen consortium, thus, nitrogen impaired.

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- An additional pre-application meeting will be scheduled to discuss the environmental concerns for this FDOT project. Please note there are wetlands associated with the proposed roadway improvements and wetland

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impacts may result from the proposed construction, but the final design has not been reached so the total is not clear. This meeting was to discuss the floodplain compensation in the area of Delaney Creek and an Unnamed Creek, both discharging to Tampa Bay.

- Provide the limits of jurisdictional wetlands and surface waters as they relate to the project area. Roadside ditches or other water conveyances, including permitted and constructed water conveyance features, can be claimed as surface waters per Chapter 62-340 F.A.C. if they do not meet the definition of a swale as stated under Rule 403.803 (14) F.S.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- Determine SHWL's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands.
- Determine 'pop-off' locations and elevations of wetlands.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- WBIDs need to be independently verified by the consultant - WBIDs 1584C, East Bay, 1584B, McKay Bay, 1625, 1605D and 1637
- Possibly discharging to impaired waters.
- Document/justify SHWE's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands.
- Determine 'pop-off' locations and elevations of wetlands.
- Provide documentation to support tailwater conditions for quality and quantity design
- Proposed control structures in wetlands should be consistent with existing 'pop-off' elevations of wetlands; demonstrate no adverse impacts to wetland hydroperiod for up to 2.33yr mean annual storm.
- Stormwater retention and detention systems are classified as moderate sanitary hazards with respect to public and private drinking water wells. Stormwater treatment facilities shall not be constructed within 100 feet of an existing public water supply well and shall not be constructed within 75 feet of an existing private drinking water well. Subsection 4.2, A.H.V.II.
- Any wells on site should be identified and their future use/abandonment must be designated.
- Contamination issues need to be resolved with the FDEP (i.e., brownfield area). Check FDEP MapDirect layer for possible contamination points within/adjacent to the project area. FDEP MapDirect Link
  For known contamination within the site or within 500' beyond the proposed stormwater management system:
  - after the application is submitted, please contact FDEP staff listed below and provide them with the ERP Application ID # along with a mounding analysis (groundwater elevation versus distance) of the proposed stormwater management system that shows the proposed groundwater mound will not adversely impact the contaminated area. FDEP will review the plans submitted to the District and mounding analysis to determine any adverse impacts. Provide documentation from FDEP that the proposed construction will not result in adverse impacts. This is required prior to the ERP Application being deemed complete.
  - If a SWMS is to be constructed within a contamination zone area, a groundwater sample collected from the first aquifer water bearing zone (i.e. zone of saturation or first zone that the water table is encountered) will most likely be required.
  For known offsite contamination between 500' and 1500' beyond the site:
  - FDEP may also require a mounding analysis (groundwater elevation versus distance) for the proposed stormwater systems. SWFWMD will issue the permit when contamination sites are located outside the 500 ft radius prior to concurrence from DEP, however, it is the Permittee's responsibility to resolve contaminated site assessment concerns with the FDEP prior to beginning any construction activities. A permit condition will be used to reiterate this. You are advised to contact DEP as soon as possible, preferably during permit application period.
  FDEP Contacts:
  - For projects located within Citrus, Hernando, Pasco, Hillsborough, Pinellas, Manatee, Polk and Hardee Counties: Yanisa Angulo yanisa.angulo@floridadep.gov

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- For projects located within Sarasota, DeSoto, Highlands and Charlotte Counties: Gary Maier Gary.Maier@FloridaDEP.gov
- For projects located within Marion, Lake and Sumter Counties: Lu Burson Lu.burson@floridadep.gov
- For projects located within Levy County: Craig Parke Craig.parke@floridadep.gov

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- For projects or portions of projects that discharge to a closed basin, limit the post-development 100-year discharge volume to the pre-development 100-year, 24-hour volume.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable. Providing cup-for-cup storage in dedicated areas of excavation is the preferred method of compensation~~.~~ if no impacts to flood conveyance are proposed and storage impacts and compensation occur within the same basin. In this case, tabulations should be provided at 0.5-foot increments to demonstrate encroachment and compensation occur at the same levels. Otherwise, storage modeling will be required to demonstrate no increase in flood stages will occur on off-site properties, using the mean annual, 10-year, 25-year, and 100-year storm events for the pre- and post-development conditions.
- Please be aware that if there is credible historical evidence of past flooding or the physical capacity of the downstream conveyance or receiving waters indicates that the conditions for issuance will not be met without consideration of storm events of different frequency or duration, applicants shall be required to provide additional analyses using storm events of different duration or frequency than the 25-year 24-hour storm event, or to adjust the volume, rate or timing of discharges. [Section 3.0 Applicant's Handbook Volume II]

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for entire project area and all contributing off-site flows.
- In addition, if the project discharges to an impaired water body, must provide a net environmental improvement.
- Also, replace treatment function of existing ditches to be filled.
- <u>Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:</u>
  -Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.
  -Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.
  -All co-mingled existing & new impervious that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
  -However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II); if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious only. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
  -Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts.
  -Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.
- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.
- Provide additional 50% treatment for any direct discharges to OFW. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(f).
- Please be advised that although use of isolated wetlands for ERP treatment purposes is permittable as per Section 4.1(a)(3), A.H.V.II, use of isolated wetlands for treatment purposes may not necessarily meet US Army Corps criteria.
- <u>Net improvement</u>
  -Refer to rule 62-330.301(2), F.A.C.

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-Applicant may demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(g).
-Effluent filtration is known to be ineffective for treating nutrient related impairments, unless special nutrient adsorption media provided. However, please note special nutrient adsorption media has extremely low conductivity values compared to typical sand type effluent filtration filter media. Note: if treatment volume required for net improvement is less than the treatment volume required for 'presumptive' treatment, then use of effluent filtration is ok.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- The project may be located within state owned sovereign submerged lands (SSSL). Be advised that a title determination will be required from FDEP to verify the presence and/or location of SSSL.
- If use of SSSL is proposed, authorization will be required. Refer to Chapter 18-21, F.A.C. and Chapter 18-20, F.A.C. for guidance on projects that impact SSSL and Aquatic Preserves.
- Coordination with the Tampa Port Authority for projects located in Hillsborough County is recommended.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.
- Provide Homeowners Association (HOA) or Property Owners Association (POA) documents and affidavit. Refer to ERP Applicant's Handbook Vol. I Subsection 12.3.4 and Section 7 of the References and Design Aids for Vol. I.
- The HOA/POA documents, covenants, and deed restrictions will need to address any docking facility, boat uses, wetland, wetland mitigation, and all other applicable regulatory and proprietary restrictions that are a result of the requested uses.

Application Type and Fee Required:

- SWERP – Sections A, C, and E of the ERP Application.
- Consult the fee schedule for different thresholds.

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- Provide a copy of the legal description (of all applicable parcels within the project area) in one of the following forms:
  a. Deed with complete Legal Description attachment.
  b. Plat.
  c. Boundary survey of the property(ies) with a sketch.

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

  ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies*

  DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here; Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.*

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- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]
- If lowering of SHWE is proposed, then burden is on Applicant to demonstrate no adverse onsite or offsite impacts as per Subsection 3.6, A.H.V.II. Groundwater drawdown 'radius of influence' computations may be required to demonstrate no adverse onsite or offsite impacts. Please note that new roadside swales or deepening of existing roadside swales may result in lowering of SHWE. Proposed ponds with control elevation less than SHWE may result in adverse lowering of onsite or offsite groundwater.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

Waterbody	Node	Description	Corrected Effective	Proposed Roadway Improvements	Cross drain Improvements
			100Y 1D	100Y 1D	100Y 1D
Delaney Creek	210030	Upstream of CSX West bridge	6.27	6.29	6.31
	210040	Downstream of US 41 bridge	7.45	7.45	7.50
	210050	Upstream of US 41 bridge	7.92	7.98	7.92
Unnamed Creek	230020	Downstream of 47th St cross drain	3.51	3.51	3.52
	230030	Upstream of 47th St cross drain	4.29	4.28	4.30
	230040	Upstream of US 41 cross drain	6.09	6.14	6.03
	230050	Further upstream	9.20	9.20	9.20

From: Bob Dasta
To: Joseph Baan
Subject: RE: PA 408072 US 41 and Causeway/CSX
Date: Wednesday, December 2, 2020 12:51:18 PM
Attachments: image001.png

Hi Joe,

Sorry for the delay in my response. I also hope you and your family had a Happy Thanksgiving.

The District has used the logic of rounding rises that are less than 0.05 feet (i.e., would round to 0.00 feet, for example 0.04 feet) on a case-by-case basis. There are several factors which determine if/when this is applied. Some factors include, but not limited to, whether these sites are where no reported flooding problems or complaints have occurred in the area (if there are reported flooding problems/complaints then there should be no increase at all); the location of the rises (i.e., within the top of bank of existing ditches, etc.); the duration of these rises; and other factors. Based on the location of the rises that we discussed in the pre-application meeting (i.e., within the top of bank of Delaney Creek just prior to the tidal system or within the channels to the tidal system), it is possible that this logic can be applied for this project as it would be expected that these rises (< 0.05 feet) would not result in adverse impacts.

Thanks,

Bob

Bob Dasta, P.E.
Professional Engineer
Environmental Resource Permit Bureau
Regulation Division
Southwest Florida Water Management District
7601 Highway 301 North
Tampa, FL 33637-6759
(800) 836-0797 or (813) 985-7481, extension 6105
Robert.Dasta@swfwmd.state.fl.us

From: Joseph Baan <jbaan@rkk.com>
Sent: Wednesday, December 2, 2020 11:09 AM
To: Bob Dasta <Robert.Dasta@swfwmd.state.fl.us>
Subject: RE: PA 408072 US 41 and Causeway/CSX

[EXTERNAL SENDER] Use caution before opening.
Bob,

I hope you had a good Thanksgiving. I didn't hear back on the email below. Does this sound reasonable?

Thanks,

JOE BAAN, PE, CFM
Project Manager | Transportation
863.333.4583 P | 863.670.9361 C

From: Joseph Baan
Sent: Tuesday, November 24, 2020 9:08 AM
To: 'Bob Dasta' <Robert.Dasta@swfwmd.state.fl.us>
Cc: Monte Ritter <Monte.Ritter@swfwmd.state.fl.us>; Rob McDaniel <Rob.McDaniel@swfwmd.state.fl.us>; Dave Kramer <dave.kramer@swfwmd.state.fl.us>
Subject: RE: PA 408072 US 41 and Causeway/CSX

Bob,

It sounds like we will be required to model our project in the Delaney Creek SWMM Model to ensure no significant stage increases. Based on our pre-app on 3/12/2020, we will need to model the 10YR24HR, 25YR24HR and 100YR24HR storm events. In the past, I understand FDOT D7 has been allowed a modeling peak stage tolerance of 0.05'. Can you confirm this tolerance will also be acceptable for this project?

Thanks,

JOE BAAN, PE, CFM
Project Manager | Transportation
863.333.4583 P | 863.670.9361 C

From: Bob Dasta <Robert.Dasta@swfwmd.state.fl.us>
Sent: Monday, November 23, 2020 8:58 AM
To: Joseph Baan <jbaan@rkk.com>
Cc: Monte Ritter <Monte.Ritter@swfwmd.state.fl.us>; Rob McDaniel <Rob.McDaniel@swfwmd.state.fl.us>; Dave Kramer <dave.kramer@swfwmd.state.fl.us>
Subject: PA 408072 US 41 and Causeway/CSX

Joe,

I discussed with the tidal receiving system and tidal floodplain issues with Monte Ritter, Chief Engineer with the District. Monte conducted the ETDM (US 41 at CSX Grade Separation, ETDM #14345 PA #405960). It was determined that the receiving system is not tidally influenced due to the constrictions imposed by the bridge at the railroad crossing at Delaney Creek and then to East Bay and the culvert constriction at the unnamed creek to McKay Bay; the large contributing basin areas to each of these locations, and the narrow channels conveying the runoff to each of the bays. Another important consideration is the mean high tide levels in the channels. If the mean high tide levels for the bays are above the top of bank of the channels to the bay, this would be an indication that the system is tidal at that point. However, this is only with regards to the channels themselves this does not consider constrictions such as culverts. If the mean high tide levels for the bays are less than the top of bank of the channels to the bay then the channelized flow with head losses is not considered tidal (i.e., riverine). The mean high tide appears to be 0.52 ft NAVD88 for both bays. It is possible the some of the project on the west most side (i.e., Causeway Blvd) may drain without constrictions (i..e, culverts, bridge, narrow channels) to each of the bays.

Thanks,

Bob

Bob Dasta, P.E.
Professional Engineer
Environmental Resource Permit Bureau
Regulation Division
Southwest Florida Water Management District
7601 Highway 301 North
Tampa, FL 33637-6759
(800) 836-0797 or (813) 985-7481, extension 6105
Robert.Dasta@swfwmd.state.fl.us

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RK&K is an equal opportunity employer that values diversity at all levels. RK&K does not discriminate in employment on the basis of race, color, religion, sex (including pregnancy), national origin, political affiliation, sexual orientation, marital status, disability, genetic information, age, parental status, military and veteran status, and any other characteristic protected by applicable law. Consistent with the requirements of Title VI of the Civil Rights Act of 1964, as amended and other nondiscrimination laws and authorities, we also note that RK&K does not discriminate in its selection or retention of subcontractors on the grounds of race, color, or national origin. We also note that RK&K will ensure that Minorities will be afforded full opportunity to submit proposals and not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

From: Dollman, Kyle <DollmanK@hillsboroughcounty.org>
Sent: Monday, March 8, 2021 11:47 AM
To: Joseph Baan
Cc: Erik Fleming; Branan Anderson; Celani, Anthony L.; OBrien, Tim; Liz Lorello
Subject: RE: 440749-1 | US 41 at CSX | Delaney Creek No-Rise Determination

Joe,

You're correct. Per the latest preliminary FIRM and FIS, US41 at Delaney Creek will not be within the regulatory floodway once the preliminary products become effective. The County expects FEMA to issue the Letter of Final Determination (LFD) for these preliminary products on April 7th, 2021. This would mean that the preliminary FIS and FIRMs would become effective on October 7th, 2021.

While there is no reason to believe that the preliminary FIRM and FIS will change here, it could theoretically happen between now and the time the preliminary products become effective. The chances of this, however, are extremely slim.

If you are anticipating permitting and construction activities to occur after October 7th, 2021, I would agree that you would want to use the preliminary FIS and FIRM to evaluate your floodway no-rise requirement. Based on these products as they currently stand, you would not be required to meet the floodway no-rise certification criteria.

However, if you plan to obtain a permit prior to October 7th, 2021 (again, this is an estimate based on when FEMA will issue the LFD), a floodway no-rise analysis and certification would still be required, as the effective maps would show US41 at Delaney Creek within the floodway.

Hope this helps. Please let me know if you have any additional questions.

Thank you

Kyle Dollman, P.E., CFM
Floodplain Administrator
Stormwater Services Section
Technical Services Division
Engineering and Operations Department

P: (813) 599-2509
E: DollmanK@HillsboroughCounty.org
W: HCFLGov.net

From: Joseph Baan <jbaan@rkk.com>
Sent: Monday, March 8, 2021 10:45 AM
To: Dollman, Kyle <DollmanK@hillsboroughcounty.org>
Cc: Erik Fleming <efleming@rkk.com>; Branan Anderson <banderson@kcaeng.com>; Celani, Anthony L. <Anthony.Celani@dot.state.fl.us>; OBrien, Tim <Tim.OBrien@dot.state.fl.us>; Liz Lorello

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<llorello@rkk.com>
Subject: 440749-1 | US 41 at CSX | Delaney Creek No-Rise Determination

[External]

Kyle,

RK&K is designing the drainage for improvements to US 41 and Causeway Boulevard, which includes replacement of Bridge 100048 over Delaney Creek. Delaney Creek is a Floodway on effective FEMA FIRM Panel 12057C0367H (see attached FIRMETTE) dated 8/28/2008. As you know, this panel is being revised by a Coastal Flood Risk Map Update. The preliminary FIRM (attached) shows the Delaney Creek floodway ending approximately ½ mile upstream of the US 41 crossing. Therefore, the US 41 crossing should no longer require a no-rise when the preliminary FIRM becomes effective. The analysis for the update is complete and comment period has closed. A Letter of Determination from FEMA is anticipated in Spring of 2021, making the revisions effective in Fall 2021. The Phase II (60%) design of the US 41 project is scheduled to be complete in mid-2022 with construction at least two years after that.

We would like to respectfully request your concurrence that the preliminary FIRM should be used for this project and a no-rise would not be required if construction occurs after the preliminary FIRM becomes effective. The project will still go through the standard environmental permitting process with SWFWMD and other regulatory agencies.

Please let me know if you have any questions.

Thanks,

JOE BAAN, PE, CFM
Project Manager | Transportation

RK&K
402 S. Kentucky Avenue, Suite 400
Lakeland, FL 33801

863.333.4583 P | 863.670.9361 C
www.rkk.com

Responsive People | Creative Solutions

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RK&K is an equal opportunity employer that values diversity at all levels. RK&K does not discriminate in employment on the basis of race, color, religion, sex (including pregnancy), national origin, political affiliation, sexual orientation, marital status, disability, genetic information, age, parental status, military and veteran status, and any other characteristic protected by applicable law. Consistent with the requirements of Title VI of the Civil Rights Act of 1964, as amended and other nondiscrimination laws and authorities, we also note

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Meeting Minutes

Date: October 5, 2022
To: Craig Fox
Re: Pond Siting Coordination Meeting

Meeting: Drainage Coordination Meeting
Date: October 4, 2022
Time: 1:30 pm
Location: District 7 Office (11201 N. McKinley Drive, Tampa, FL 33612) and MS Teams
Attendees: FDOT – Kirk Bogen, Craig Fox, Robin Rhinesmith, Bill McTeer, Manny Marsh, Robert Blenton, Allison Conner, Anthony Celani (virtual), Abdul Waris (virtual), Joel Johnson (virtual), Barry Lenz (virtual), Marcel Goss (virtual)
FDOT GEC – Caroline Cation Smith
RK&K – Liz Lorello, Joe Baan (virtual), Vishal Verma, Brett Berube (virtual)
KCA – Branan Anderson

Meeting Notes:

<u>Introduction</u>

- The meeting began with an introduction of the participants.
- Craig introductions; Status update on 15% Line & Grade; concept updates - flyover removal
- Pre-app meeting with SWFWMD; Update Delaney creek model 0.04' rise
    - No FPC; No increase in flood stage
- Design Approach:
    - 3 basins with pond alternatives
        - Basins 1 and 2 draining to Delaney Creek
        - Basin 3 draining north to Unnamed Creek
        - All basins ultimately outfall to McKay Bay
    - Existing southern basin divide located at Hartford
        - Project limits have been extended further south
        - Currently assuming entire project limits draining to Pond 1
            - Project to south is expected to be constructed second

<u>Right of Way Discussion</u>

Basin 1

- Pond 1A site looks feasible due to the property encroachment from the roadway improvements
- Pond 1D - Bill McTeer- partial take with building
    - Bill - Can 1D be adjusted to the east to avoid the building structure and impact the existing parking area, and pipe along property line

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- Liz – hydraulically, yes
- Bill - Otherwise you will be purchasing the entire property
  - No access from US 41
  - Joe - Access directly to ramp may not be feasible
  - Review access to the property if reconfigured to the east
- Any possibility for connecting basins 1 & 2?
  - Joe - Crossing creek would be challenging and expensive given elevations, but possible

- Pond 1C - Brett - environmental concerns
  - Marcel Goss - contamination concerns with 1C - suggest dropping this alternative; Location adjacent to brownfield site regulated by FDEP
- Robin Rhinesmith - Does RK&K have someone who runs EST tool?
  - Joe Baan - yes
  - Robin also referred to the AOI tool
  - Brett confirmed that we can access these tools and shared a matrix of the pond sites comparing the cultural and contamination risks during the meeting

Basin 1 Consensus: Remove 1C and proceed with 1A, 1B, & 1D (reconfigured)

Basin 2

- Craig - a lot of movement within the area due to contamination; FDEP looking to make adjustments to areas in order for development
  - Marcel - all ponds in Basin 2 are within brownfield sites; These sites have not been fully evaluated for the level of contamination and will require further investigation
  - Exide battery site; Historically - Ground up batteries spread around site before FDEP regulated
- Pond 2E - Bill - look at 2E; Possibly cleaner from an environmental standpoint
  - Brett - wetlands and other surface waters located within site 2E; Blocked off and under security by FDEP
  - Bill - Move 2E to the paintball property; Can justify the take due to environmental concerns elsewhere
- Pond 2C – Bill - any opportunities for 2C to be full take?
  - Bill - any opportunities for 2C to be full take?
    - Look into reconfiguring pond to maximize pond usage
    - Bill to Craig - Look to see if Exide is willing to sell entire 2C (Early acquisition opportunity)
- Kirk Bogen – only need up to two pond sites to be evaluated; up to three is desirable but not required
  - Can justify environmental concerns in the area for just the two sites

Basin 2 Consensus: Expand 2C & use Paintball site for 2E; Eliminate all other alternatives

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Basin 3

- Liz - existing ponds at northeast and northwest corners of Causeway intersection will be impacted by the roadway improvements; These ponds need to be reconfigured to meet the drainage requirements of the existing conditions
    - Looking to combine those ponds to maintain the existing drainage patterns and compensation
    - Additional right of way to the west of the existing pond on the northwest corner will be required to maintain the existing drainage condition. It is shown in yellow on the maps.
    - Bill - This pond needs to be identified as 3A and will be required for all alternatives
- Bill - Anything between El Camino Blanco, Sagasta, and Causeway desirable for full take
- Pond 3A - Bill prefers 3A blue
    - May need to expand 3A adjacent to Sagasta and could possibly eliminate Sagasta connection to Causeway Blvd. since motorists will have opportunity to access Causeway Blvd. directly from the signal at 47th St.
    - Could also consider using the southern portion of County R/W along El Camino Blanco Blvd. to eliminate the need for northern 3A adjacent to 47th St.
- Pond 3B – google street view shows site to be under development
- Pond 3C – showing residential takes
    - Possibly take the commercial piece in 3C to eliminate impacts to residents and combine with one or two of the commercial sites within 3D as an alternative
- Marcel documented pre-existing contamination for petroleum removal from sites adjacent to 47th St.
    - Bill - Mainline improvements already impacting the property so contamination cleanup will likely be required either way

Basin 3 Consensus: Adjust yellow east of Sagasta to include the 2 parcel takes and call that 3A, change 3A blue to 3B and evaluate closing Sagasta connection to expand 3B - check hydraulics, eliminate 3A north, and reconfigure 3C to commercial only. Add what is needed from 3D for 3C hydraulic needs. Eliminate Pond 3B as an alternative.

<u>Action Items:</u>

1. Basin 1: Remove 1C and proceed with 1A, 1B, & 1D (reconfigured - becomes 1C)
2. Basin 2: Evaluate expanding 2C to become 2A (full parcel take); Evaluate paintball property for 2E to be reconfigured for use - becomes 2B
3. Basin 3: Adjust yellow shape east of Sagasta to include the 2 parcel takes and call that 3A, change 3A blue to 3B and evaluate closing Sagasta connection to expand 3B - check hydraulics, eliminate 3A north, and reconfigure 3C to commercial only and add what we need from 3D for 3C hydraulic needs.
4. Updated exhibits to be provided to D7 meeting invites

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VI. Environmental

a. Wetlands and Other Surface Waters

i. Urbanized area with mostly commercial and industrial land uses, minor residential areas adjacent to project study area.

ii. 8.21 acres of wetlands and other surface waters present within the project study area

iii. Includes two tidally-influenced systems

1. Delaney Creek – Under US 41, approx. 0.55 miles south of Causeway Blvd. and drains west to East Bay; historically channelized
2. Unnamed Tributary – Under US 41, approx. 875 feet north of Causeway Blvd. and drains west to McKay Bay

iv. Polygon delineations have not been field-reviewed agency staff

v. Direct and secondary impacts from the project total approximately 0.293 acre of wetland impacts.

vi. Approx. 0.143 acre of direct WL impacts (0.063 acre from roadway improvements and 0.08 acre from the preferred pond sites)

vii. Approx. 0.08 acre of direct impact to one OSW occurring within NRCS-designated hydric soils entirely from proposed pond outfall (confirm if mitigation required)

viii. Approx. 0.15 acre of secondary wetland impacts (0.08 acre from roadway improvements and 0.07 acre from preferred pond sites)

b. Anticipated Mitigation

i. UMAM assessments have been completed but not field-reviewed with agency staff

ii. Direct wetland impacts from the project (0.143 acre) will result in an estimated functional loss of 1.11 units.

1. Roadway impacts - 0.063 acre resulting in a functional loss of 0.05 unit
2. Pond site impacts - 0.08 acre resulting in a functional loss of 0.06 unit.

iii. Secondary wetland impacts - 0.15 acre will result in an estimated functional loss of 0.02 unit.

a. roadway improvements - 0.08 acre of impacts resulting in a functional loss of 0.01 unit
b. Pond sites - 0.07 acre of impacts resulting in a functional loss of 0.01 unit.

iv. All impacts within the Tampa Bay basin.

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v. The project will result in impacts to mangrove mitigation sites for adjacent superfund parcels. Any special considerations anticipated for this? (ERP could not be found for mitigation project on SWFWMD mapper)

vi. USACE RIBITS database reviewed on November 9, 2022. *A recent review indicates that sufficient estuarine forested mitigation credits are available (but subject to change).*

Bank Name	Credit Classification	Assessment Method	Basin	Available Credits
Mangrove Point MB	Estuarine Intertidal Emergent and Estuarine Intertidal Forested	UMAM	Tampa Bay	0.97 emergent 4.22 forested
Nature Coast MB	Palustrine Forested, Palustrine Emergent Estuarine Intertidal Emergent, and Estuarine Intertidal Forested	UMAM	Tampa Bay	2.66 forested (palustrine) 0.33 emergent (palustrine) 1.57 emergent (estuarine) 8.15 forested (estuarine)
Tampa Bay MB	Estuarine Intertidal Emergent, Estuarine Intertidal Forested, Palustrine Emergent, and Palustrine Open Water	E-WRAP WRAP	Tampa Bay	21.63 emergent (estuarine) 0.20 forested (estuarine) 6.88 emergent (palustrine) 2.94 open water (palustrine)

c. Listed/Protected Species

i. Primarily wood stork and wading birds, FL sandhill crane, eastern indigo snake

ii. Very low potential for involvement with federally-protected manatee and fish species

iii. No evidence of gopher tortoises/burrows observed in upland areas.

VII. *Russell – As per standard process, SWFWMD will need a field review to verify wetland boundaries, jurisdictional limits and UMAM functional assessment. Mitigation bank credits are tough to come by in the Tampa Bay basin, so FDOT will need letter of credit reservation prior to permit application submittal. Recommended that FDOT coordinate with Tampa Port Authority (TPA) on Sovereign Submerged Lands limits determination. Joel clarified that FDOT is exempt from TPA's Minor Works permits, but not SSL requirement. Would need to coordinate this with Hillsborough County. Russell also mentioned that manatee grates may be required due to tidal connection. Gordon mentioned downstream constrictions (CSX RR timber bridge on Delaney Creek and S. 47th St. culverts. More data is being collected on these features to see if these would negate the need for grates on the future drainage structure crossings under US 41 and pond outfall locations.*

VIII. Open Discussion

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THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER:

PA 409994

Date:	12/1/22
Time:	10 am
Project Name:	BAR - US 41 and Causeway/CSX
District Engineer:	Bob Dasta
District ES:	Russell Martin, Chaz LaRiche
Attendees:	Craig Fox – FDOT; Greg Lee, RK&K Joel Johnson – FDOT, Tony Celani – FDOT Joe Baan - RK&K, Liz Lorello - RK&K, Gordon Mullen - RK&K, Branan Anderson

County:	Hillsborough	**Sec/Twp/Rge:**	27,28,29,33,34/29/19
Total Land Acreage:		**Project Acreage:**	Acres

Prior On-Site/Off-Site Permit Activity:

- PA 408072
- ERP – 27063.000
- ETDM – 14345

Project Overview:

- FDOT Project; ETDM #14345
- Comments provided - A pre-application meeting for this project was held on November 19, 2020, with Bob Dasta and Chaz LaRiche as representatives from SWFWMD. Given the time that has passed since the initial pre-application meeting and revisions which have been made to the project, an updated pre-application meeting is requested with these staff.
- Project appears to be located within WBIDs 1584C, 1584B, 1625, 1615, 1605D, 1636 and 1637. WBIDs 1584B and 1584C discharges to Tampa Bay. Tampa Bay is designated as a Category 4b water body and does not meet water quality standard for nitrogen. Discharges within these WBIDs will need to be met net improvement for total nitrogen.
- Potential to proposed to lower existing seasonal high water table (SHWT) elevation in Pond 3A-3D location by lowering orifice of these ponds below the SHWT elevation. Demonstrate compliance with Section 3.6, A.H.V.II.
- Refer to PA 408072 notes including associated emails (attached)

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- 8.2 acres of wetlands associated with Delany Creek tidal areas and unnamed McBay tributary. Will mitigate impacts in mitigation banks. 1.11 FL units, mostly estuarine forested. FWC manatee grates may not be needed due to downstream pipes blocking access.
- Provide the limits of jurisdictional wetlands and surface waters. Roadside ditches or other water conveyances, including permitted and constructed water conveyance features, can be claimed as surface waters per Chapter 62-340 F.A.C. if they do not meet the definition of a swale as stated under Rule 403.803 (14) F.S.
- Demonstrate elimination and reduction of wetland impacts. The elimination and reduction criteria can be found in subsection 10.2.1 of Applicant's Handbook Volume 1. Be advised that the use of subsection 10.2.1.2 (a) of the handbook may put the project in conflict with the state's 404 program. Coordination with the DEP, the during application review process, is recommended if the applicant wishes to use subsection 10.2.1.2 (a).

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- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- The site is located in the Tampa Bay ERP Basin. Mitigation Banks that serve this area include the Nature Coast, Mangrove Point and Tampa Bay. For an interactive map of permitted mitigation banks and their service areas, use this LINK. Be advised that use of a bank with a modified service area (i.e. a service area that is larger than the basin the bank is located in), may require the submittal of a cumulative impact analysis pursuant to subsection 10.2.8 of Applicant's Handbook volume 1.
- If the wetland mitigation is appropriate and the applicant is proposing to utilize mitigation bank credit as wetland mitigation, provide a letter of reservation of credits from the wetland mitigation bank. The wetland mitigation bank current credit ledgers can be found out the following link: https://www.swfwmd.state.fl.us/business/epermitting/environmental-resource-permit, Go to "ERP Mitigation Bank Wetland Credit Ledgers"
- Determine SHWL's at pond locations, wetlands, and OSWs.
- Determine 'pop-off' locations and elevations of wetlands.
- Please note, the Florida Department of Environmental Protection (FDEP) has assumed the Federal dredge and fill permitting program under section 404 of the Federal Clean Water Act within certain waters. State 404 Program streamlining intentions direct Agency staff to coordinate joint site visits for overall consistency between the two State programs. As such, District staff and the FDEP will need to conduct a joint site visit for evaluation of the wetland/surface water systems proposed for impact. District staff will coordinate with FDEP staff on determining dates/times of joint Agency availability. Upon determination of joint availability, staff will provide the applicant's representative with site visit scheduling options. A site visit will not be scheduled until the appropriate signatures on the application and the fee is submitted.

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

-

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- For projects or portions of projects that discharge to a closed basin, limit the post-development 100-year discharge volume to the pre-development 100-year, 24-hour volume.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Watershed Model information may be available for download using the following link: https://watermatters.sharefile.com/d-s8c9019e00fd243908654e733a6b2016c
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable. Providing cup-for-cup storage in dedicated areas of excavation is the preferred method of compensation~~.~~ if no impacts to flood conveyance are proposed and storage impacts and compensation occur within the same basin. In this case, tabulations should be provided at 0.5-foot increments to demonstrate encroachment and compensation occur at the same levels. Otherwise, storage modeling will be required to demonstrate no increase in flood stages will occur on off-site properties, using the mean annual, 10-year, 25-year, and 100-year storm events for the pre- and post-development conditions.
- Please be aware that if there is credible historical evidence of past flooding or the physical capacity of the downstream conveyance or receiving waters indicates that the conditions for issuance will not be met without consideration of storm events of different frequency or duration, applicants shall be required to provide additional analyses using storm events of different duration or frequency than the 25-year 24-hour storm event, or to adjust the volume, rate or timing of discharges. [Section 3.0 Applicant's Handbook Volume II]

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for entire project area and all contributing off-site flows.
- In addition, if the project discharges to an impaired water body, must provide a net environmental improvement.
- Also, replace treatment function of existing ditches to be filled.
- Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:
  -Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.

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-Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.
-All co-mingled existing & new impervious that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
-However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II); if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious only. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
-Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts.
-Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.

- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.
- Provide additional 50% treatment for any direct discharges to OFW. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(f).

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- Coordination with the Tampa Port Authority for projects located in Hillsborough County is recommended.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.

Application Type and Fee Required:

- SWERP – Sections A, C, and E of the ERP Application.
- Consult the fee schedule for different thresholds.

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- Provide a copy of the legal description (of all applicable parcels within the project area) in one of the following forms:
  a. Deed with complete Legal Description attachment.
  b. Plat.
  c. Boundary survey of the property(ies) with a sketch.

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

  ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies*

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DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here; Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.*

- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]
- If lowering of SHWE is proposed, then burden is on Applicant to demonstrate no adverse onsite or offsite impacts as per Subsection 3.6, A.H.V.II. Groundwater drawdown 'radius of influence' computations may be required to demonstrate no adverse onsite or offsite impacts. Please note that new roadside swales or deepening of existing roadside swales may result in lowering of SHWE. Proposed ponds with control elevation less than SHWE may result in adverse lowering of onsite or offsite groundwater.
- On December 17, 2020, the Environmental Protection Agency (EPA) formally transferred permitting authority under CWA Section 404 from the U.S. Army Corps of Engineers (Corps) to the State of Florida for a broad range of water resources within the State. The primary State 404 Program rules are adopted by the Florida Department of Environmental Protection (FDEP) as Chapter 62-331 of the Florida Administrative Code (F.A.C.). While the State 404 Program is a separate permitting program from the Environmental Resource Permitting program (ERP) under Chapter 62-330, F.A.C., and agency action for State 404 Program verifications, notices, or permits shall be taken independently from ERP agency action, the FDEP and the Southwest Florida Water Management District (SWFWMD) will be participating in a Joint application Process. Upon submittal of an ERP application that proposes dredge/fill activities in wetlands or surface waters within state assumed waters, the SWFWMD will forward a copy of your application to the FDEP for activities under State 404 jurisdiction. The applicant may choose to have the State 404 Program and ERP agency actions issued concurrently to help ensure consistency and reduce the need for project modifications that may occur when the agency actions are issued at different times. Additional information on the FDEP's 404 delegation can be found at: https://floridadep.gov/water/submerged-lands-environmental-resources-coordination/content/state-404-program

  Additionally, for those projects located in areas where the Corps retains jurisdiction, the applicant is advised that the District will not send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

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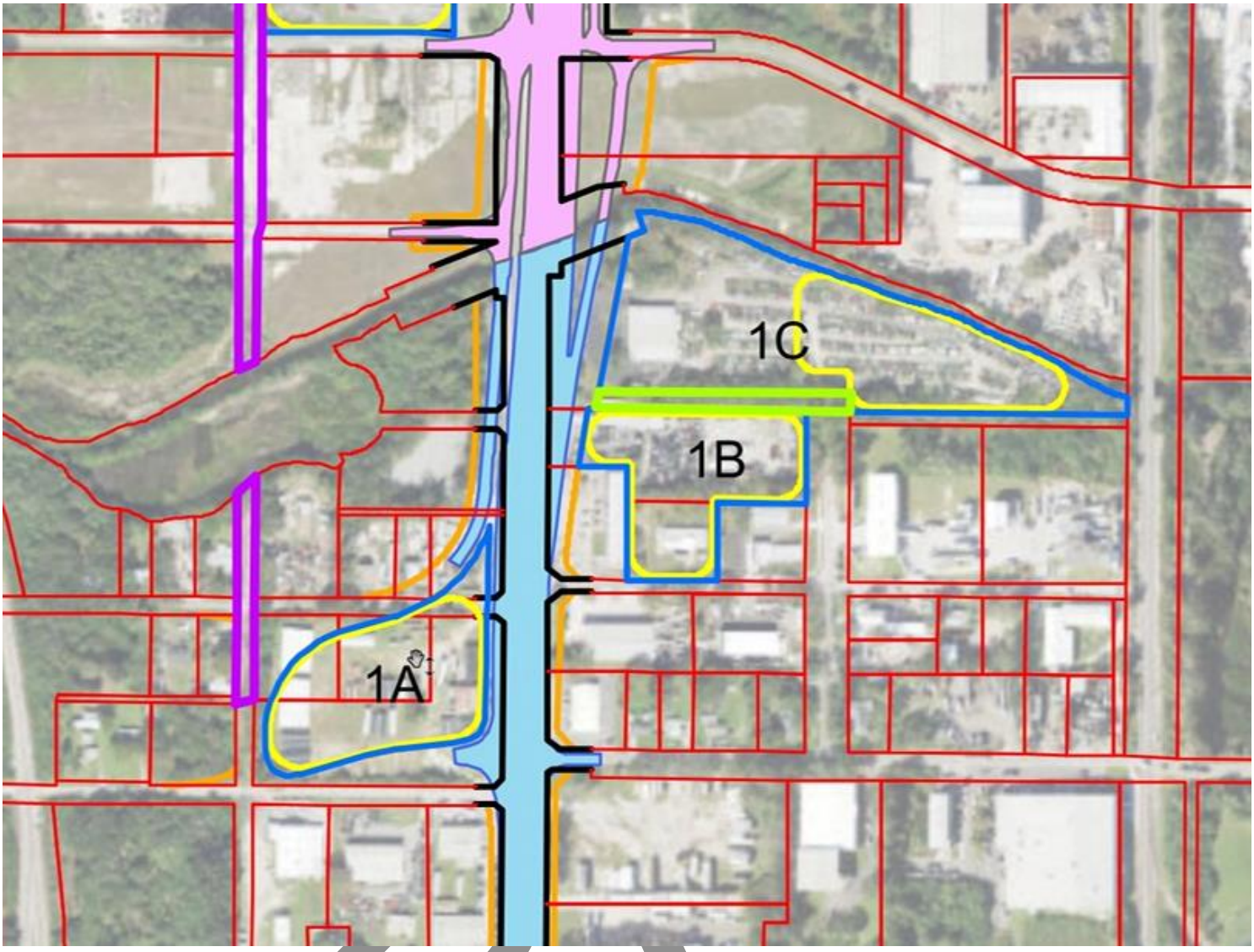

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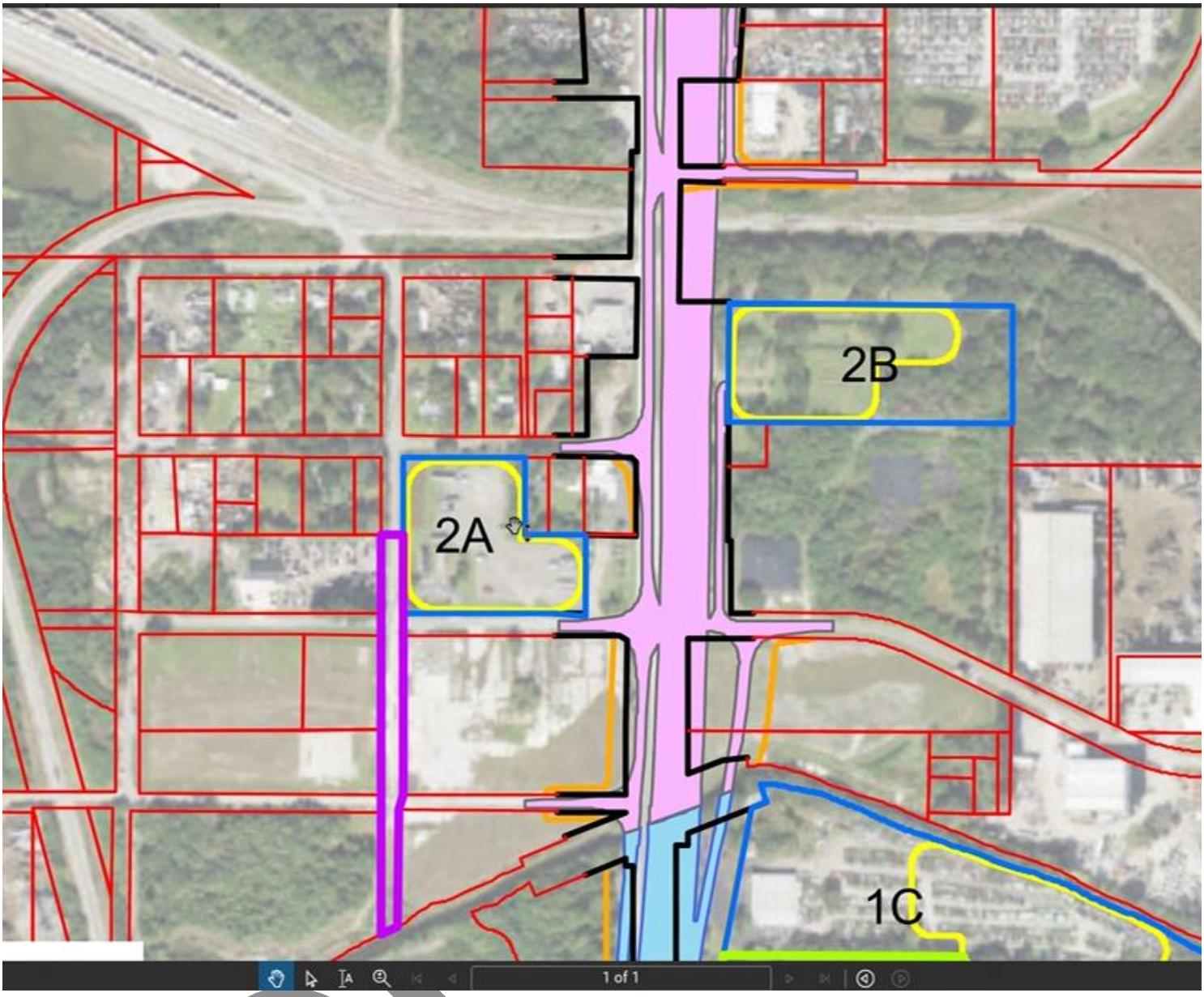

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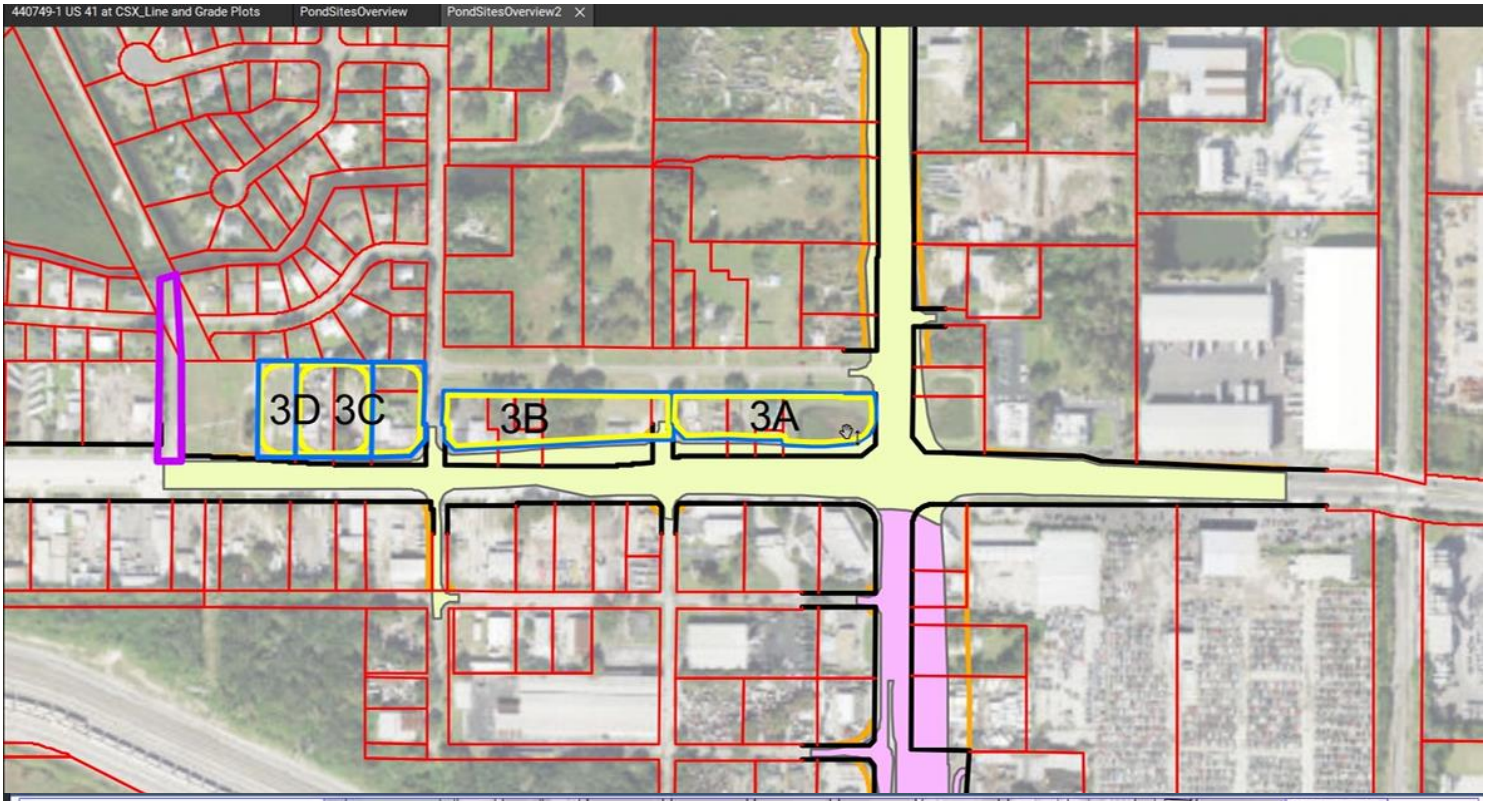
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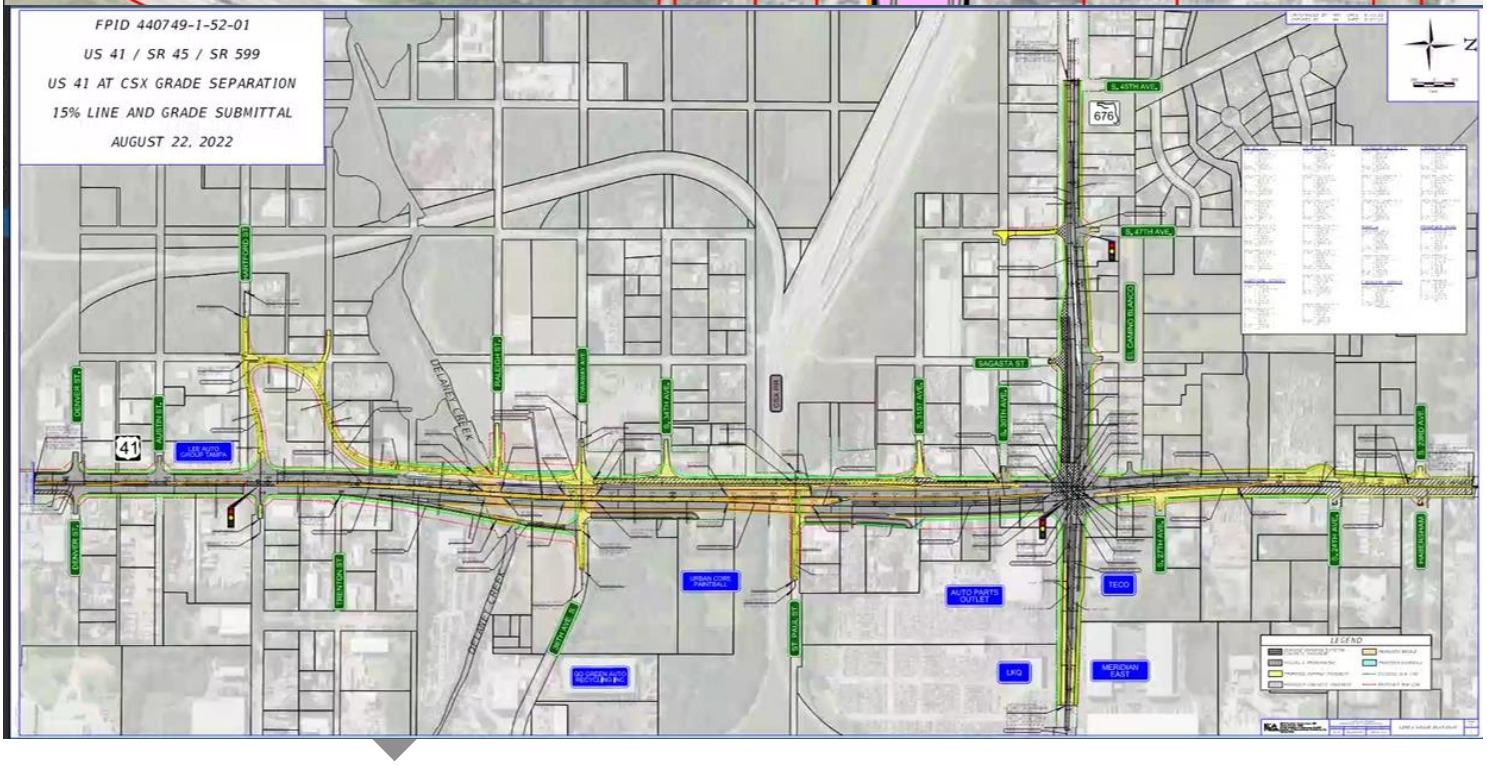
FPID 440749-1-52-01
US 41 / SR 45 / SR 599
US 41 AT CSX GRADE SEPARATION
15% LINE AND GRADE SUBMITTAL
AUGUST 22, 2022
41
676
SAGASTA ST
DELANEY CREEK
AUTO PARTS OUTLET
TECO
MERIDIAN EAST
LEGEND

THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER: PA 408072

Date:	11/19/2020
Time:	11 am
Project Name:	BAR PA 408072 US 41 and Causeway/CSX
District Engineer:	Bob Dasta
District ES:	Chaz LaRiche
Attendees:	Joseph Baan, RK&K (Drainage), Liz Lorello, RK&K (Drainage), Erik Fleming, RK&K (Roadway), Branan Anderson, KCA (Roadway), Craig Fox, FDOT (Project Manager), Abdul Waris, FDOT (Drainage), Anthony Celani, FDOT (Drainage)

County:	Hillsborough	**Sec/Twp/Rge:**	27,28,29,33,34/29/19
Total Land Acreage:		**Project Acreage:**	acres

Prior On-Site/Off-Site Permit Activity:

- ERP – 27063.000
- ETDM – 14345

Project Overview:

- From US 41 at Trenton Street to US 41 at S. 23rd Ave
- Capacity and operational improvements on US 41/SR45/SR 599 from south of the SR 676/Causeway Boulevard intersection to north of the SR 676/Causeway Boulevard intersection
- ~100 ft span bridge at railroad crossing over Delaney creek. Based on LIDAR, this measured approximately 70 ft from top of bank to top of bank.
- Pre/post modeling shows rises downstream between railroad track along Delaney Creek (0.05 ft). No rises further modeled west of the railroad track. This would be considered an adverse impact since the system is not tidal, especially prior to the span bridge at CSX (and the culvert at the unnamed creek to the north).
- Discussed with staff (Monte Ritter) after the pre-application to determine if tidal.
    - It was determined that the receiving system is not tidally influenced due to the constrictions imposed by the bridge at the railroad crossing at Delaney Creek and then to East Bay and the culvert constriction at the unnamed creek to McKay Bay; the large contributing basin areas to each of these locations, and the narrow channels to each of the bays.
    - Another consideration is the mean high tide levels in the channels. If the mean high tide levels for the bays are above the top of bank of the channels to the bay, this would be an indication that the system is tidal at that point. However, this is only with regards to the channels themselves this does not consider constrictions such as culverts. If the mean high tide levels for the bays are less than the top of bank of the channels to the bay then the channelized flow with head losses is not considered tidal (i.e., riverine).
    - The mean high tide would be the minimum tailwater to model the boundary nodes at each of the bays.
    - East Bay. Site 8726674. Mean high tide appears to be 0.52 ft NAVD88
    - McKay Bay. Site 8726667. Mean high tide appears to be 0.52 ft NAVD88
    - It is possible the some of the project on the west most side (i.e., Causeway Blvd) may drain without constrictions (i..e, culverts, bridge, narrow channels) to each of the bays.
- This area is within a brownfield site with FDEP.
- Consultant discussed that floodplain compensation difficult to provide without additional wetland impacts and FDEP brownfield issues and site will peak far earlier than the channels.
- East Bay is in the Tampa Bay nitrogen consortium, thus, nitrogen impaired.

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- An additional pre-application meeting will be scheduled to discuss the environmental concerns for this FDOT project. Please note there are wetlands associated with the proposed roadway improvements and wetland

impacts may result from the proposed construction, but the final design has not been reached so the total is not clear. This meeting was to discuss the floodplain compensation in the area of Delaney Creek and an Unnamed Creek, both discharging to Tampa Bay.

- Provide the limits of jurisdictional wetlands and surface waters as they relate to the project area. Roadside ditches or other water conveyances, including permitted and constructed water conveyance features, can be claimed as surface waters per Chapter 62-340 F.A.C. if they do not meet the definition of a swale as stated under Rule 403.803 (14) F.S.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- Determine SHWL's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands.
- Determine 'pop-off' locations and elevations of wetlands.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- WBIDs need to be independently verified by the consultant - WBIDs 1584C, East Bay, 1584B, McKay Bay, 1625, 1605D and 1637
- Possibly discharging to impaired waters.
- Document/justify SHWE's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands.
- Determine 'pop-off' locations and elevations of wetlands.
- Provide documentation to support tailwater conditions for quality and quantity design
- Proposed control structures in wetlands should be consistent with existing 'pop-off' elevations of wetlands; demonstrate no adverse impacts to wetland hydroperiod for up to 2.33yr mean annual storm.
- Stormwater retention and detention systems are classified as moderate sanitary hazards with respect to public and private drinking water wells. Stormwater treatment facilities shall not be constructed within 100 feet of an existing public water supply well and shall not be constructed within 75 feet of an existing private drinking water well. Subsection 4.2, A.H.V.II.
- Any wells on site should be identified and their future use/abandonment must be designated.
- Contamination issues need to be resolved with the FDEP (i.e., brownfield area). Check FDEP MapDirect layer for possible contamination points within/adjacent to the project area. FDEP MapDirect Link

  For known contamination within the site or within 500' beyond the proposed stormwater management system:

  - after the application is submitted, please contact FDEP staff listed below and provide them with the ERP Application ID # along with a mounding analysis (groundwater elevation versus distance) of the proposed stormwater management system that shows the proposed groundwater mound will not adversely impact the contaminated area. FDEP will review the plans submitted to the District and mounding analysis to determine any adverse impacts. Provide documentation from FDEP that the proposed construction will not result in adverse impacts. This is required prior to the ERP Application being deemed complete.
  - If a SWMS is to be constructed within a contamination zone area, a groundwater sample collected from the first aquifer water bearing zone (i.e. zone of saturation or first zone that the water table is encountered) will most likely be required.

  For known offsite contamination between 500' and 1500' beyond the site:

  - FDEP may also require a mounding analysis (groundwater elevation versus distance) for the proposed stormwater systems. SWFWMD will issue the permit when contamination sites are located outside the 500 ft radius prior to concurrence from DEP, however, it is the Permittee's responsibility to resolve contaminated site assessment concerns with the FDEP prior to beginning any construction activities. A permit condition will be used to reiterate this. You are advised to contact DEP as soon as possible, preferably during permit application period.

  FDEP Contacts:

  - For projects located within Citrus, Hernando, Pasco, Hillsborough, Pinellas, Manatee, Polk and Hardee Counties: Yanisa Angulo yanisa.angulo@floridadep.gov

- For projects located within Sarasota, DeSoto, Highlands and Charlotte Counties: Gary Maier Gary.Maier@FloridaDEP.gov
- For projects located within Marion, Lake and Sumter Counties: Lu Burson Lu.burson@floridadep.gov
- For projects located within Levy County: Craig Parke Craig.parke@floridadep.gov

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- For projects or portions of projects that discharge to a closed basin, limit the post-development 100-year discharge volume to the pre-development 100-year, 24-hour volume.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).
- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable. Providing cup-for-cup storage in dedicated areas of excavation is the preferred method of compensation if no impacts to flood conveyance are proposed and storage impacts and compensation occur within the same basin. In this case, tabulations should be provided at 0.5-foot increments to demonstrate encroachment and compensation occur at the same levels. Otherwise, storage modeling will be required to demonstrate no increase in flood stages will occur on off-site properties, using the mean annual, 10-year, 25-year, and 100-year storm events for the pre- and post-development conditions.
- Please be aware that if there is credible historical evidence of past flooding or the physical capacity of the downstream conveyance or receiving waters indicates that the conditions for issuance will not be met without consideration of storm events of different frequency or duration, applicants shall be required to provide additional analyses using storm events of different duration or frequency than the 25-year 24-hour storm event, or to adjust the volume, rate or timing of discharges. [Section 3.0 Applicant's Handbook Volume II]

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for entire project area and all contributing off-site flows.
- In addition, if the project discharges to an impaired water body, must provide a net environmental improvement.
- Also, replace treatment function of existing ditches to be filled.
- Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:
  -Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.
  -Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.
  -All co-mingled existing & new impervious that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
  -However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the new impervious area only. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II); if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious only. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
  -Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts.
  -Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.
- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.
- Provide additional 50% treatment for any direct discharges to OFW. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(f).
- Please be advised that although use of isolated wetlands for ERP treatment purposes is permittable as per Section 4.1(a)(3), A.H.V.II, use of isolated wetlands for treatment purposes may not necessarily meet US Army Corps criteria.
- Net improvement
  -Refer to rule 62-330.301(2), F.A.C.

-Applicant may demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(g).
-Effluent filtration is known to be ineffective for treating nutrient related impairments, unless special nutrient adsorption media provided. However, please note special nutrient adsorption media has extremely low conductivity values compared to typical sand type effluent filtration filter media. Note: if treatment volume required for net improvement is less than the treatment volume required for 'presumptive' treatment, then use of effluent filtration is ok.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- The project may be located within state owned sovereign submerged lands (SSSL). Be advised that a title determination will be required from FDEP to verify the presence and/or location of SSSL.
- If use of SSSL is proposed, authorization will be required. Refer to Chapter 18-21, F.A.C. and Chapter 18-20, F.A.C. for guidance on projects that impact SSSL and Aquatic Preserves.
- Coordination with the Tampa Port Authority for projects located in Hillsborough County is recommended.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.
- Provide Homeowners Association (HOA) or Property Owners Association (POA) documents and affidavit. Refer to ERP Applicant's Handbook Vol. I Subsection 12.3.4 and Section 7 of the References and Design Aids for Vol. I.
- The HOA/POA documents, covenants, and deed restrictions will need to address any docking facility, boat uses, wetland, wetland mitigation, and all other applicable regulatory and proprietary restrictions that are a result of the requested uses.

Application Type and Fee Required:

- SWERP – Sections A, C, and E of the ERP Application.
- Consult the fee schedule for different thresholds.

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- Provide a copy of the legal description (of all applicable parcels within the project area) in one of the following forms:
  a. Deed with complete Legal Description attachment.
  b. Plat.
  c. Boundary survey of the property(ies) with a sketch.

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

  ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies*

  DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here; Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.*

- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]
- If lowering of SHWE is proposed, then burden is on Applicant to demonstrate no adverse onsite or offsite impacts as per Subsection 3.6, A.H.V.II. Groundwater drawdown 'radius of influence' computations may be required to demonstrate no adverse onsite or offsite impacts. Please note that new roadside swales or deepening of existing roadside swales may result in lowering of SHWE. Proposed ponds with control elevation less than SHWE may result in adverse lowering of onsite or offsite groundwater.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

Waterbody	Node	Description	Corrected Effective (inches)	Proposed Roadway Improvements (inches)	Crossdrain Improvements (inches)
Delaney Creek	210000	Upstream of 25th West bridge	6.27	6.29	6.31
	210060	Downstream of US 41 bridge	7.45	7.45	7.54
	210050	Upstream of US 41 bridge	7.92	7.93	7.92
Unnamed Creek	250000	Downstream of 17th St crossdrain	3.5	3.51	3.52
	250060	Upstream of 8th St crossdrain	4.29	4.28	4.30
	250040	Upstream of US 41 crossdrain	6.09	6.11	6.03
	250050	Further upstream	9.20	9.20	9.20

emails PA 408072.pdf

SWFWMD Pre-Application Meeting - Agenda
FPID 440749-1-52-01
BAR – PA 409994 US 41 and Causeway/CSX

Date: 12/01/2022
Time: 10:00 AM – 11:00 AM
Location: Microsoft Office Teams

I. Introductions

a. FDOT District 7 – Craig Fox, PE (Proj. Mgr.), Anthony (Tony) Celani, PE (Drainage), Joel Johnson (Environmental Permitting)
b. SWFWMD – Bob Dasta, PE, Russell Martin, Chaz LaRiche
c. Consultant Team – RK&K – Joe Baan, PE (Consultant PM / Drainage), Liz Lorello PE (Drainage), Greg Lee, PE (Drainage), Gordon Mullen (Environmental), KCA - Branan Andersen, PE (Roadway)

II. Project Overview

a. Previous Pre-Application Meetings 3/12/2020 and 11/19/2020
   i. *Craig introduced the project and the proposed grade separation over CSX. He discussed the general changes in the design concept form what had been discussed with SWFWMD previously and what was presented at the November 2019 Alternatives Public Workshop. Major changes include: the removal of flyover ramp from NB US 41 to WB Causeway Blvd., shifted alignment and reduced limits along Causeway Blvd. west of US 41, extended limits along US 41 further to the south, roadway loop at Hartford St.,*
b. Grade separation over CSX with capacity and operational improvements
c. Recommended Alternative
d. Status

III. Design Criteria

a. Treatment
   i. Confirm only new pavement (*includes some compensatory treatment of existing areas*)
   ii. Impaired WBIDs - *The consultant did not anticipate direct discharges to impaired water bodies. Bob mentioned that WBIDs 1584B & 1584C are nutrient-impaired. The project may be within these WBIDs. RK&K will confirm as part of their drainage design/documentation.*
   iii. Confirm no nutrient loading (*Joe suggested that this would likely not be considered a direct discharge, over 1.5 miles from East Bay along Delaney Creek and over 0.75 miles from McKay Bay.*)

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b. Attenuation
    i. Delaney Creek Watershed Model
    ii. No impacts that round to 0.1' or greater (*Bob clarified this as* no increase at or above *0.05'*)
    iii. Required storm events (*Bob – SWFWMD criteria are the mean annual, 10-year, 25-year, 100-year storm events.*)

IV. Floodplain

a. Included in watershed model

V. Pond Siting

a. Finishing up PD&E Pond Siting Report. Currently evaluating 2-3 ponds per basin (3 alternatives in southern Basin 1, which discharges to tidally-influenced Delaney Creek); middle Basin 2 (2 pond alternatives, which also drain to Delaney Creek), and northern Basin 3 (3 alternatives, which discharge to the unnamed tributary to McKay Bay)

b. Bridge Hydraulic Report is in progress. Currently comparing a bridge to a box culvert alternative at Delaney Creek. There is also some flow through the proposed 36th St bridge during extreme storm events.

c. Phase II/60% design plans should be ready March 2023. Following FDOT review/comment and subsequent revisions, ERP application submittal anticipated in Summer 2023.

d. Joe discussed major industrial land uses. Gordon discussed existing elevated contamination levels locally. FDOT will evaluate this further and complete remediation as needed prior to construction.

e. Pond 3A/3B – propose to bore a cross drain hydraulically connecting both ponds to function as one pond. This would propose to lower the existing water table locally due to base clearance water elevation. It is anticipated to reduce the pond control elevation by 1 foot below SHWT to intentionally lower water table to protect the roadway. No potable water wells in this area. Will not impact unnamed tributary to McKay Bay (or associated wetlands) since it is lower in elevation. Bob indicated this was feasible as long as the criteria in SWFWMD Applicant's Handbook Section 3.6 are satisfactorily addressed.

f. Potential contamination involvement at several proposed pond sites. FDOT will clean-up as applicable/required. SWFWMD recommended consultation with FDEP that they have no issues.

g. Underdrains – direct discharge to Delaney Creek and the unnamed tributary. Bob asked Joe to clarify if this was from a water quality standpoint. Joe/Branan confirmed that this is the case. If compensatory treatment has been done within the same systems, this should not be a problem.

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VI. Environmental

a. Wetlands and Other Surface Waters

i. Urbanized area with mostly commercial and industrial land uses, minor residential areas adjacent to project study area.

ii. 8.21 acres of wetlands and other surface waters present within the project study area

iii. Includes two tidally-influenced systems

1. Delaney Creek – Under US 41, approx. 0.55 miles south of Causeway Blvd. and drains west to East Bay; historically channelized
2. Unnamed Tributary – Under US 41, approx. 875 feet north of Causeway Blvd. and drains west to McKay Bay

iv. Polygon delineations have not been field-reviewed agency staff

v. Direct and secondary impacts from the project total approximately 0.293 acre of wetland impacts.

vi. Approx. 0.143 acre of direct WL impacts (0.063 acre from roadway improvements and 0.08 acre from the preferred pond sites)

vii. Approx. 0.08 acre of direct impact to one OSW occurring within NRCS-designated hydric soils entirely from proposed pond outfall (confirm if mitigation required)

viii. Approx. 0.15 acre of secondary wetland impacts (0.08 acre from roadway improvements and 0.07 acre from preferred pond sites)

b. Anticipated Mitigation

i. UMAM assessments have been completed but not field-reviewed with agency staff

ii. Direct wetland impacts from the project (0.143 acre) will result in an estimated functional loss of 1.11 units.

1. Roadway impacts - 0.063 acre resulting in a functional loss of 0.05 unit
2. Pond site impacts - 0.08 acre resulting in a functional loss of 0.06 unit.

iii. Secondary wetland impacts - 0.15 acre will result in an estimated functional loss of 0.02 unit.

a. roadway improvements - 0.08 acre of impacts resulting in a functional loss of 0.01 unit
b. Pond sites - 0.07 acre of impacts resulting in a functional loss of 0.01 unit.

iv. All impacts within the Tampa Bay basin.

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v. The project will result in impacts to mangrove mitigation sites for adjacent superfund parcels. Any special considerations anticipated for this? (ERP could not be found for mitigation project on SWFWMD mapper)

vi. USACE RIBITS database reviewed on November 9, 2022. *A recent review indicates that sufficient estuarine forested mitigation credits are available (but subject to change).*

Bank Name	Credit Classification	Assessment Method	Basin	Available Credits
Mangrove Point MB	Estuarine Intertidal Emergent and Estuarine Intertidal Forested	UMAM	Tampa Bay	0.97 emergent 4.22 forested
Nature Coast MB	Palustrine Forested, Palustrine Emergent Estuarine Intertidal Emergent, and Estuarine Intertidal Forested	UMAM	Tampa Bay	2.66 forested (palustrine) 0.33 emergent (palustrine) 1.57 emergent (estuarine) 8.15 forested (estuarine)
Tampa Bay MB	Estuarine Intertidal Emergent, Estuarine Intertidal Forested, Palustrine Emergent, and Palustrine Open Water	E-WRAP WRAP	Tampa Bay	21.63 emergent (estuarine) 0.20 forested (estuarine) 6.88 emergent (palustrine) 2.94 open water (palustrine)

c. Listed/Protected Species

i. Primarily wood stork and wading birds, FL sandhill crane, eastern indigo snake

ii. Very low potential for involvement with federally-protected manatee and fish species

iii. No evidence of gopher tortoises/burrows observed in upland areas.

VII. *Russell – As per standard process, SWFWMD will need a field review to verify wetland boundaries, jurisdictional limits and UMAM functional assessment. Mitigation bank credits are tough to come by in the Tampa Bay basin, so FDOT will need letter of credit reservation prior to permit application submittal. Recommended that FDOT coordinate with Tampa Port Authority (TPA) on Sovereign Submerged Lands limits determination. Joel clarified that FDOT is exempt from TPA's Minor Works permits, but not SSL requirement. Would need to coordinate this with Hillsborough County. Russell also mentioned that manatee grates may be required due to tidal connection. Gordon mentioned downstream constrictions (CSX RR timber bridge on Delaney Creek and S. 47th St. culverts. More data is being collected on these features to see if these would negate the need for grates on the future drainage structure crossings under US 41 and pond outfall locations.*

VIII. Open Discussion

DRAFT

Liz Lorello

From: Bob Dasta <Robert.Dasta@swfwmd.state.fl.us>
Sent: Friday, December 9, 2022 10:43 AM
To: Joseph Baan
Cc: Liz Lorello; Craig.Fox@dot.state.fl.us; Greg Lee; Gordon Mullen; Johnson, Joel; Celani, Anthony L.; Kevin.ODonnell; Jessica.Mostyn@FloridaDEP.gov
Subject: RE: 440749-1 US 41 at CSX | Nutrient Loading

EXTERNAL EMAIL: Do not click links or open attachments unless you trust the 'Sender' and know the content is safe.

Joe,

Yes, that is correct regarding WBIDs 1584B and WBID 1584C.

However, I wanted to point our that the other WBIDs that the project discharges to are also on FDEP's Study List and Delist. It should be noted that the District has been requiring net improvement when a WBID is impaired for dissolved oxygen with no causative pollutant determined since nutrients are often a cause of low dissolved oxygen levels.

In this case, however, I would contact Kevin O'Donnell, Kevin.ODonnell@FloridaDEP.gov, or Jessica Mostyn, Jessica.Mostyn@FloridaDEP.gov, with FDEP to determine if these impairments are nutrient related. It is difficult to determine if nutrients are related to these impairments based on the comments provided within these FDEP lists.

Please note too that because a pollutant is on the FDEP Delist that does not always mean that the WBID is not impaired due to that pollutant. The comments are important as sometimes a pollutant is delisted only because a TMDL program has been approved for that pollutant while the WBID remains impaired.

Kevin or Jessica will have more detailed information regarding the nature of the impairment for these WBIDs.

Current FDEP Study List:

1636	Port Sutton Ditch	Estuary	3M	Dissolved Oxygen (Percent Saturation)	4d	Stud

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1605D	Delaney Creek (Tidal)	Estuary	3M	Dissolved Oxygen (Percent Saturation)	4d	Stud

1615	Drainage to Mckay Bay	Estuary	3M	Dissolved Oxygen (Percent Saturation)	4d	Stud

Current FDEP Delist:

1636	Port Sutton Ditch	Estuary	3M		Dissolved Oxygen (Percent Saturation)		4d

1605D	Delaney Creek (Tidal)	Estuary	3M		Nutrients (Chlorophyll-a)	TN = 3.50 (n=102) TP = 0.25 (n=104) BOD = 1.7 (n=61)	3b
1605D	Delaney Creek (Tidal)	Estuary	3M		Dissolved Oxygen (Percent Saturation)		4d

DRAFT

1615	Drainage to McKay Bay	Estuary	3M		Dissolved Oxygen (Percent Saturation)		4d

Thanks,

Bob Dasta, P.E.
Professional Engineer
Environmental Resource Permit Bureau
Regulation Division
Southwest Florida Water Management District
7601 Highway 301 North
Tampa, FL 33637-6759
(813) 985-7481
Direct: (813) 445-6298
Robert.Dasta@swfwmd.state.fl.us

DRAFT

From: Joseph Baan <jbaan@rkk.com>
Sent: Thursday, December 8, 2022 4:31 PM
To: Bob Dasta <Robert.Dasta@swfwmd.state.fl.us>
Cc: Liz Lorello <llorello@rkk.com>; Craig.Fox@dot.state.fl.us; Greg Lee <glee@rkk.com>; Gordon Mullen <gmullen@rkk.com>; Johnson, Joel <Joel.Johnson@dot.state.fl.us>; Celani, Anthony L. <Anthony.Celani@dot.state.fl.us>
Subject: 440749-1 US 41 at CSX | Nutrient Loading

[EXTERNAL SENDER] Use caution before opening.
Bob,

I appreciate your time earlier today. As I mentioned on the phone and as shown in the attached figure, The US 41 at CSX project is within WIBDs 1615, 1605D, and 1636. These WBIDs are not impaired for nutrients, based on the FDEP Comprehensive Verified List. As noted in the attached pre-app minutes, WBIDs 1584B and 1584C discharge directly to Tampa Bay, which does not meet water quality standards for nitrogen. Any direct discharges to those two WBIDs would require nutrient loading analysis, with a focus on nitrogen.

Our project discharge points are approximately one mile upstream of the border of WBID 1584B and WBID 1584C. I understand from our conversation that this project will not be required to provide nutrient loading analysis because we have no direct discharges to WBIDs 1584B and 1584C. Based on that, we will complete our pond siting analysis and move forward with design utilizing presumptive criteria.

Please confirm if I understood correctly.

Thanks,

JOE BAAN, PE
Project Delivery Leader | Transportation

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www.rkk.com

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Meeting Minutes
FPID 440749-1-52-01

Date: December 15, 2022
To: Craig Fox
Re: FDEP Coordination Meeting

Meeting: FDEP Coordination Meeting
Date: December 14, 2022
Time: 3:00 pm
Location: MS Teams
Attendees: FDOT – Craig Fox, Anthony Celani, Joel Johnson
FDEP – Kevin O'Donnell, Jessica Mostyn
RK&K – Joe Baan, Liz Lorello, Greg Lee, Gordon Mullen
KCA – Dean Grumbach

Meeting Notes:

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Introduction

- The meeting began with an introduction of the project.
- Craig Fox explained that this project concept has changed a few times over the past two years.
- Working on environmental and design schedules concurrently (SWAT). Construction is anticipated in 2025.
- Joe explained that the project will be providing wet treatment for the new impervious area, per SWFWMD requirements.
- Pre-Application meeting was held with SWFWMD on December 1, 2022.
- There are no direct discharges to East Bay or McKay Bay. The project discharges to Delaney Creek south of Causeway Blvd. and to an unnamed creek north of Causeway Blvd.

WBID Discussion

- Project is located within WBIDs 1615 (Drainage to McKay Bay), 1605D (Delaney Creek – Tidal), and 1636 (Port Sutton Ditch).
- Project directly discharges to WBIDs 1615 and 1605D. WBID 1615 is impaired for Enterococci. WBID 1605D is impaired for Enterococci, Copper, Iron, and Lead.
- WBIDs 1584B (McKay Bay) and 1584C (East Bay) are adjacent to the project and are within the Tampa Bay Nitrogen Management Consortium. The project does not directly discharge to these WBIDs.

- Kevin provided a brief overview of what the FDEP considers an impaired water and noted that it does differ from the regulatory agency definition: Impaired waters are on the impaired list, Regional Assurance Plan (RAP), or have an assigned Total Maximum Daily Load (TMDL).
- Kevin stated that if the receiving water body is covered by a RAP for a nutrient then a nutrient loading analysis is required.
- The WBIDs directly associated with the project are not on the Verified Impaired List for dissolved oxygen, nitrogen, phosphorous, or nutrients. They are on the current FDEP Study List for dissolved oxygen.
- Kevin believes that the dissolved oxygen listing in the study is likely attributed to the lack of flushing within the tidal waters instead of nutrients. He further added that new impervious area is not likely to impact the dissolved oxygen.
- Jessica mentioned that the total nitrogen and phosphates within the waters were not elevated and therefore, she doesn't believe that they are effecting the dissolved oxygen.
- Joe mentioned that the proposed FDOT project would clean up existing contamination from petroleum and other sources within the right of way and provide a net benefit to the area.
- The project does not discharge to a verified impaired water body that would traditionally require nutrient loading analysis.
- FDEP does not see a reason to require nutrient loading analysis if SWFWMD does not. This is because the project is separated from the bay and not immediately adjacent to it. FDEP defers to SWFWMD as the lead permitting agency to determine if nutrient loading analysis is required or if presumptive criteria is sufficient.
- Joel asked if Kevin and Jessica will receive the application. Kevin said they typically do not.

<u>Action Items</u>

- None

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Meeting Minutes

Date: January 20, 2023
To: Craig Fox
Re: Bridge Drift Clearance Meeting

Meeting: Bridge Drift Clearance Meeting
Date: January 19, 2023
Time: 3:30 pm
Location: MS Teams
Attendees: FDOT –Craig Fox, Anthony Celani, Abdul Waris
FDOT GEC – Mohit Garg
RK&K – Liz Lorello, Joe Baan, Gordon Mullen
KCA – Branan Anderson, Guillermo Madriz, Carlos Layrisse

Meeting Notes:

Drift Clearance

1. Joe Baan and Branan Anderson summarized the current state of the project design effort. The design team is currently working on Phase II plans. The bridge hydraulic report (BHR) was previously submitted and the bridge development report (BDR) will be submitted within the next week. Joe explained that this meeting was called because a comment was raised about whether or not drift clearance should include predicted sea level rise.
   The ERC comment/response is as follows:
   Comment: *Does Bridge Alternative provide a 2ft drift clearance including sea level rise of 0.91ft reported in BHR? Does this alternative require a profile adjustment?*
   Response: *The mainline bridge is providing well over 2.91 feet. The frontage road and Ramp A bridges are meeting the minimum 2 feet. We would like to set up a meeting to discuss this comment.*
   The design team clarified all bridges over Delaney Creek, including the US 41 mainline bridges, are currently established with the low member clearance of 2-feet. The profile update came after the Draft BHR was submitted for review/comment.
2. The proposed crossing of Delaney Creek was discussed. The existing crossing is an aging concrete box culvert. The BDR compares a box culvert and bridge alternatives. Carlos Layrisse explained that replacement with a proposed box culvert would be more challenging because of constructability and MOT issues.
3. The design team explained that the 15% line & grade was prepared assuming a 2.0’ drift clearance without including predicted sea level rise per previous discussions and coordination with FDOT.
4. Potential hazards associated with a reduction in drift clearance due to sea level rise were discussed. The channel is not considered navigable so vessel impact is not anticipated. The most

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significant impact risk was determined to be a large tree or other storm debris during an extreme riverine event. The design will also need to account for water pressure against the side of the bridge during a storm surge event, which has much higher stages than a riverine event. It was hypothesized that the water pressure against the bridge in a storm surge condition would far exceed the force of storm debris during a future riverine peak stage condition if sea level rise becomes a reality.

5. Abdul requested that the bridge be designed to accommodate the structural water loading associated with a storm surge event and an analysis be performed to determine the scour associated with a 10% debris blockage during a riverine event.
6. Buoyancy was brought up by Mohit. Joe Baan explained that drift clearance is provided over the riverine peak stage but the storm surge is much higher at approximately 12'. Guillermo stated that a statement would be added to the BDR explaining that buoyancy will be considered if the bridge alternative were selected.

Action Items:

1. RK&K to prepare a riverine storm surge analysis assuming a 10% blockage of the bridge opening.
2. KCA to include language in the BDR stating that the bridge would be designed to mitigate buoyancy and to sustain a storm surge event.

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Meeting Minutes

Date: January 20, 2023
To: Craig Fox
Re: Final Pond Site Selection Meeting

Meeting: Final Pond Site Selection Meeting
Date: January 20, 2023
Time: 9:00 am
Location: D7 HQ-Planning & MS Teams
Attendees: FDOT – Craig Fox, Kirk Bogen, Anthony (Tony) Celani, Marcel Goss, Bill McTeer, Robert Blanton, Joseph (Joe) Murphy, Kenneth (Ken) Madden
RK&K – Liz Lorello, Joe Baan, Gordon Mullen
KCA – Branan Anderson

Meeting Notes:

Basin One

1. Liz and Craig presented the pond siting graphic and alternatives evaluation matrix from the Draft Pond Siting Report (PSR) showing Alternatives 1A, 1B and 1C that were considered for this basin (see attachment). Pond 1A was determined to be the clear preference due to resource impacts (particularly contamination involvement) and lowest right-of-way cost. It was discussed that the property owners comprising Pond 1A have approached the FDOT as willing sellers. Craig will send the PSR to Joe M. for his review/use. Joe M. will look to pursue these as advanced acquisitions. **Pond 1A is the selected alternative.**

Basin Two

1. Ponds 2A and 2B were subsequently discussed via the graphic and matrix. Joe M. mentioned that Pond 2A would be a total take. Pond 2B would be less expensive and likely not be a total take, but would result in an un-economical parcel remainder, with FDOT ultimately acquiring the whole parcel. The use of Pond 2B has recently changed from a commercial paintball facility to a truck/materials storage via a lease agreement with the property owner. Bill noted that the truck/materials storage facility business would not be eligible for receipt of business damages as it had not existed on-site 5 years prior to the future date of acquisition. Marcel noted that both sites are immediately adjacent to documented brownfield contamination areas but agreed that Pond 2B would likely require less remediation/clean-up work. Joe M. will look to pursue this as an advanced acquisition as well and asked for Craig to send him contact information for the property owner's attorney. Branan provided this in the chat portion of this meeting. Joe M. asked why the maintenance road from S. 36th Avenue was needed and if it was possible to bridge US 41 over a pond maintenance access from the west side of US 41 (preferably under the proposed bridge over

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the CSX railroad to the north). He suggested this might limit ROW acquisition needed along the east side of US 41. **Pond 2B is the selected alternative.**

Basin Three

1. Pond alternatives 3A, 3B, 3C and 3D were reviewed next. Bill emphasized that acquisition of the 3A parcels was already a project necessity for the roadway improvements. The mainline Causeway Blvd. improvements will also impact 3B parcels and may potentially increase based on tweaks being considered for the roadway typical section. 3B parcels may be left with un-economical remainders. Branan confirmed that a median divider beyond 4 feet in width would require more of the 3A and 3B parcels and the horizontal geometry could impact the TECO parcel in the NE quadrant of the US 41/Causeway Blvd. intersection. KCA is actively working to avoid hitting the TECO parcel. Bill agreed and confirmed the TECO property will require high ROW costs associated with impacts to this parcel. Bill discussed prior excessive cost requests from TECO on the prior Causeway Blvd. widening project.
2. Craig explained that the prior design concept had shown impacts to the properties along the south side of Causeway Blvd., west of US 41. However, based on the particular local land use zoning (i.e., which allow the current uses) relative to other areas of Hillsborough County and the potential severity of impacts, the design concept was shifted to the north and is now the Preferred Alternative.
3. Joe M. agreed that ponds 3A and 3B were reasonable preferences based the extent of proposed roadway encroachment and the avoidance of several other business takes. The sites identified for ponds 3C and 3D only require minor roadway frontage impacts. He recommended that if ponds 3A and 3B were to be connected, that coordination begin ASAP with Hillsborough County regarding vacating the existing Sagasta Street ROW portion between Causeway Blvd. and El Camino Blanco Blvd. **Ponds 3A and 3B are the selected alternatives.**
4. There may be a need to expand the 3A and 3B ponds into the existing El Camino right of way. Bill mentioned the need to include the extra water currently directed to the roadside ditch along the S. side of El Camino Blanco Blvd. into our calculations for the Pond 3A and 3B facility if this option is required.
5. Joe M. will look to pursue 3A and 3B as advanced acquisitions and will proceed with contacting the applicable property attorneys.
6. There was brief discussion regarding the need to relocate the TECO electric transmission line along the north side of Causeway Blvd. to accommodate ponds 3A and 3B.
7. Gordon asked Kirk if EMO had any issues with the selection of alternatives 1A, 2B, 3A and 3B as the final pond sites. Kirk had no objection.
8. Tony asked for clarification of which ponds would require liners to avoid/minimize potential contamination impacts. Liz stated that a portion of Pond 3A in the NE quadrant of the US 41/Causeway Blvd. intersection (not labelled in the graphic) already has a liner and it may need to remain in the post-construction condition. Additional reviews will be conducted to determine whether the remainder of ponds 3A and 3B will require liners. Pond 3B is anticipated to require a draw-down of the local water table via a lower control structure orifice. There will be an equalizer pipe connecting the portion of Pond 3A in the NE quadrant to the rest of ponds 3A and 3B in the NW quadrant and they will serve as one pond. Ponds 1A and 2B are not anticipated to need a liner.

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Additional Discussion

1. Bill mentioned that on recent D7 projects (SR 50, US 98/301 PD&E), CSX has been requesting bridges higher than the 23.5-foot height as per FDOT specification. CSX had requested 24'4"-bridge elevations from the top of the rail based on their desire to transport double-decker (stacked) freight cars on their trains.
2. He suggested reaching out to Kevin Lee, David Grillo and/or Don Brown (DRMP) to get the specifics/history behind these requests.
3. Branan mentioned that the 23.5-foot clearance is currently proposed, spanning the 100-foot CSX ROW portion as outlined within CSX's design manual. This clearance is also identified within the upcoming Bridge Development Report. The 23.5-foot clearance envelope was a previous request made by STV, CSX's general engineering consultant. Branan mentioned that the request for additional vertical clearance, above 23.5-feet, had not been received during several rounds of prior communication/reviews with CSX and STV. If the proposed US 41 bridge height would need to be raised to the 24'4", this would have significant ramifications/consequences on the current project design, cost and schedule. Craig forwarded an e-mail from Ken Madden that contained the 24'4" typical section on a recent D7 project.
4. The RK&K Team submitted a recent project schedule update showing the project going to a public hearing on 5/11/23.
5. Ken suggested that this may have been a special CSX request for one or both projects. Bill recommended discussing this with CSX representatives in Jacksonville via the FDOT D7 Rail Group as soon as possible.
    a. Typically, they want 100% plans, but since this project is currently in the PD&E phase, these are not available. Plans of sufficient detail may need to be generated to continue these discussions.
    b. Gordon reminded the participants that Gautom and his staff will be preparing the steel bridge plans for the US 41 crossing over CSX. These plans will require additional Central Office coordination/review time. This effort and coordination will need to be coordinated with Gautom and Ming.

Action Items:

1. Craig will send the PSR to Joe M. for his review/use.
2. Joe M. will reach out to the legal representatives for the applicable parcels to commence advanced ROW acquisition.
3. KCA to coordinate with FDOT D7 Structures, FDOT D7 Rail and CSX staff to determine the necessary bridge height for this project.

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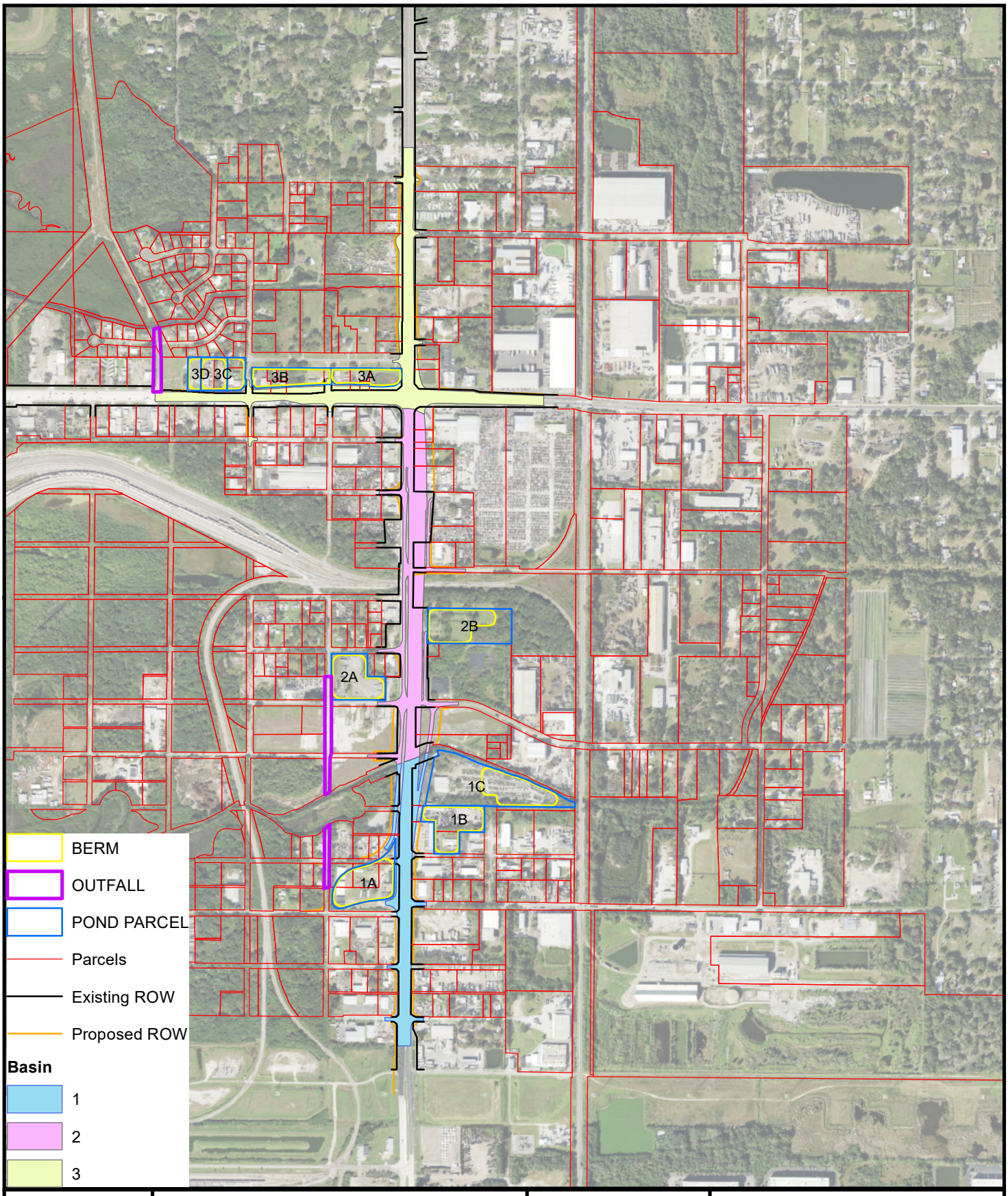

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 1,000
1" = 1000'

RK&K

Figure 1
Pond Site Overview
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondSitesOverview2.mxd

APPENDIX D

Geotechnical Analysis and Soil Data

DRAFT

February 18, 2021

Rummel Klepper & Kahl
14055 Riveredge Drive, Suite 301
Tampa, Florida 33637

Attn: Mr. Erik Fleming, P.E.

RE: Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No.: 6511-18-025

Mr. Fleming:

Tierra, Inc. has estimated Seasonal High Groundwater Tables (SHGWTs) along the project roadway alignment and preliminary pond alternative sites associated with the above referenced project. The seasonal high groundwater level estimates are presented as an attachment to this letter.

Review of Available Data

As part of our study, Tierra reviewed published soils information obtained from the "Soil Survey of Hillsborough County, Florida" published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and topographic information obtained from the Tampa, Florida Quadrangle Map published by the United States Geological Survey (USGS).

Seasonal High Groundwater Estimates

SHGWT estimates were completed at select locations along the roadway alignments typically on alternating sides of the existing roadway and at intervals of approximately 200 to 400 feet. SHGWT borings were also completed within the preliminary pond alternatives. The SHGWT estimates were based on soil stratigraphy, measured groundwater levels from the borings as well as the Hillsborough County, Florida USDA Soil Survey information. A **Summary of Seasonal High Groundwater Table Estimates** is presented as an attachment with this letter.

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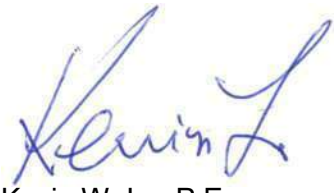
Tierra, Inc.
7351 Temple Terrace Highway • Tampa, Florida 33637
(813) 989-1354 • Fax (813) 989-1355
Florida Certificate No. 6486

Tierra, Inc. appreciates the opportunity to be of service to Rummel Klepper & Kahl on this project. If you have any questions or comments regarding this information, please contact our office at your earliest convenience.

Sincerely,
TIERRA, INC.

Juan M. Navarrete II, E.I.
Geotechnical Engineer Intern

Joseph R. Antinori, P.E.
Geotechnical Engineer
Florida License No. 73176



Kevin W. Lo, P.E.
Chief Geotechnical Engineer
Florida License No. 56959

Attachments:
Summary of Seasonal High Groundwater Table Estimates

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Summary of Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No. 6511-18-025

DRAFT

Boring Name	Boring Location[1] (C/L Const)		Boring Location[1] State Plane Coordinates		Ground Elevation[1] (ft., NAVD88)	Boring Depth (feet)	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[4]	
	Sation	Offset	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	SHGWT Depth[3] (ft.)	Depth (ft.)	Elevation (ft., NAVD88)
US 41													
SH - 59R	59 + 93	102 RT	1300904	526470	5.0	3.5	10/20/20	1.5	3.5	38	0.5-1.5	0.8	4.2
SH - 60L2	59 + 94	87 LT	1300907	526280	5.8	5.0	02/02/21	2.9	2.9	38	0.5-1.5	1.5	4.3
SH - 62R2	62 + 11	126 RT	1301122	526494	6.6	5.0	02/02/21	3.3	3.3	38	0.5-1.5	2.0	4.6
SH - 63L	63 + 34	135 LT	1301246	526234	5.8	5.0	10/22/21	3.0	2.8	29	0.5-1.5	1.5	4.3
SH - 66L2	68 + 15	68 LT	1301728	526304	5.6	5.0	02/02/21	3.6	2.0	29	0.5-1.5	1.8	3.8
SH - 68R	68 + 47	68 RT	1301759	526439	6.5	5.0	10/20/20	5.0	1.5	29	0.5-1.5	2.8	3.7
SH - 70L	70 + 49	83 LT	1301962	526290	5.3	5.0	10/22/20	GNE	≤ 0.3	30	0.0-0.5	2.0	3.3
SH - 71R	71 + 63	193 RT	1302074	526567	5.4	5.0	02/02/21	3.2	2.2	30	0.0-0.5	2.0	3.4
SH - 74R	74 + 01	66 RT	1302312	526441	7.6	7.0	10/21/20	6.0	1.6	30	0.0-0.5	4.0	3.6
SH - 75L	74 + 97	52 LT	1302409	526323	6.4	5.0	10/22/20	4.0	2.4	30	0.0-0.5	2.5	3.9
SH - 77L	77 + 27	83 LT	1302639	526294	6.3	5.0	10/22/20	4.5	1.8	29/30	0.5-1.5/0.0-0.5	2.2	4.1
SH - 77R	77 + 62	75 RT	1302674	526452	7.2	6.5	02/02/21	5.4	1.8	30	0.0-0.5	3.0	4.2
SH - 79R1	78 + 99	54 RT	1302811	526432	7.1	5.0	10/21/20	3.5	3.6	29	0.5-1.5	2.5	4.6
SH - 79R2	80 + 08	201 RT	1302919	526579	6.2	5.0	10/21/20	3.5	2.7	29	0.5-1.5	1.5	4.7
SH - 80L	80 + 48	78 LT	1302961	526300	6.3	5.0	10/22/20	3.0	3.3	29	0.5-1.5	1.8	4.5
SH - 81R	81 + 18	53 RT	1303030	526432	6.8	5.0	10/21/20	3.5	3.3	29	0.5-1.5	2.0	4.8
SH - 85R1	84 + 52	59 RT	1303364	526439	7.3	4.5	10/21/20	4.0	3.3	29	0.5-1.5	2.3	5.0
SH - 85L	84 + 89	63 LT	1303402	526317	6.5	6.0	02/02/21	4.9	1.6	29/38	0.5-1.5	2.0	4.5
SH - 85R2	85 + 13	202 RT	1303424	526583	5.3	3.0	10/22/20	2.5	2.8	29	0.5-1.5	0.5	4.8

[1] Boring locations and elevations were provided by the project surveyor. The state plane coordinates reference Florida West NAD 1983.

[2] Depth below existing grades at time of augering.

[3] Seasonal high groundwater table depth estimated based on the Hillsborough County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on historic soil stratigraphy, measured groundwater levels, and USDA Soil Survey.

Summary of Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No. 6511-18-025

Boring Name	Boring Location[1] (C/L Const)		Boring Location[1] State Plane Coordinates		Ground Elevation[1] (ft., NAVD88)	Boring Depth (feet)	Measured Groundwater Table			USDA Soil Survey		Estimated SHGWT[4]	
	Sation	Offset	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	SHGWT Depth[3] (ft.)	Depth (ft.)	Elevation (ft., NAVD88)
US 41													
SH - 86L	86 + 16	55 LT	1303529	526327	6.8	5.0	10/22/20	4.0	2.8	38	0.5-1.5	2.0	4.8
SH - 86R	86 + 43	227 RT	1303554	526608	7.3	5.0	10/22/20	3.5	3.8	29	0.5-1.5	2.3	5.0
SH - 90R	90 + 59	71 RT	1303971	526455	7.2	4.0	10/22/20	3.0	4.2	38	0.5-1.5	2.3	4.9
SH - 92L	92 + 47	91 LT	1304160	526294	7.3	4.5	10/28/20	4.5	2.8	38	0.5-1.5	2.5	4.8
SH - 92R1	92 + 64	62 RT	1304176	526447	7.2	4.5	10/22/20	3.0	4.2	38	0.5-1.5	2.3	4.9
SH - 95R	94 + 96	74 RT	1304408	526460	7.0	4.0	10/22/20	3.0	4.0	38	0.5-1.5	2.0	5.0
SH - 96L	96 + 22	58 LT	1304535	526328	6.7	4.0	02/02/21	3.3	3.4	38	0.5-1.5	1.7	5.0
SH - 98R	99 + 02	221 RT	1304813	526609	7.6	5.0	02/02/21	4.8	2.8	38	0.5-1.5	2.5	5.1
SH - 103L	103 + 65	63 LT	1305179	526328	5.6	5.0	11/03/20	4.0	1.6	38	0.5-1.5	1.3	4.3
SH - 104R	104 + 47	61 RT	1305260	526452	6.3	5.0	10/22/20	4.0	2.3	38	0.5-1.5	2.0	4.3
SH - 106L2	106 + 19	68 LT	1305433	526324	6.9	5.0	02/02/21	4.0	2.9	38	0.5-1.5	2.5	4.4
SH - 107R	107 + 71	45 RT	1305584	526438	7.2	5.0	11/02/20	5.0	2.2	38	0.5-1.5	2.7	4.5
SH - 110R	110 + 20	46 RT	1305833	526440	6.5	5.0	11/02/20	4.0	2.5	38	0.5-1.5	2.0	4.5
SH - 110L	110 + 35	59 LT	1305849	526335	6.2	3.5	11/02/20	GNE	≤ 2.7	38	0.5-1.5	1.8	4.4
SH - 114L	114 + 13	44 LT	1306227	526350	7.1	4.0	11/02/20	GNE	≤ 3.1	38	0.5-1.5	2.0	5.1
SH - 119L	118 + 82	83 LT	1306696	526311	8.8	6.5	11/02/20	6.0	2.8	38	0.5-1.5	3.7	5.1

[1] Boring locations and elevations were provided by the project surveyor. The state plane coordinates reference Florida West NAD 1983.

[2] Depth below existing grades at time of augering.

[3] Seasonal high groundwater table depth estimated based on the Hillsborough County, Florida USDA Soil Survey information.

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	Sation	Offset	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	SHGWT Depth[3] (ft.)	Depth (ft.)	Elevation (ft., NAVD88)
Causeway Boulevard													
SH - 258R	257 + 91	30 RT	1304901	522180	6.4	5.0	11/25/20	4.5	1.9	30	0.0-0.5	2.5	3.9
SH - 265L	266 + 13	102 LT	1305029	523002	4.5	5.0	11/25/20	2.5	2.0	30	0.0-0.5	1.0	3.5
SH - 266R	266 + 65	37 RT	1304890	523054	3.8	5.0	11/25/20	1.8	2.0	30	0.0-0.5	0.3	3.5
SH - 270L	269 + 99	102 LT	1305027	523388	5.0	5.0	11/25/20	2.0	3.0	30	0.0-0.5	1.5	3.5
SH - 275L	275 + 43	94 LT	1305016	523933	4.8	3.5	11/25/20	2.0	2.8	38	0.5-1.5	1.0	3.8
SH - 276R	276 + 42	46 RT	1304876	524031	4.8	4.5	12/07/20	1.5	3.3	38	0.5-1.5	1.0	3.8
SH - 282L	282 + 46	95 LT	1305015	524635	5.3	5.0	11/03/20	3.5	1.8	30	0.0-0.5	1.5	3.8
SH - 283R	283 + 22	47 RT	1304873	524711	5.2	5.0	12/07/20	2.0	3.2	38	0.5-1.5	1.5	3.7
SH - 285L	285 + 33	55 LT	1304974	524922	5.0	4.0	11/03/20	2.0	3.0	30	0.0-0.5	1.2	3.8
SH - 287R2	287 + 58	60 RT	1304858	525146	5.0	7.5	02/02/21	2.5	2.5	30/38	0.0-0.5/0.5-1.5	1.2	3.8
SH - 290L	290 + 77	72 LT	1304988	525466	5.3	3.5	11/03/20	3.5	1.8	38	0.5-1.5	1.5	3.8
SH - 291R	291 + 34	72 RT	1304844	525523	5.6	5.0	02/02/21	3.0	2.6	38	0.5-1.5	1.5	4.1
SH - 295L	295 + 48	77 LT	1304991	525937	6.6	4.5	11/03/20	3.5	3.1	38	0.5-1.5	2.0	4.6
SH - 297R	295 + 93	61 RT	1304853	525982	6.4	4.0	12/07/20	3.0	3.4	38	0.5-1.5	1.8	4.6
SH - 302L	302 + 58	95 LT	1305006	526647	7.7	5.0	11/03/20	4.0	3.7	38	0.5-1.5	2.5	5.2
SH - 303R	303 + 23	31 RT	1304880	526712	7.9	5.0	12/07/20	3.0	4.9	38	0.5-1.5	2.5	5.4
SH - 308R	307 + 71	49 RT	1304860	527160	8.5	5.0	12/07/20	3.0	5.5	38	0.5-1.5	1.5	7.0
SH - 310R	310 + 55	48 RT	1304859	527444	9.3	5.0	12/07/20	2.0	7.3	38	0.5-1.5	1.5	7.8

[1] Boring locations and elevations were provided by the project surveyor. The state plane coordinates reference Florida West NAD 1983.

[2] Depth below existing grades at time of augering.

[3] Seasonal high groundwater table depth estimated based on the Hillsborough County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on historic soil stratigraphy, measured groundwater levels, and USDA Soil Survey.

DRAFT

Summary of Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No. 6511-18-025

Boring Name	Boring Location[1] (B/L Survey US 41)		Boring Location[1] State Plane Coordinates		Approximate Ground Elevation[1] (ft., NAVD88)	Boring Depth[2] (ft.)	Measured Groundwater Table			USDA Soil Survey SHGWT[3]		Estimated SHGWT[4]	
	Station (ft.)	Offset (ft.)	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	Depth (ft)	Depth (ft.)	Elevation (ft., NAVD88)
SMF 1A													
PBA - SMF 1A-1	66+03	528 RT	1301512	526899	6.2	4.0	02/02/21	3.0	3.2	29	0.5-1.5	1.5	4.7
SMF 1B													
PBA - SMF 1B-1	68+42	166 LT	1301755	526206	5.2	5.5	02/02/21	4.5	0.7	29	0.5-1.5	1.5	3.7
SH - 66L2	68+15	68 LT	1301728	526304	5.6	5.0	02/02/21	3.6	2.0	29	0.5-1.5	1.8	3.8
SMF 1C													
Note: Several attempts to complete hand augers within the footprint of SMF 1C were terminated due to refusal on fill material (rocks, brick, etc.). The depth of the fill material above natural grades was not determined. It is recommended that the SHGWT reported by the USDA be used for preliminary evaluation.													
PBA - SMF 1C-1	---	---	---	---	---	---	---	---	---	30	0.0-0.5	Not determined due to fill material	
SMF 2A													
SH - 79R2	80+08	201 RT	1302919	526579	6.2	5.0	10/21/20	3.5	2.7	29	0.5-1.5	1.5	4.7
PBA - SMF 2A-1	80+37	270 RT	1302947	526649	5.8	4.5	02/02/21	2.5	3.3	29	0.5-1.5	1.0	4.8
SMF 2B													
Note: Site was inaccessible due to locked gates and signs stating, "Contaminated Area Avoid Contact with Soil and Water". It is recommended that the SHGWT reported by the USDA and the estimated SHGWT at adjacent pond boring PBASMF 2A-1 be used for preliminary evaluation.													
PBA - SMF 2A-1	80+37	270 RT	1302947	526649	5.8	4.5	02/02/21	2.6	3.2	29	0.5-1.5	1.0	4.8
SMF 2C													
Note: Site was inaccessible due to locked gates and signs stating, "Contaminated Area Avoid Contact with Soil and Water". It is recommended that the SHGWT reported by the USDA and the estimated SHGWT at adjacent roadway boring SH-74R be used for preliminary evaluation.													
SH - 74R	74+01	66 RT	1302312	526441	7.6	7.0	10/21/20	6.0	1.6	30	0.0-0.5	4.0	3.6

[1] Boring locations and elevations were provided by the project surveyor. The state plane coordinates reference Florida West NAD 1983.

[2] Depth below existing grades at time of augering.

[3] Seasonal high groundwater table depth estimated based on the Hillsborough County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on historic soil stratigraphy, measured groundwater levels, and USDA Soil Survey.

Summary of Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No. 6511-18-025

Boring Name	Boring Location[1] (B/L Survey SR 676)		Boring Location[1] State Plane Coordinates		Approximate Ground Elevation[1] (ft., NAVD88)	Boring Depth[2] (ft.)	Measured Groundwater Table			USDA Soil Survey SHGWT[3]		Estimated SHGWT[4]	
	Station (ft.)	Offset (ft.)	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	Depth (ft)	Depth (ft.)	Elevation (ft., NAVD88)
SMF 3A-1													
PBA - SMF 3A1-1	295+88	224 RT	1304690	525975	6.3	5.0	02/02/21	3.4	2.9	38	0.5-1.5	1.5	4.8
SMF 3A-2													
PBA - SMF 3A2-2	291+73	205 RT	1304711	525561	6.4	4.0	02/02/21	3.5	2.9	38	0.5-1.5	2.2	4.2
SMF 3A-2 (Alternate)													
PBA - SMF 3A2 ALT-1	284+67	193 RT	1304726	524854	6.0	4.0	02/02/21	3.8	2.2	38	0.5-1.5	2.0	4.0
SMF 3B													
PBA - SMF 3B-1	290+78	455 LT	1305371	525468	4.9	4.0	02/02/21	3.0	1.9	38	0.5-1.5	1.5	3.4
SMF 3C													
PBA - SMF 3C-1	282+32	293 LT	1305213	524622	6.1	3.5	02/02/21	3.3	2.8	30	0.0-0.5	2.0	4.1
SH - 282L	282+46	95 LT	1305015	524635	5.3	5.0	11/03/20	1.8	3.5	30	0.0-0.5	1.5	3.8
SH - 285L	285+33	55 LT	1304974	524922	5.0	4.0	11/03/20	2.0	3.0	30	0.0-0.5	1.2	3.8

[1] Boring locations and elevations were provided by the project surveyor. The state plane coordinates reference Florida West NAD 1983.

[2] Depth below existing grades at time of augering.

[3] Seasonal high groundwater table depth estimated based on the Hillsborough County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on historic soil stratigraphy, measured groundwater levels, and USDA Soil Survey.

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November 22, 2022

Rummel Klepper & Kahl
14055 Riveredge Drive, Suite 301
Tampa, Florida 33637

Attn: Mr. Erik Fleming, P.E.

RE: Seasonal High Groundwater Table Estimates for Preliminary Pond Alternatives
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No.: 6511-18-025

Mr. Fleming:

Tierra, Inc. has estimated Seasonal High Groundwater Tables (SHGWTs) within the preliminary pond alternative sites associated with the above referenced project. The seasonal high groundwater level estimates are presented as an attachment to this letter.

Review of Available Data

As part of our study, Tierra reviewed published soils information obtained from the "Soil Survey of Hillsborough County, Florida" published by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) and topographic information obtained from the Tampa, Florida Quadrangle Map published by the United States Geological Survey (USGS).

Soil Borings

Tierra completed seven (7) auger borings within the pond alternatives. Tierra visually classified the soils using American Association of State Highway and Transportation Officials (AASHTO) nomenclature and estimated the seasonal high groundwater table (SHGWT) levels at each of the boring locations. The boring locations and the soil and water table conditions encountered are presented on the attached **Pond Soil Survey** sheets.

When encountered, the top of clayey soils ranged from approximately 1.0 to 6.5 feet below the ground surface. The clayey soils are identified as Strata 3 and 4 on the attached **Pond Soil Survey** sheets. Based on the results of our field exploration, the depth of the confining layer will coincide with the top of Strata 3 and 4.

Debris laden materials (Stratum 7) consisting of silty sand with concrete, plastic, metal, wood, and glass was encountered within Pond Sites 1A, 1C, and 3A. The debris material was encountered from at the existing ground surface to depths ranging from ½ foot to 2½ feet below the existing ground surface. Additional test borings will be performed to evaluate the approximate horizontal and vertical limits of these debris materials and determine removal limits.

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Seasonal High Groundwater Estimates

The SHGWT levels were estimated within the preliminary pond alternatives. The SHGWT estimates were based on soil stratigraphy, measured groundwater levels from the borings as well as the Hillsborough County, Florida USDA Soil Survey information. A **Summary of Seasonal High Groundwater Table Estimates** is presented as an attachment with this letter.

Tierra, Inc. appreciates the opportunity to be of service to Rummel Klepper & Kahl on this project. If you have any questions or comments regarding this information, please contact our office at your earliest convenience.

Sincerely,
TIERRA, INC.

Juan M. Navarrete II, P.E.
Geotechnical Engineer
Florida License No. 94755

Joseph R. Antinori, P.E.
Geotechnical Engineer
Florida License No. 73176

Attachments:
Summary of Seasonal High Groundwater Table Estimates
Pond Soil Survey

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Summary of Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No. 6511-18-025

Boring Name	Boring Location[1] (B/L Survey SR 45)		Boring Location[1] State Plane Coordinates		Approximate Ground Elevation[1] (ft., NAVD88)	Boring Depth[2] (ft.)	Measured Groundwater Table			USDA Soil Survey SHGWT[3]		Estimated SHGWT[4]	
	Station (ft.)	Offset (ft.)	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	Depth (ft)	Depth (ft.)	Elevation (ft., NAVD88)
Pond Alternative 1A													
PBA - 1A-1	61+26	326 LT	1301040	526042	6.4	4.0	11/08/22	3.8	2.6	38	0.5-1.5	2.0	4.4
SH - 63L	63+34	135 LT	1301246	526234	5.8	5.0	10/22/21	3.0	2.8	29	0.5-1.5	1.5	4.3
Pond Alternative 1B													
PBA - 1B-1	65+75	352 RT	1301485	526723	6.2	5.5	11/07/22	3.5	2.7	29	0.5-1.5	2.0	4.2
PBA - SMF 1A-1	66+03	528 RT	1301512	526899	6.2	4.0	02/02/21	3.0	3.2	29	0.5-1.5	1.5	4.7
Pond Alternative 1C													
PBA - 1C-1	69+12	861 RT	1301819	527233	6.5	6.0	11/07/22	3.8	2.7	30	0.0-0.5	2.5	4.0
Pond Alternative 2A													
PBA - 2A-1	61+26	326 LT	1301040	526042	6.4	5.5	11/08/22	3.8	2.6	29	0.5-1.5	2.5	3.9
SH - 77L	77+27	83 LT	1302639	526294	6.3	5.0	10/22/20	4.5	1.8	30	0.0-0.5	2.2	4.1
Pond Alternative 2B													
Note: Site was inaccessible due to locked gates. It is recommended that the SHGWT reported by the USDA and the estimated SHGWT at adjacent boring PBASMF 2A-1 be used for preliminary evaluation.													
PBA - SMF 2A-1	80+37	270 RT	1302947	526649	5.8	4.5	02/02/21	2.6	3.2	29	0.5-1.5	1.0	4.8

[1] Boring locations and elevations were provided by the project surveyor. The state plane coordinates reference Florida West NAD 1983.

[2] Depth below existing grades at time of augering.

[3] Seasonal high groundwater table depth estimated based on the Hillsborough County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on historic soil stratigraphy, measured groundwater levels, and USDA Soil Survey.

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Summary of Seasonal High Groundwater Table Estimates
US 41/SR 45/SR 599 from South of the SR 676/Causeway Boulevard Intersection to North of the SR 676/Causeway Boulevard Intersection
Hillsborough County, Florida
FPID Nos.: 440749-1-22-01 and 440749-1-32-01
Tierra Project No. 6511-18-025

Boring Name	Boring Location[1] (B/L Survey SR 676)		Boring Location[1] State Plane Coordinates		Approximate Ground Elevation[1] (ft., NAVD88)	Boring Depth[2] (ft.)	Measured Groundwater Table			USDA Soil Survey SHGWT[3]		Estimated SHGWT[4]	
	Station (ft.)	Offset (ft.)	Northing	Easting			Date Recorded	Depth[2] (ft.)	Elevation (ft., NAVD88)	Map Symbol	Depth (ft)	Depth (ft.)	Elevation (ft., NAVD88)
Pond Alternative 3A													
PBA - 3A-1	295+63	261 LT	1305175	525953	5.6	5.0	11/07/22	3.4	2.2	38	0.5-1.5	1.5	4.1
SH - 295L2	295+71	135 LT	1305049	525960	6.3	4.0	03/17/21	GNE	< 2.3	38	0.5-1.5	2.0	4.3
Pond Alternative 3B													
PBA - 3B-1	291+01	202 LT	1305118	525491	5.1	5.0	11/07/22	3.2	1.9	38	0.5-1.5	1.5	3.6
SH - 290L	290+77	72 LT	1304988	525466	5.3	3.5	11/03/20	3.5	1.8	38	0.5-1.5	1.5	3.8
Pond Alternative 3C													
PBA - 3C-1	287+01	200 LT	1305138	525091	5.1	5.0	11/07/22	3.1	2.0	38	0.5-1.5	1.5	3.6
SH - 285L	285+33	55 LT	1304974	524922	5.0	4.0	11/03/20	2.0	3.0	30	0.0-0.5	1.2	3.8
Pond Alternative 3D													
PBA - SMF 3C-1A	282+32	293 LT	1305213	524622	6.1	3.5	02/02/21	3.3	2.8	30	0.0-0.5	2.0	4.1
SH - 282L	282+46	95 LT	1305015	524635	5.3	5.0	11/03/20	1.8	3.5	30	0.0-0.5	1.5	3.8
SH - 285L	285+33	55 LT	1304974	524922	5.0	4.0	11/03/20	2.0	3.0	30	0.0-0.5	1.2	3.8

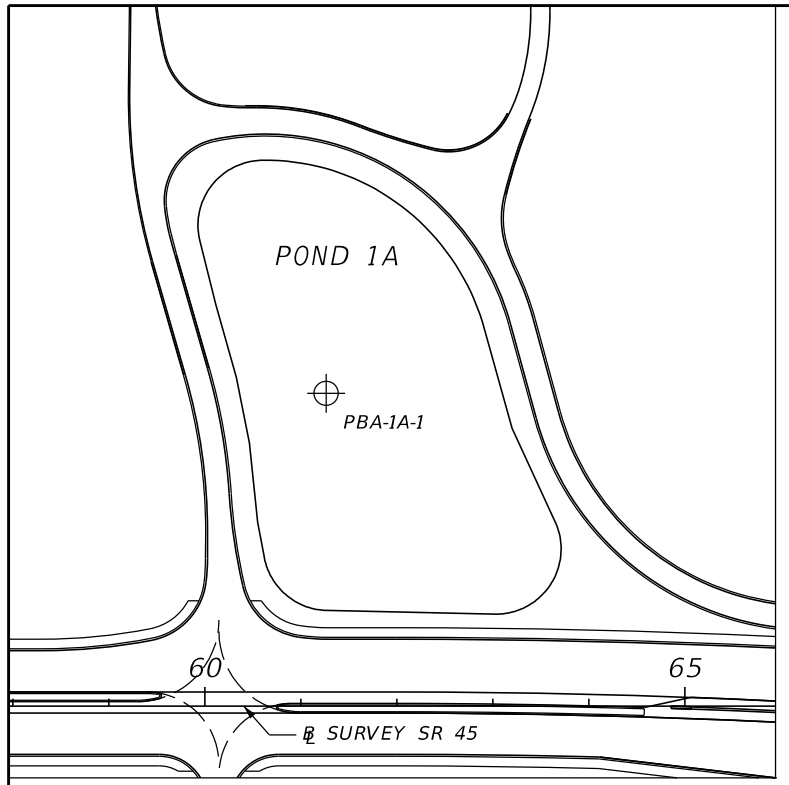
[1] Boring locations and elevations were provided by the project surveyor. The state plane coordinates reference Florida West NAD 1983.

[2] Depth below existing grades at time of augering.

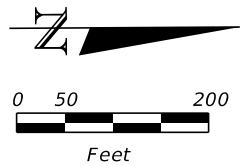
[3] Seasonal high groundwater table depth estimated based on the Hillsborough County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on historic soil stratigraphy, measured groundwater levels, and USDA Soil Survey.

DRAFT



BORING LOCATION PLAN

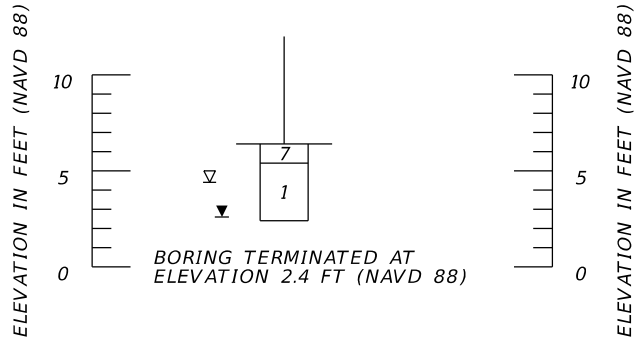


LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT TO SILTY SAND (A-3/A-2-4)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT GRAY TO LIGHT BROWN TO ORANGE-BROWN CLAYEY SAND (A-2-6/A-7-6)
4.	GREEN-GRAY TO GRAY SANDY CLAY TO SILTY CLAY (A-7-6)
5.	WEATHERED LIMESTONE
6.	DARK BROWN TO BLACK ORGANIC SILTY SAND TO MUCK (A-8)
7.	DEBRIS: BROWN SILTY SAND WITH CONCRETE, PLASTIC, METAL, WOOD, AND GLASS
A.	WITH ROCK AND SHELL
B.	WITH CEMENTED SAND
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
℄ SURVEY SR 45	BASELINE SURVEY SR 45
℄ SURVEY CAUSEWAY	BASELINE SURVEY CAUSEWAY BOULEVARD

DRAFT

BOR # PBA-1A-1
STA. 61+26
REF. ℄ SURVEY SR 45
OFF. 326' LT.
ELEV. 6.4
DATE 11/8/2022



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND SOIL SURVEY (1)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	JOSEPH R. ANTINORI, P.E. LICENSE NUMBER: 73176 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 45	HILLSBOROUGH	440749-1-32-01		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

11/22/2022 9:12:10 AM bgarcia
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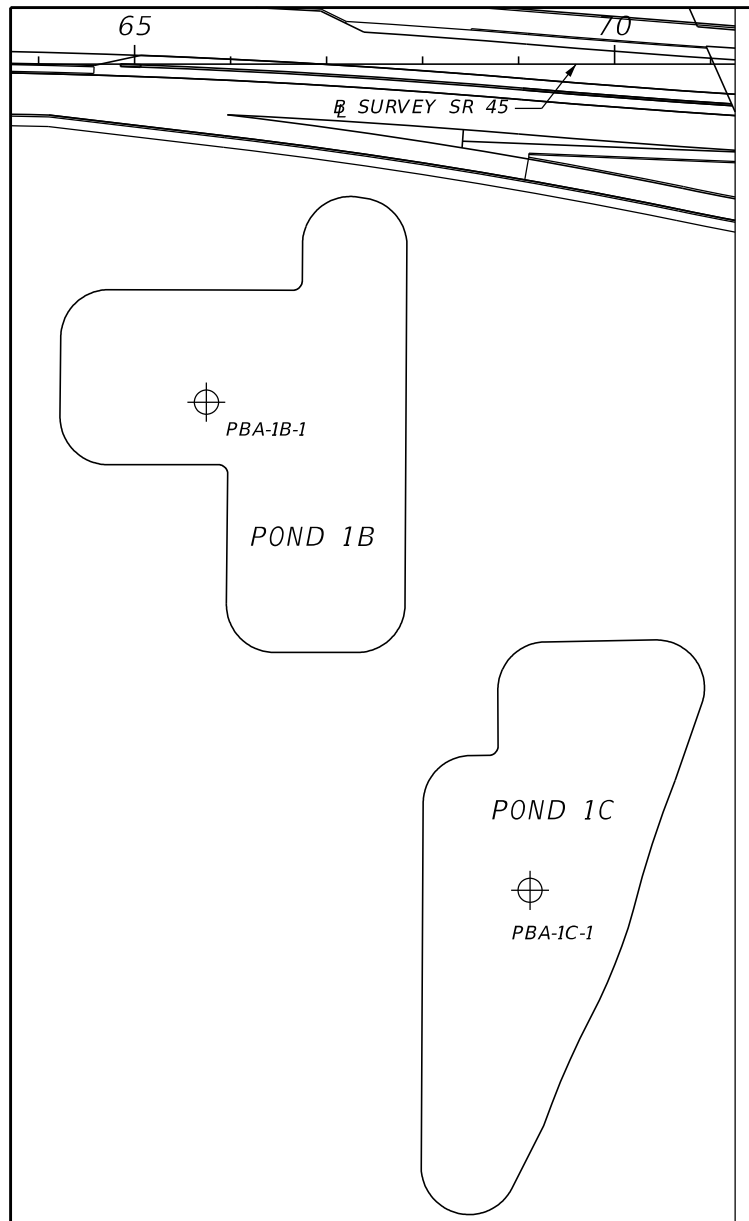
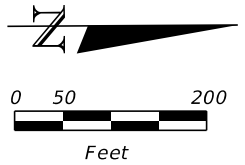


BORING LOCATION PLAN



LEGEND

1.	GRAY TO BROWN SAND TO SAND WITH SILT TO SILTY SAND (A-3/A-2-4)
2.	LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3.	LIGHT GRAY TO LIGHT BROWN TO ORANGE-BROWN CLAYEY SAND (A-2-6/A-7-6)
4.	GREEN-GRAY TO GRAY SANDY CLAY TO SILTY CLAY (A-7-6)
5.	WEATHERED LIMESTONE
6.	DARK BROWN TO BLACK ORGANIC SILTY SAND TO MUCK (A-8)
7.	DEBRIS: BROWN SILTY SAND WITH CONCRETE, PLASTIC, METAL, WOOD, AND GLASS
A.	WITH ROCK AND SHELL
B.	WITH CEMENTED SAND
A-3	AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
⊕	APPROXIMATE AUGER BORING LOCATION
▽	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
▼	GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS
℄ SURVEY SR 45	BASELINE SURVEY SR 45
℄ SURVEY CAUSEWAY	BASELINE SURVEY CAUSEWAY BOULEVARD

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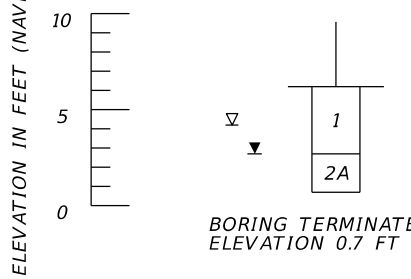
BOR # PBA-1B-1
STA. 65+75
REF. ℄ SURVEY SR 45
OFF. 352' RT.
ELEV. 6.2
DATE 11/7/2022



BORING TERMINATED AT ELEVATION 0.7 FT (NAVD 88)

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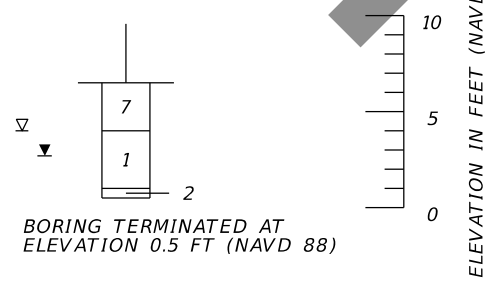
STA. 69+12
REF. ℄ SURVEY SR 45
OFF. 861' RT.
ELEV. 6.5
DATE 11/7/2022



BORING TERMINATED AT ELEVATION 0.5 FT (NAVD 88)

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND SOIL SURVEY (2)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	JOSEPH R. ANTINORI, P.E. LICENSE NUMBER: 73176 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 45	HILLSBOROUGH	440749-1-32-01		

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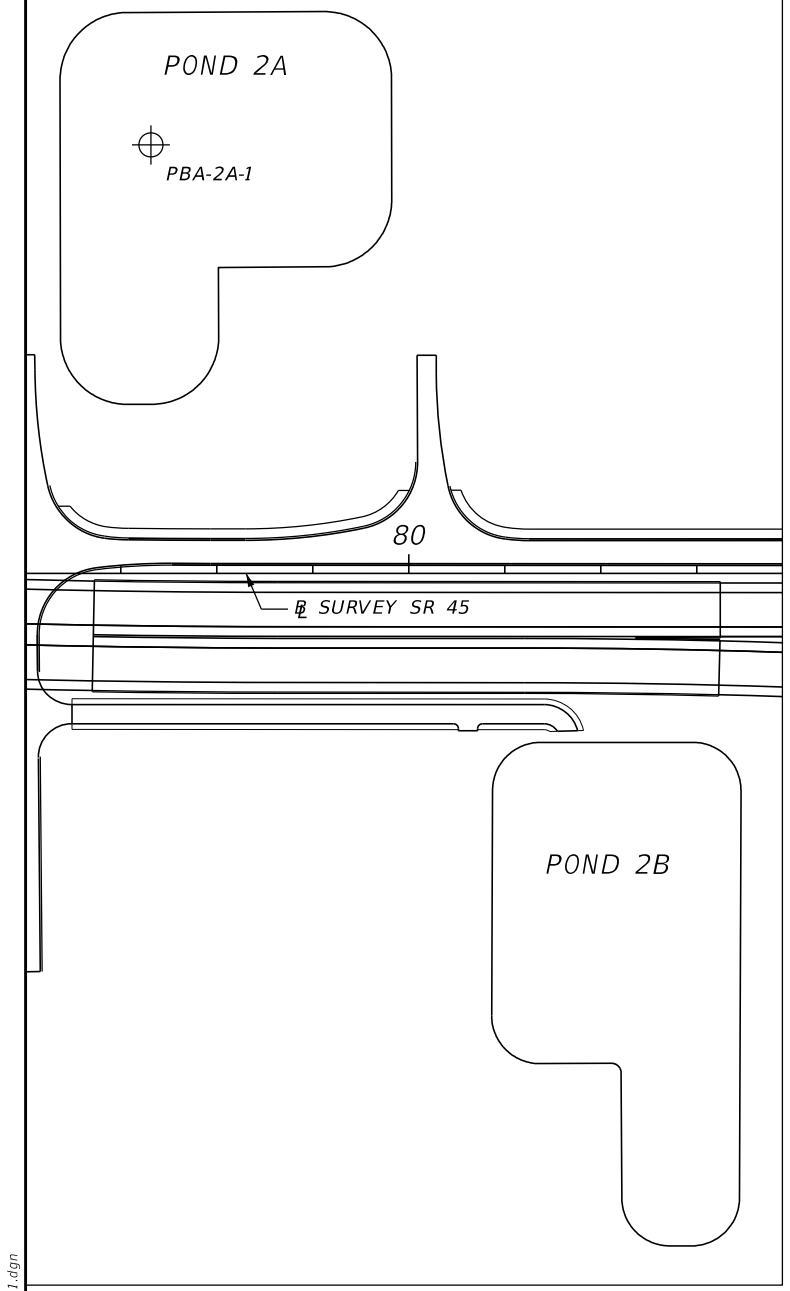
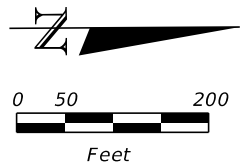


BORING LOCATION PLAN



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LEGEND

1. GRAY TO BROWN SAND TO SAND WITH SILT TO SILTY SAND (A-3/A-2-4)
2. LIGHT GRAY TO LIGHT BROWN SILTY SAND (A-2-4)
3. LIGHT GRAY TO LIGHT BROWN TO ORANGE-BROWN CLAYEY SAND (A-2-6/A-7-6)
4. GREEN-GRAY TO GRAY SANDY CLAY TO SILTY CLAY (A-7-6)
5. WEATHERED LIMESTONE
6. DARK BROWN TO BLACK ORGANIC SILTY SAND TO MUCK (A-8)
7. DEBRIS: BROWN SILTY SAND WITH CONCRETE, PLASTIC, METAL, WOOD, AND GLASS

A. WITH ROCK AND SHELL

B. WITH CEMENTED SAND

A-3 AASHTO GROUP SYMBOL AS DETERMINED BY VISUAL REVIEW AND LABORATORY TESTING ON SELECTED SAMPLES FOR CONFIRMATION OF VISUAL REVIEW.

NAVD 88 NORTH AMERICAN VERTICAL DATUM OF 1988

⊕ APPROXIMATE AUGER BORING LOCATION

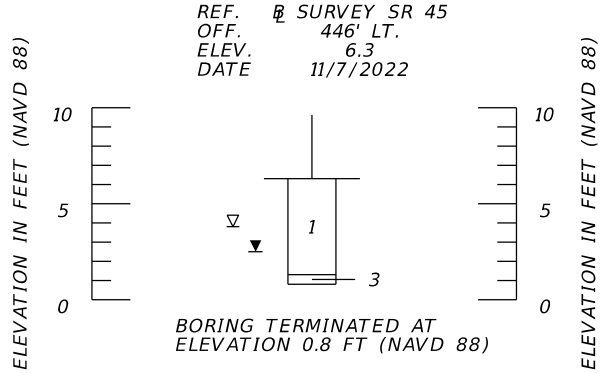
▽ ESTIMATED SEASONAL HIGH GROUNDWATER TABLE

▼ GROUNDWATER LEVEL ENCOUNTERED DURING FIELD EXPLORATIONS

℄ SURVEY SR 45 BASELINE SURVEY SR 45

℄ SURVEY CAUSEWAY BASELINE SURVEY CAUSEWAY BOULEVARD

BOR # PBA-2A-1
STA. 77+31
REF. ℄ SURVEY SR 45
OFF. 446' LT.
ELEV. 6.3
DATE 11/7/2022



REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND SOIL SURVEY (3)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	JOSEPH R. ANTINORI, P.E. LICENSE NUMBER: 73176 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 45	HILLSBOROUGH	440749-1-32-01		

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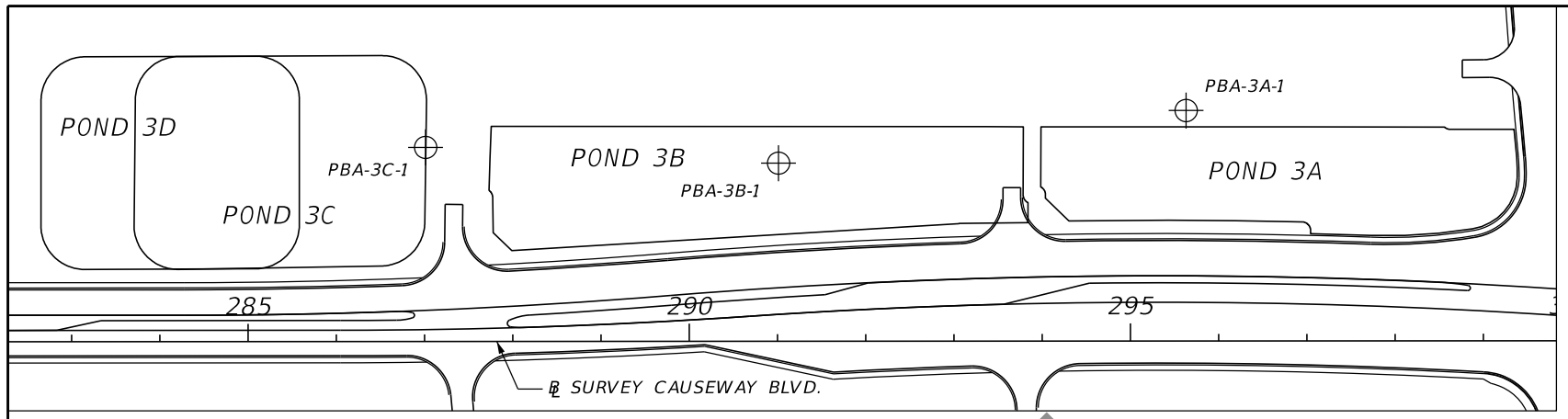
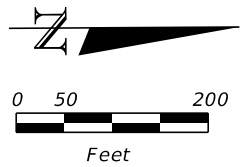


BORING LOCATION PLAN



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℄ SURVEY SR 45 BASELINE SURVEY SR 45

℄ SURVEY CAUSEWAY BASELINE SURVEY CAUSEWAY BOULEVARD

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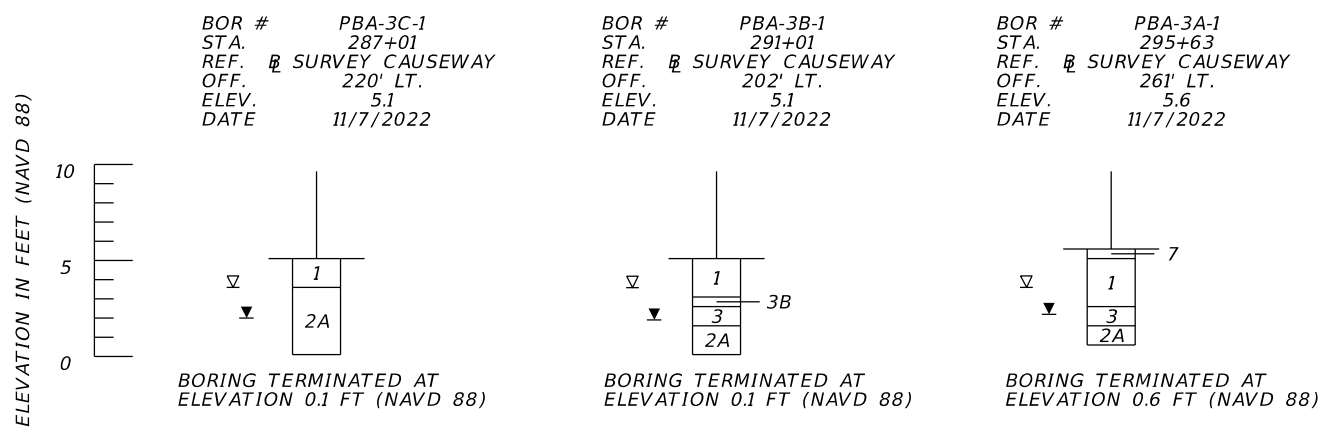

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			POND SOIL SURVEY (4)	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	JOSEPH R. ANTINORI, P.E. LICENSE NUMBER: 73176 TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 676	HILLSBOROUGH	440749-1-32-01		

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hillsborough County, Florida

US 41/SR 45 @ CSX Grade Separation

DRAFT

August 1, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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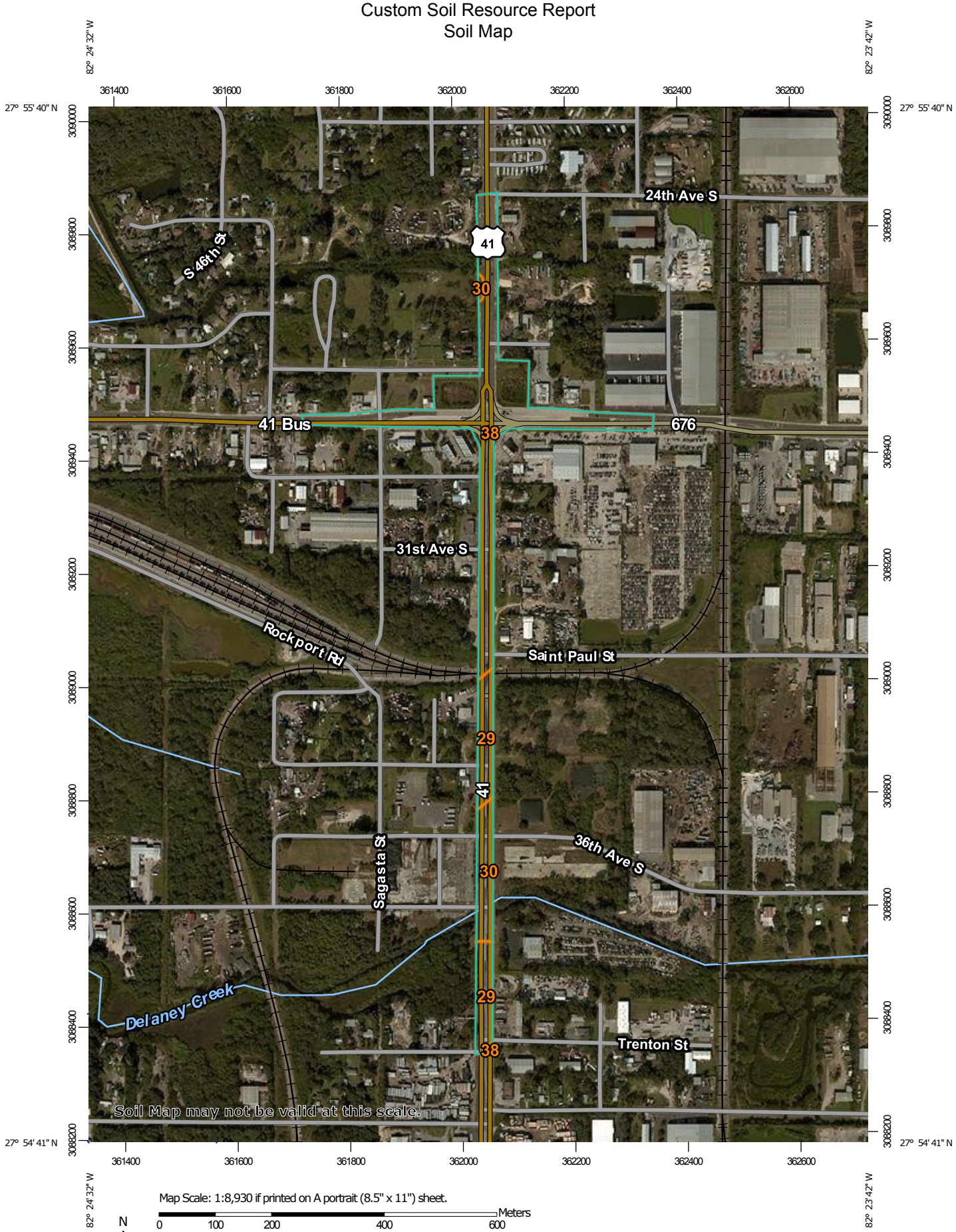

Map Scale: 1:8,930 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

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: Hillsborough County, Florida
Survey Area Data: Version 16, Oct 4, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 29, 2010—Jan 17, 2014

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.

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29	Myakka fine sand, 0 to 2 percent slopes	3.0	16.7%
30	Myakka fine sand, frequently flooded	1.8	10.3%
38	Pinellas fine sand	13.1	73.1%
Totals for Area of Interest		**17.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

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delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

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Hillsborough County, Florida

29—Myakka fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2s3lg
Elevation: 0 to 130 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 68 to 77 degrees F
Frost-free period: 350 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Myakka and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka

Setting

Landform: Drainageways on flatwoods on marine terraces
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Linear
Across-slope shape: Linear, concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 20 inches: fine sand
Bh - 20 to 36 inches: fine sand
C - 36 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

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Minor Components

Basinger

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Cassia

Percent of map unit: 3 percent
Landform: Knolls on marine terraces, rises on marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

Immokalee

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Riser, talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

Satellite

Percent of map unit: 1 percent
Landform: Rises on marine terraces, flatwoods on marine terraces
Landform position (three-dimensional): Tread, rise, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Other vegetative classification: Sand Pine Scrub (R155XY001FL)
Hydric soil rating: No

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30—Myakka fine sand, frequently flooded

Map Unit Setting

National map unit symbol: 1j72h

Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days
Farmland classification: Not prime farmland

Map Unit Composition

Myakka, frequently flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Myakka, Frequently Flooded

Setting

Landform: Tidal marshes on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 5 inches: fine sand
E - 5 to 22 inches: fine sand
Bh - 22 to 40 inches: fine sand
C - 40 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Strongly saline (16.0 to 32.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: A/D
Forage suitability group: Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)
Other vegetative classification: Salt Marsh (R155XY009FL)
Hydric soil rating: Yes

Minor Components

Samsula

Percent of map unit: 10 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL)

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Hydric soil rating: Yes

38—Pinellas fine sand

Map Unit Setting

National map unit symbol: 1j72q
Elevation: 20 to 100 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days
Farmland classification: Not prime farmland

Map Unit Composition

Pinellas and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pinellas

Setting

Landform: Plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
E - 4 to 11 inches: fine sand
Bk - 11 to 22 inches: fine sand
Btg - 22 to 27 inches: sandy clay loam
Cg - 27 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

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Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Forage suitability group: Sandy over loamy soils on flats of hydric or mesic lowlands (G155XB241FL)
Other vegetative classification: Cabbage Palm Flatwoods (R155XY005FL)
Hydric soil rating: No

Minor Components

Malabar

Percent of map unit: 5 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R155XY011FL)
Hydric soil rating: Yes

Wabasso

Percent of map unit: 4 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL)
Hydric soil rating: No

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APPENDIX E

Cross Drain Pictures and Review Checklist

DRAFT

FPID: 440749-1-22-01
DATE: 9/28/2020
ATTENDEES: ROUSANA MARRERO GONZALEZ, VERONICA PEREZ HERRERA

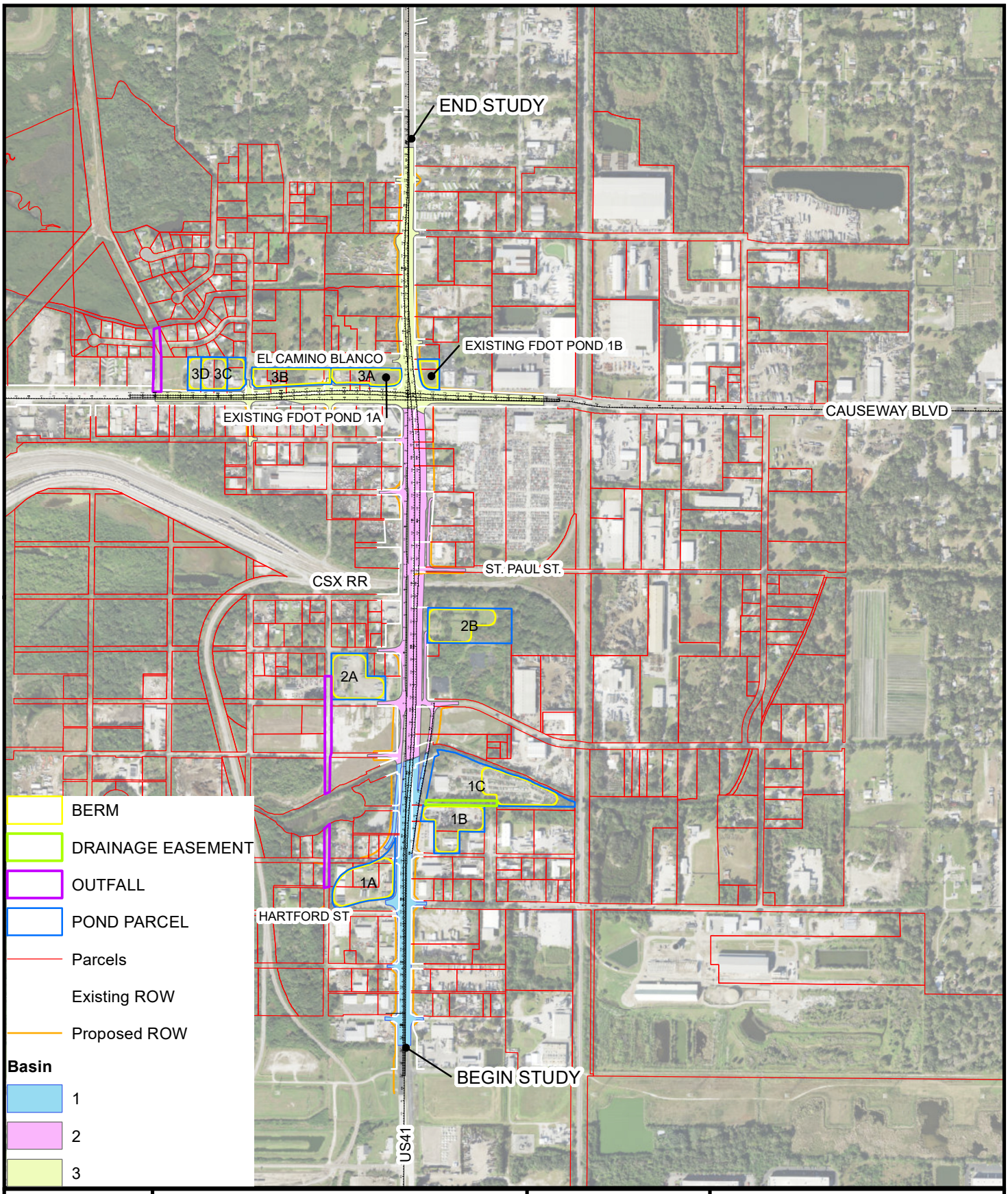
CROSS DRAIN FIELD REVIEW NOTES

STR. NO.	DESCRIPTION: BASELINE	DESCRIPTION: STATION/ LOCATION	DESCRIPTION: OFFSET	DESCRIPTION: SIDE	DESCRIPTION: STR. TYPE	# OF BARRELS	SIZE	MATERIAL	CULVERT SILTATION (NOTE DETERMINE DEPTH OF SILT)	CONDITION OF ENDWALL/CULVERT (NOTE CRACKING, SPALLING, DETERIORATION)	SCOUR (MEASURE DEPTH OF SCOUR HOLE)	SIGNS OF HIGHWATER (MEASURE HEIGHT OF WATER STAIN ABOVE CULVERT INVERT)	CHANNEL DESCRIPTION ((WET, DRY, VEGETATION, DEBRIS,EROSION, SOIL, ETC.)	ROADWAY ISSUES (NOTE DEPRESSIONS, CRACKING, CURB ISSUES, ETC.	PHOTO	NOTES
27	US 41	71+16.79	55.45	X LT RT	Curb Inlet DBI MH Gutter X OTHER Concrete Headwall	1 2 X 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 11'X8' CBC	RCP CMP SRAP X OTHER CONC. BOX	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
28	US 41	71+60.80	55.80	LT X RT	Curb Inlet DBI MH Gutter X OTHER Concrete Headwall	1 2 X 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 11'X8' CBC	RCP CMP SRAP X OTHER CONC. BOX	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
78	US 41	109+95.09	60.61	X LT RT	Curb Inlet DBI MH Gutter X OTHER Winged end wall	1 X 2 3 4	18" 24" 36" X 42" 48" 54" 60" OTHER	X RCP CMP SRAP OTHER	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
80	US 41	109+95.42	57.49	LT X RT	Curb Inlet DBI MH Gutter X OTHER Concrete Endwall	1 X 2 3 4	18" 24" 36" X 42" 48" 54" 60" OTHER	X RCP CMP SRAP OTHER	NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		Channel full of water. Hard to verify silt and scour.
259	CAUSEWAY	303+97.68	38.62	LT X RT	Curb Inlet X DBI MH Gutter OTHER	X 1 2 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 24"X38"	X RCP CMP SRAP OTHER	NO SILT X OTHER Grate slightly silted	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		
276	CAUSEWAY	304+00.85	110.61	X LT RT	Curb Inlet DBI MH Gutter X OTHER Straight End Wall	X 1 2 3 4	18" 24" 36" 42" 48" 54" 60" X OTHER 24"X38"	X RCP CMP SRAP OTHER	X NO SILT OTHER	CORROSION COLLAPSE DEFLECTION LEAKING END DAMAGE	NO SCOUR VERY LIGHT LIGHT MODERATE SEVERE	NO HIGHWATER OTHER	X MAINTENANCE DESILT ONLY EROSION REESTABLISH DITCH L= OTHER	DEPRESSION CRACKING CURB TRANS. CLEAR ZONE OTHER		

APPENDIX F

Pond Sizing Calculations and Cost Estimates

DRAFT



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

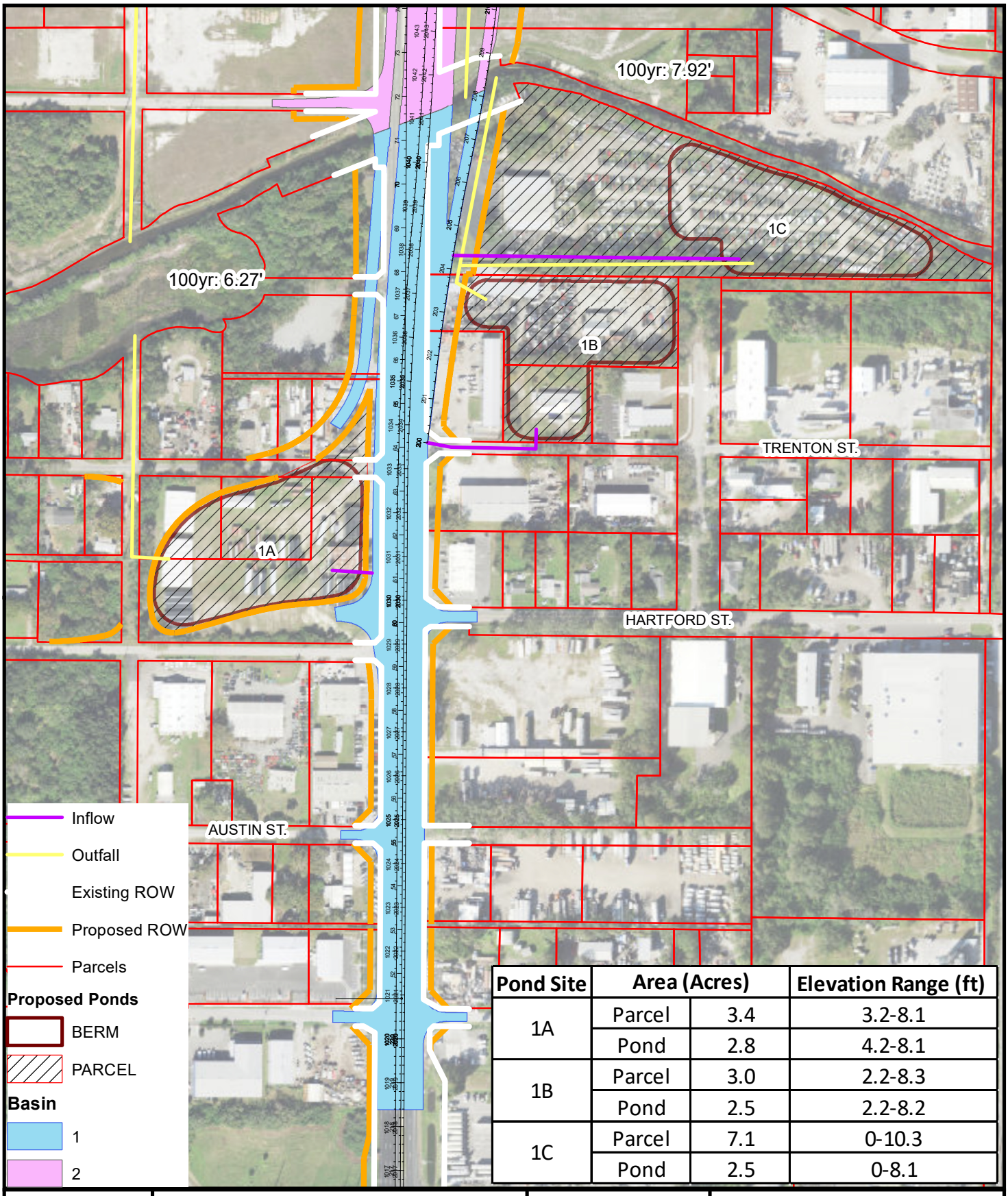
Explanation of Features

0 1,000
1" = 1000'

RK&K

Pond Alternatives Overview
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondAlternativesOverview.mxd



Pond Site	Area (Acres)		Elevation Range (ft)
1A	Parcel	3.4	3.2-8.1
	Pond	2.8	4.2-8.1
1B	Parcel	3.0	2.2-8.3
	Pond	2.5	2.2-8.2
1C	Parcel	7.1	0-10.3
	Pond	2.5	0-8.1

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 9/16/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

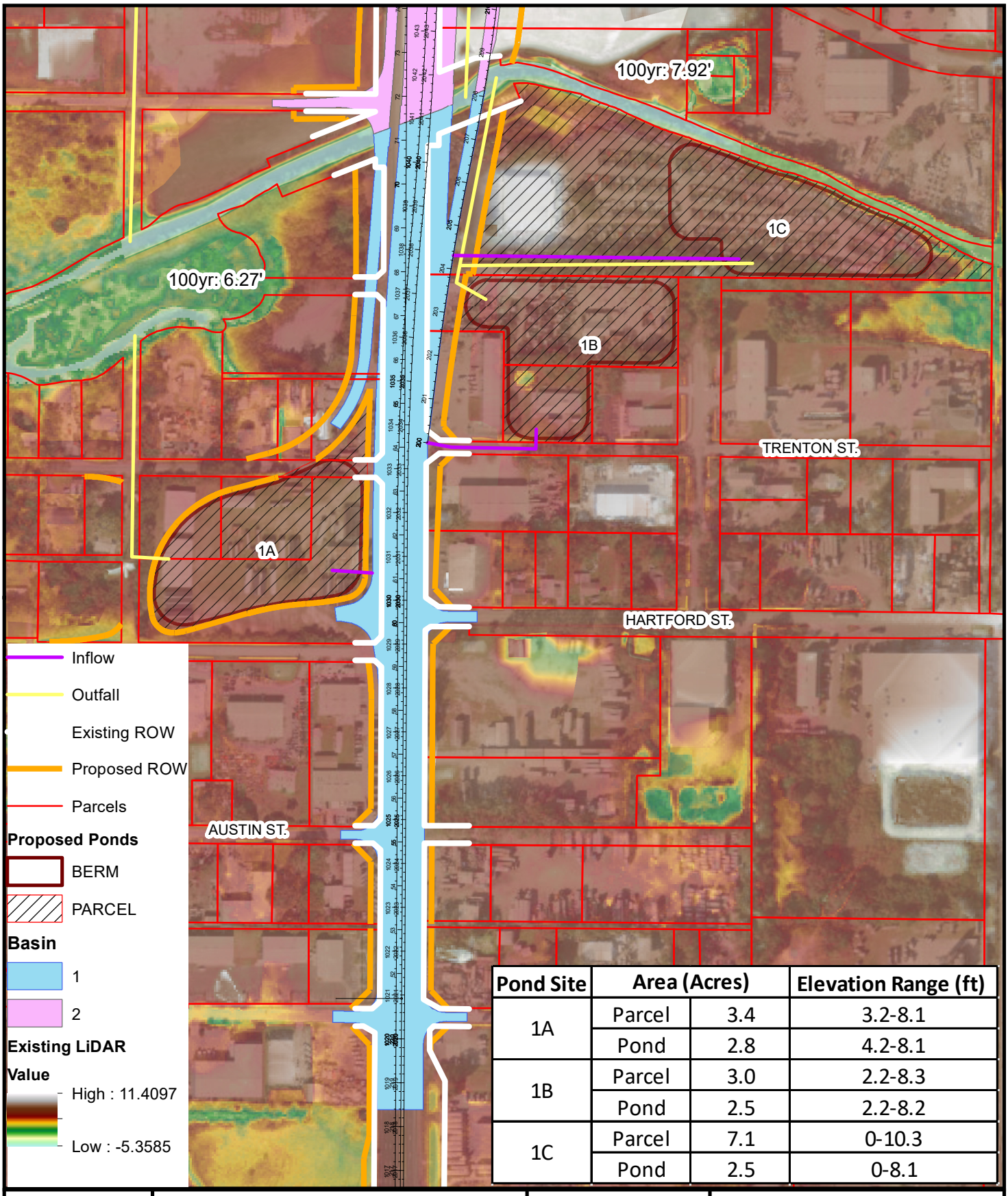
0 300

1" = 300'

RK&K

Pond Alternatives
Basin 1 Aerial
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondSitesBasin1Aerial.mxd



Pond Site	Area (Acres)		Elevation Range (ft)
1A	Parcel	3.4	3.2-8.1
	Pond	2.8	4.2-8.1
1B	Parcel	3.0	2.2-8.3
	Pond	2.5	2.2-8.2
1C	Parcel	7.1	0-10.3
	Pond	2.5	0-8.1

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 9/16/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 300

1" = 300'

RK&K

Pond Alternatives
Basin 1 LiDAR
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondSitesBasin1LiDAR.mxd

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 1A

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

Pre-Development (R/W Area)

Total Area = 13.64 ac
Impervious Area = 6.36 ac
Pervious Area = 7.28 ac

Post-Development (R/W Area)

Total Area = 13.64 ac
Impervious Area = 9.24 ac
Pervious Area = 4.40 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area — 0.24 ac

Treatment volume required — **0.24 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? Y
SWFWMD 25-yr 24-hr rainfall 7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	13.64 ac	1.80 ac	15.44 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			6.36 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			9.08 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN 80

DRAFT

	Area	CN	Weighted
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	6.36 ac	98	40.36
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	9.08 ac	80	47.06
		CN_{pre} =	87

SCS Method for Attenuation Volume:

S_{pre} = 1.44 in.

Q_{pre} = 6.44 in.

Pre-development runoff volume = **8.28 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	13.64 ac	1.80 ac	15.44 ac
Impervious Areas			
Water			1.48 ac
Pavement			9.24 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			4.71 ac

	Area	CN	Weighted
Impervious Areas			
Water	1.48 ac	100	9.60
Pavement	9.24 ac	98	58.67
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	4.71 ac	80	24.43
		CN_{post} =	92.7

SCS Method for Attenuation Volume:

S_{post} = 0.79 in.

Q_{post} = 7.07 in.

Post-development runoff volume = **9.09 ac-ft**

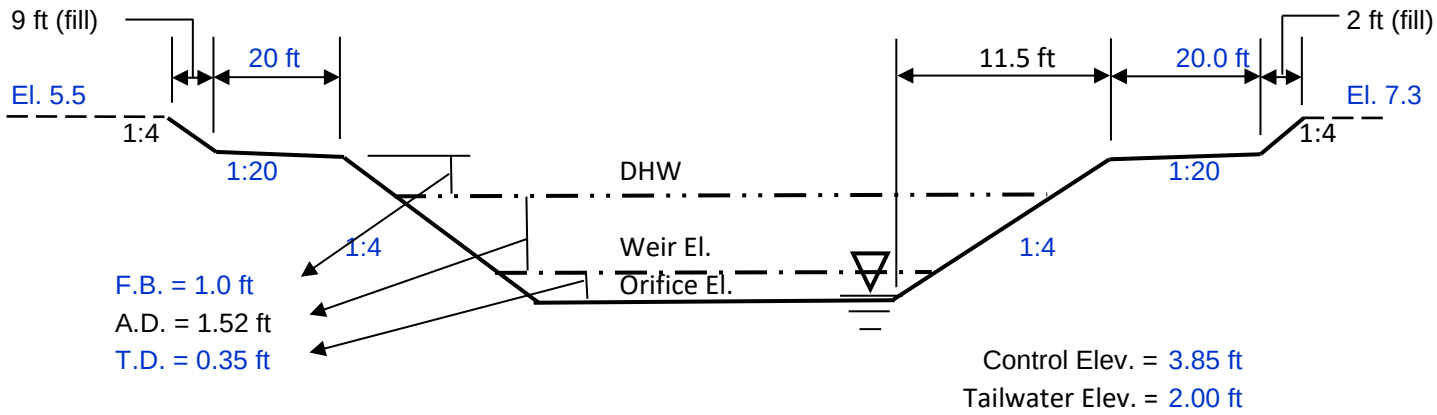
$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Attenuation volume required (Post-Pre) **0.81 ac-ft**

DRAFT

POND SIZE ESTIMATE



Approx. low edge of pavement elevation (LEOP)= 6.30
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (100 ft) = 0.08 ft
Head loss from SMF to Outfall (600 ft) = 0.48 ft
Available depth for T.D. + A.D. = 1.87 ft

Avg. SHW for Pond 1A is 4.35. Assume control 0.5 feet below SHW. Assume compensatory north of Austin St.

Length/Width Ratio (Rr): 3

Treatment area provided by treatment depth (T.D.) 0.68 ac

Square dimension at bottom of T.D. 172.1 ft
Long Rectangular dimension at bottom of T.D. (R1) 298.1 ft
Short Rectangular dimension at bottom of T.D. (R2) 99.4 ft

Long Rectangular dimension at tie-in (R1) 372 ft
Short Rectangular dimension at tie-in (R2) 173 ft

	Required	Provided
Treatment Volume	**0.24 ac-ft**	**0.24 ac-ft**
Attenuation Volume	**0.81 ac-ft**	**1.16 ac-ft**

Minimum Pond Site Area Required: **1.80 ac**
(Includes 20% increase for conservatism)

DRAFT

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 1B

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

Pre-Development (R/W Area)

Total Area = 13.64 ac
Impervious Area = 6.36 ac
Pervious Area = 7.28 ac

Post-Development (R/W Area)

Total Area = 13.64 ac
Impervious Area = 9.24 ac
Pervious Area = 4.40 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area — 0.24 ac

Treatment volume required — **0.24 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? Y
SWFWMD 25-yr 24-hr rainfall 7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	13.64 ac	1.90 ac	15.54 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			6.36 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			9.18 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN 80

DRAFT

	Area	*CN*	*Weighted*
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	6.36 ac	98	40.10
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	9.18 ac	80	47.27
		CN_{pre} =	87

SCS Method for Attenuation Volume:

S_{pre} = 1.45 in.

Q_{pre} = 6.43 in.

Pre-development runoff volume = **8.33 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	13.64 ac	1.90 ac	15.54 ac
Impervious Areas			
Water			1.57 ac
Pavement			9.24 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			4.73 ac

	Area	*CN*	*Weighted*
Impervious Areas			
Water	1.57 ac	100	10.10
Pavement	9.24 ac	98	58.29
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	4.73 ac	80	24.34
		CN_{post} =	92.7

SCS Method for Attenuation Volume:

S_{post} = 0.78 in.

Q_{post} = 7.07 in.

Post-development runoff volume = **9.15 ac-ft**

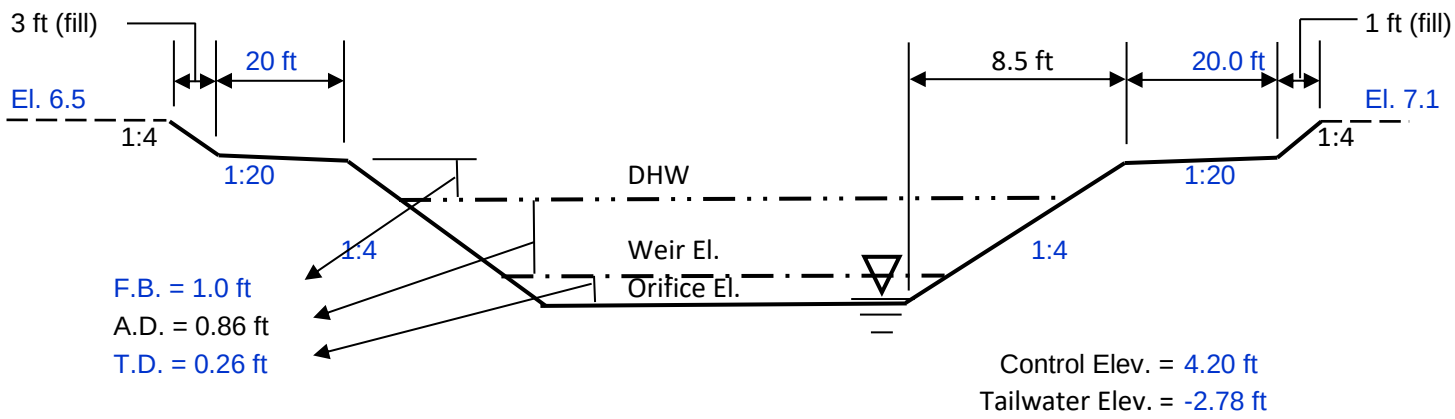
$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Attenuation volume required (Post-Pre) **0.82 ac-ft**

DRAFT

POND SIZE ESTIMATE



Approx. low edge of pavement elevation (LEOP)= 6.30
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (600 ft) = 0.48 ft
Head loss from SMF to Outfall (450 ft) = 0.36 ft
Available depth for T.D. + A.D. = 1.12 ft

Avg. SHW for Pond 1B is 4.45. Assume control elevation is 4.2. Assume compensatory north of Austin St.

Length/Width Ratio (Rr):	1.2
Treatment area provided by treatment depth (T.D.)	0.92 ac
Square dimension at bottom of T.D.	200.2 ft
Long Rectangular dimension at bottom of T.D. (R1)	219.3 ft
Short Rectangular dimension at bottom of T.D. (R2)	182.8 ft
Long Rectangular dimension at tie-in (R1)	280 ft
Short Rectangular dimension at tie-in (R2)	244 ft

	Required	Provided
Treatment Volume	0.24 ac-ft	0.24 ac-ft
Attenuation Volume	0.82 ac-ft	0.84 ac-ft

Minimum Pond Site Area Required: **1.90 ac**
(Includes 20% increase for conservatism)

DRAFT

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 1C

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

Pre-Development (R/W Area)

Total Area = 13.64 ac
Impervious Area = 6.36 ac
Pervious Area = 7.28 ac

Post-Development (R/W Area)

Total Area = 13.64 ac
Impervious Area = 9.24 ac
Pervious Area = 4.40 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area — 0.24 ac

Treatment volume required — **0.24 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? Y
SWFWMD 25-yr 24-hr rainfall 7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	13.64 ac	2.10 ac	15.74 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			6.36 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			9.38 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN 80

DRAFT

	Area	*CN*	*Weighted*
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	6.36 ac	98	39.59
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	9.38 ac	80	47.68
		CN_{pre} =	87

SCS Method for Attenuation Volume:

S_{pre} = 1.46 in.

Q_{pre} = 6.42 in.

Pre-development runoff volume = **8.42 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	13.64 ac	2.10 ac	15.74 ac
Impervious Areas			
Water			1.67 ac
Pavement			9.24 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			4.82 ac

	Area	*CN*	*Weighted*
Impervious Areas			
Water	1.67 ac	100	10.62
Pavement	9.24 ac	98	57.55
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	4.82 ac	80	24.52
		CN_{post} =	92.7

SCS Method for Attenuation Volume:

S_{post} = 0.79 in.

Q_{post} = 7.07 in.

Post-development runoff volume = **9.27 ac-ft**

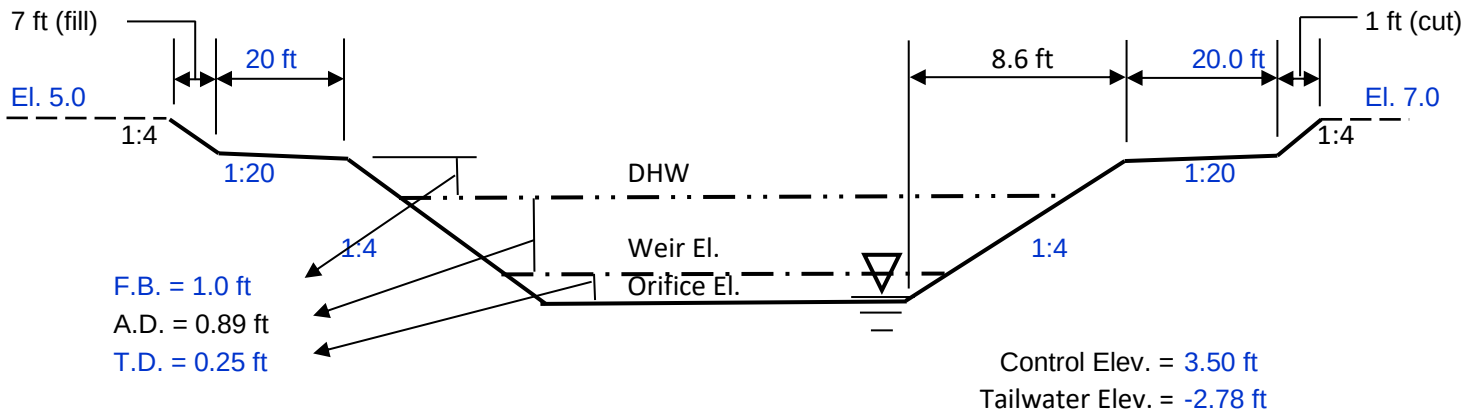
$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Attenuation volume required (Post-Pre) **0.84 ac-ft**

DRAFT

POND SIZE ESTIMATE



Approx. low edge of pavement elevation (LEOP)= 6.30
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (1450 ft) = 1.16 ft
Head loss from SMF to Outfall (25 ft) = 0.02 ft
Available depth for T.D. + A.D. = 1.14 ft

SHW for Pond 1C is 4.0. Assume 3.5 for control elevation. Assume compensatory north of Austin St.

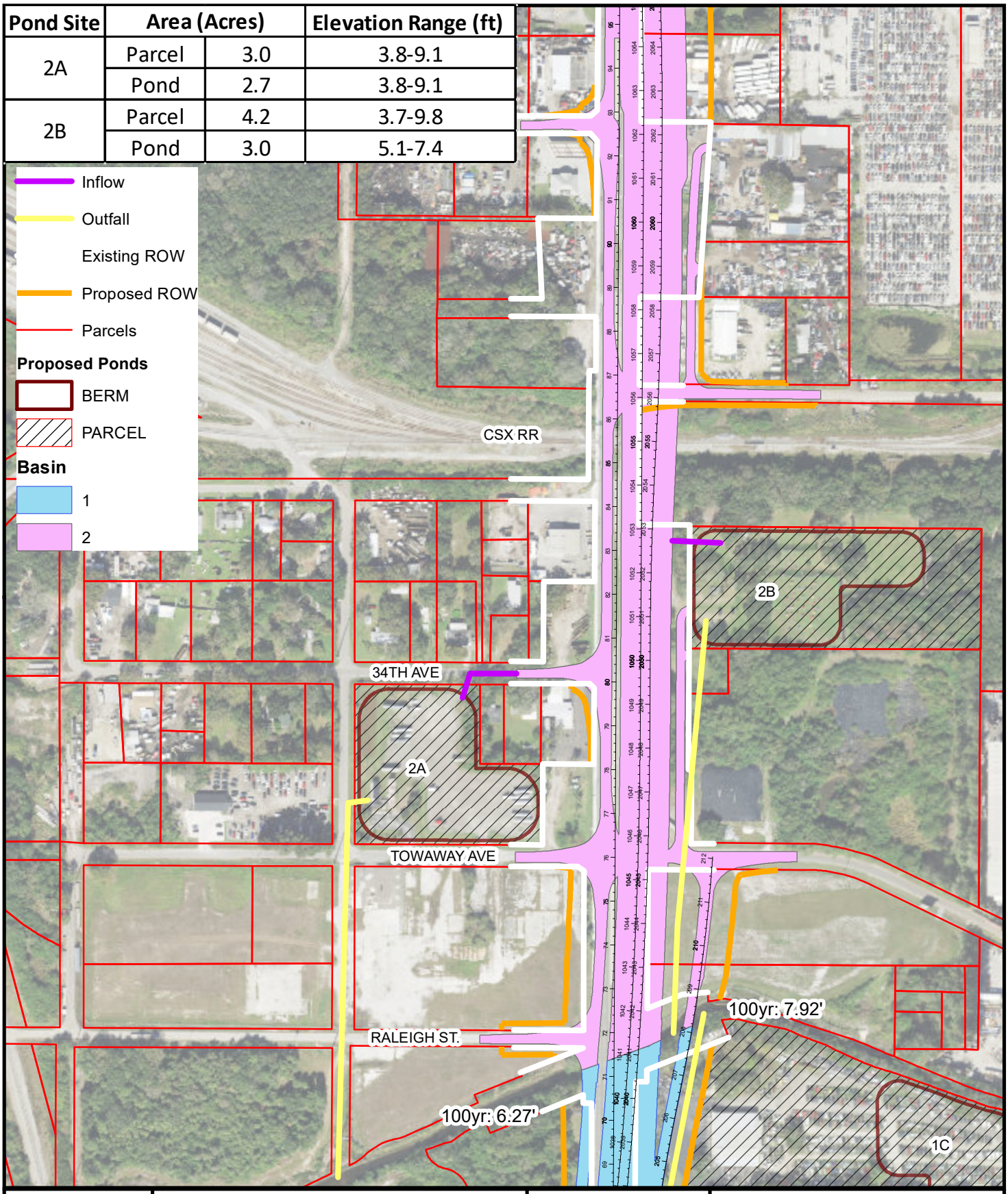
Length/Width Ratio (Rr):	1.2
Treatment area provided by treatment depth (T.D.)	0.96 ac
Square dimension at bottom of T.D.	204.5 ft
Long Rectangular dimension at bottom of T.D. (R1)	224.0 ft
Short Rectangular dimension at bottom of T.D. (R2)	186.7 ft
Long Rectangular dimension at tie-in (R1)	289 ft
Short Rectangular dimension at tie-in (R2)	252 ft

	Required	Provided
Treatment Volume	0.24 ac-ft	0.24 ac-ft
Attenuation Volume	0.84 ac-ft	0.90 ac-ft

Minimum Pond Site Area Required: **2.10 ac**
(Includes 20% increase for conservatism)

DRAFT

Pond Site	Area (Acres)		Elevation Range (ft)
2A	Parcel	3.0	3.8-9.1
	Pond	2.7	3.8-9.1
2B	Parcel	4.2	3.7-9.8
	Pond	3.0	5.1-7.4



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 9/16/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 300

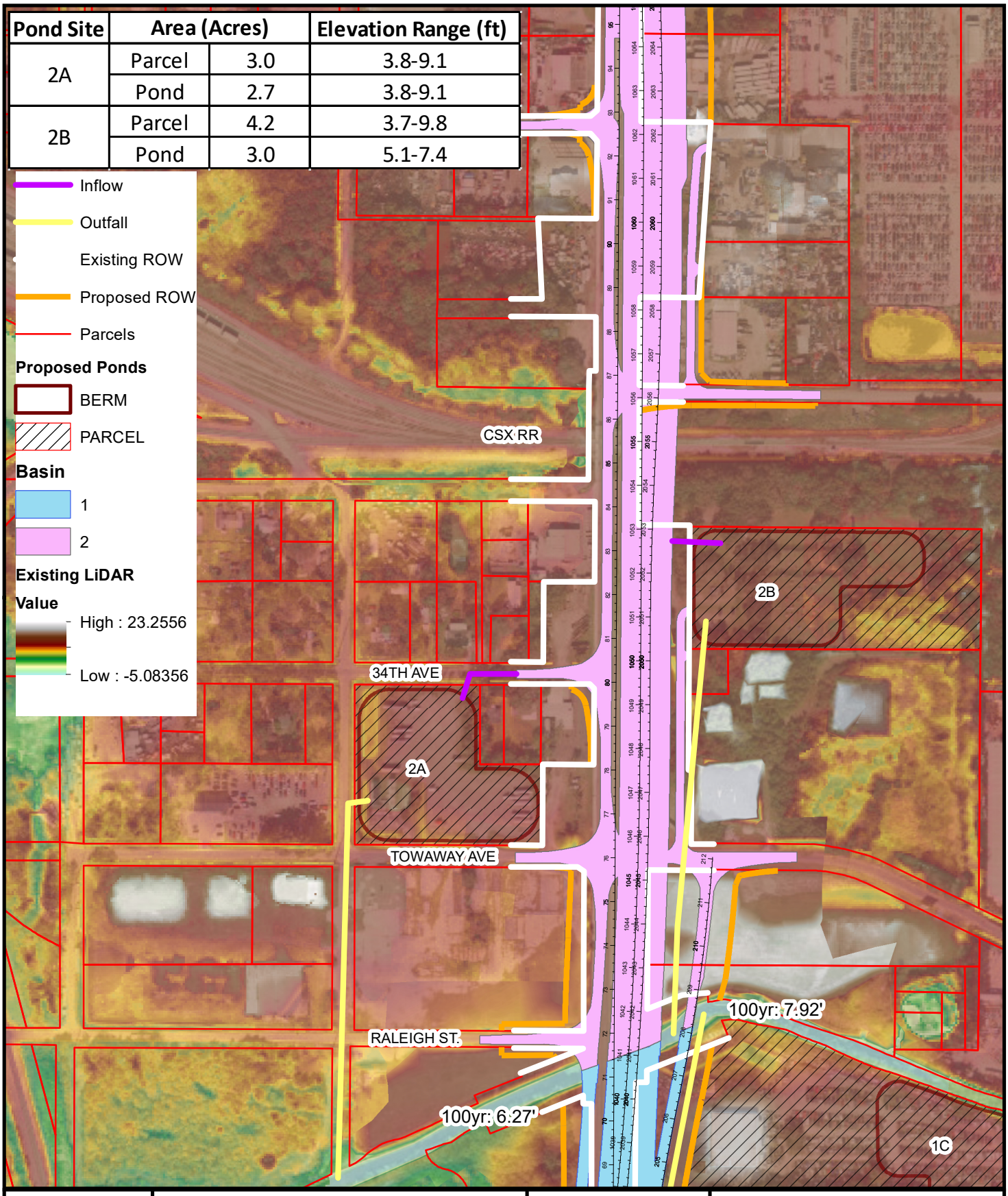
1" = 300'

RK&K

Pond Alternatives
Basin 2 Aerial
US41 at CSX
440749-1
Hillsbourough County, FL

Path: \\ad.rkk.com\FS\Cloud\Projects\2018\18033_D7US41CSX\Design\44074915201_nd\drainage\VISHAL\CSX at 41 01-01-2023\Pond Site Figures\PondSitesBasin2Aerial.mxd

Pond Site	Area (Acres)		Elevation Range (ft)
2A	Parcel	3.0	3.8-9.1
	Pond	2.7	3.8-9.1
2B	Parcel	4.2	3.7-9.8
	Pond	3.0	5.1-7.4



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 9/16/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 300

1" = 300'

RK&K

Pond Alternatives
Basin 2 LiDAR
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondSitesBasin2LiDAR.mxd

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 2A

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

Pre-Development (R/W Area)

Total Area = 19.80 ac
Impervious Area = 7.17 ac
Pervious Area = 12.63 ac

Post-Development (R/W Area)

Total Area = 19.80 ac
Impervious Area = 12.58 ac
Pervious Area = 4.40 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area — 0.44 ac

Treatment volume required — **0.44 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? — Y
SWFWMD 25-yr 24-hr rainfall — 7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.80 ac	2.70 ac	22.50 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			7.17 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			15.33 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN — 80

DRAFT

	Area	*CN*	*Weighted*
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	7.17 ac	98	31.23
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	15.33 ac	80	54.51
		CN_{pre} =	86

SCS Method for Attenuation Volume:

S_{pre} = 1.66 in.

Q_{pre} = 6.24 in.

Pre-development runoff volume = **11.70 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.80 ac	2.70 ac	22.50 ac
Impervious Areas			
Water			2.23 ac
Pavement			12.58 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			7.69 ac

	Area	*CN*	*Weighted*
Impervious Areas			
Water	2.23 ac	100	9.92
Pavement	12.58 ac	98	54.80
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	7.69 ac	80	27.33
		CN_{post} =	92.0

SCS Method for Attenuation Volume:

S_{post} = 0.86 in.

Q_{post} = 6.99 in.

Post-development runoff volume = **13.11 ac-ft**

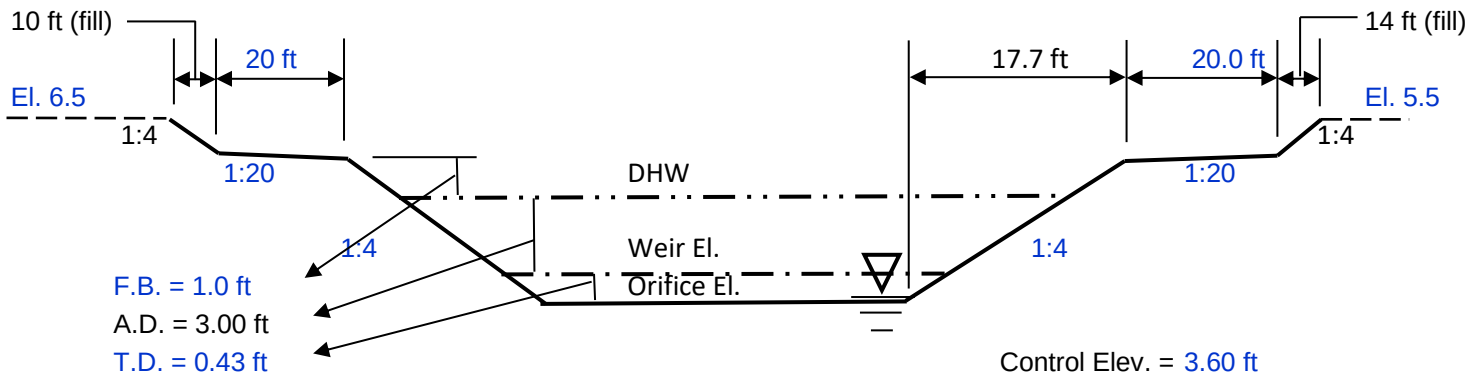
$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Attenuation volume required (Post-Pre) **1.40 ac-ft**

DRAFT

POND SIZE ESTIMATE



Control Elev. = 3.60 ft
Tailwater Elev. = -4.00 ft

Approx. low edge of pavement elevation (LEOP)= 9.20
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (2100 ft) = 1.68 ft
Head loss from SMF to Outfall (950 ft) = 0.76 ft
Available depth for T.D. + A.D. = 3.42 ft

Avg. SHW is 4.0 for Pond 2A. Assume 3.6 for control elevation. Assume northernmost portion of US 41 drains to Frontage Road and not to pond. Compensatory treatment provided. Impermeable liner will be required due to contamination risk.

Length/Width Ratio (Rr): 1.3

Treatment area provided by treatment depth (T.D.) 1.03 ac

Square dimension at bottom of T.D. 211.8 ft
Long Rectangular dimension at bottom of T.D. (R1) 241.5 ft
Short Rectangular dimension at bottom of T.D. (R2) 185.8 ft

Long Rectangular dimension at tie-in (R1) 341 ft
Short Rectangular dimension at tie-in (R2) 285 ft

	Required	Provided
Treatment Volume	0.44 ac-ft	0.44 ac-ft
Attenuation Volume	1.40 ac-ft	3.55 ac-ft

Minimum Pond Site Area Required: **2.70 ac**
(Includes 20% increase for conservatism)

DRAFT

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 2B

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

Pre-Development (R/W Area)

Total Area = 19.80 ac
Impervious Area = 7.17 ac
Pervious Area = 12.63 ac

Post-Development (R/W Area)

Total Area = 19.80 ac
Impervious Area = 12.58 ac
Pervious Area = 4.40 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area — 0.44 ac

Treatment volume required — **0.44 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? Y
SWFWMD 25-yr 24-hr rainfall 7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.80 ac	3.00 ac	22.80 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			7.17 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			15.63 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN 80

DRAFT

	Area	*CN*	*Weighted*
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	7.17 ac	98	30.82
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	15.63 ac	80	54.84
		CN_{pre} =	86

SCS Method for Attenuation Volume:

S_{pre} = 1.67 in.

Q_{pre} = 6.23 in.

Pre-development runoff volume = **11.84 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.80 ac	3.00 ac	22.80 ac
Impervious Areas			
Water			2.47 ac
Pavement			12.58 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			7.75 ac

	Area	*CN*	*Weighted*
Impervious Areas			
Water	2.47 ac	100	10.82
Pavement	12.58 ac	98	54.08
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	7.75 ac	80	27.20
		CN_{post} =	92.1

SCS Method for Attenuation Volume:

S_{post} = 0.86 in.

Q_{post} = 7.00 in.

Post-development runoff volume = **13.29 ac-ft**

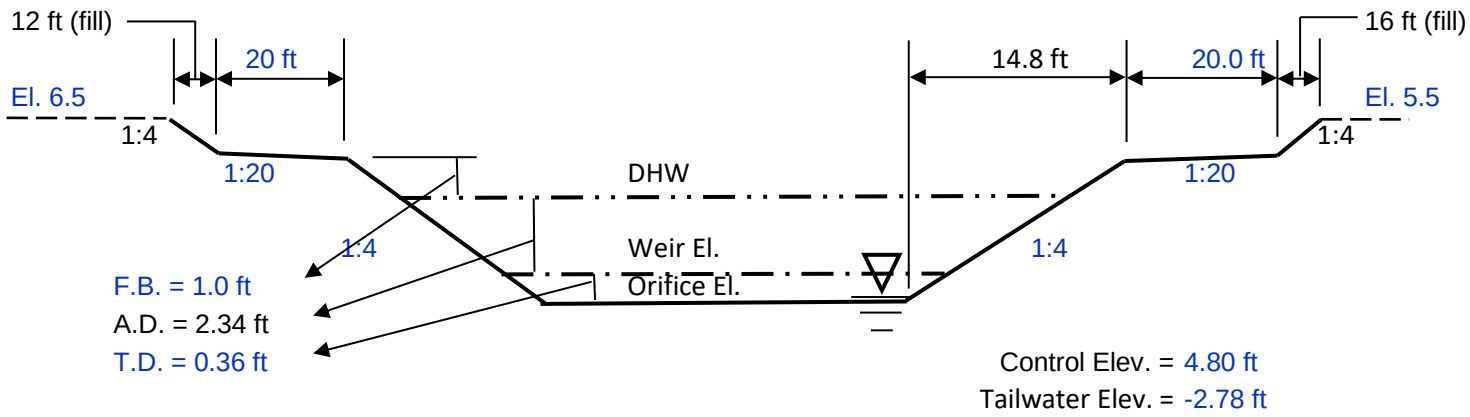
$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Attenuation volume required (Post-Pre) **1.45 ac-ft**

DRAFT

POND SIZE ESTIMATE



Approx. low edge of pavement elevation (LEOP)= 9.20
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (1500 ft) = 1.20 ft
Head loss from SMF to Outfall (950 ft) = 0.76 ft
Available depth for T.D. + A.D. = 2.70 ft

SHW for Pond 2B is 4.8. Assume northernmost portion of US 41 drains to Frontage Road and not to pond. Compensatory treatment provided.

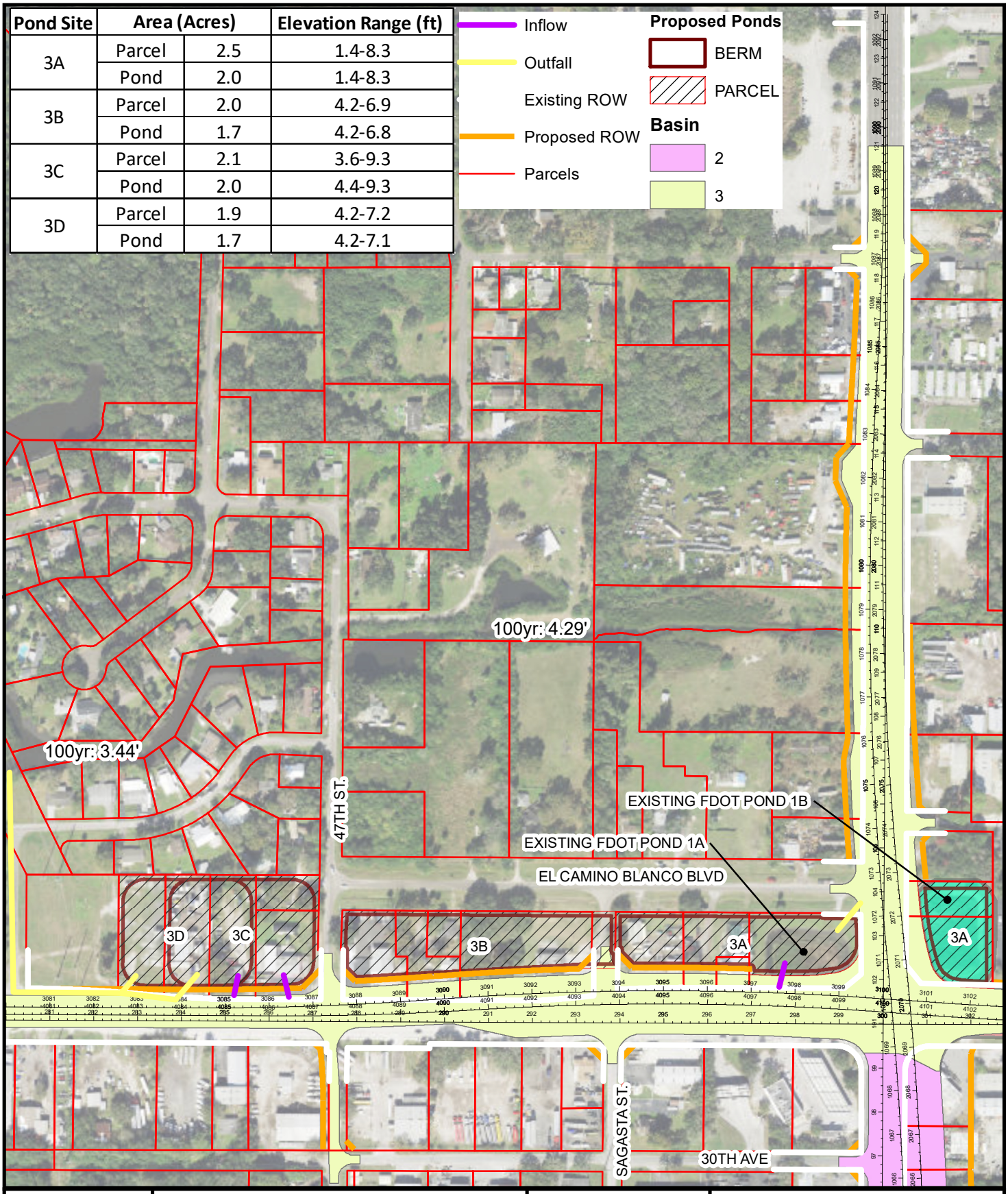
Length/Width Ratio (Rr):	1.3
Treatment area provided by treatment depth (T.D.)	1.21 ac
Square dimension at bottom of T.D.	229.6 ft
Long Rectangular dimension at bottom of T.D. (R1)	261.8 ft
Short Rectangular dimension at bottom of T.D. (R2)	201.4 ft
Long Rectangular dimension at tie-in (R1)	359 ft
Short Rectangular dimension at tie-in (R2)	299 ft

	Required	Provided
Treatment Volume	0.44 ac-ft	0.44 ac-ft
Attenuation Volume	1.45 ac-ft	3.15 ac-ft

Minimum Pond Site Area Required: **3.00 ac**
(Includes 20% increase for conservatism)

DRAFT

Pond Site	Area (Acres)		Elevation Range (ft)
3A	Parcel	2.5	1.4-8.3
	Pond	2.0	1.4-8.3
3B	Parcel	2.0	4.2-6.9
	Pond	1.7	4.2-6.8
3C	Parcel	2.1	3.6-9.3
	Pond	2.0	4.4-9.3
3D	Parcel	1.9	4.2-7.2
	Pond	1.7	4.2-7.1



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 9/16/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 300

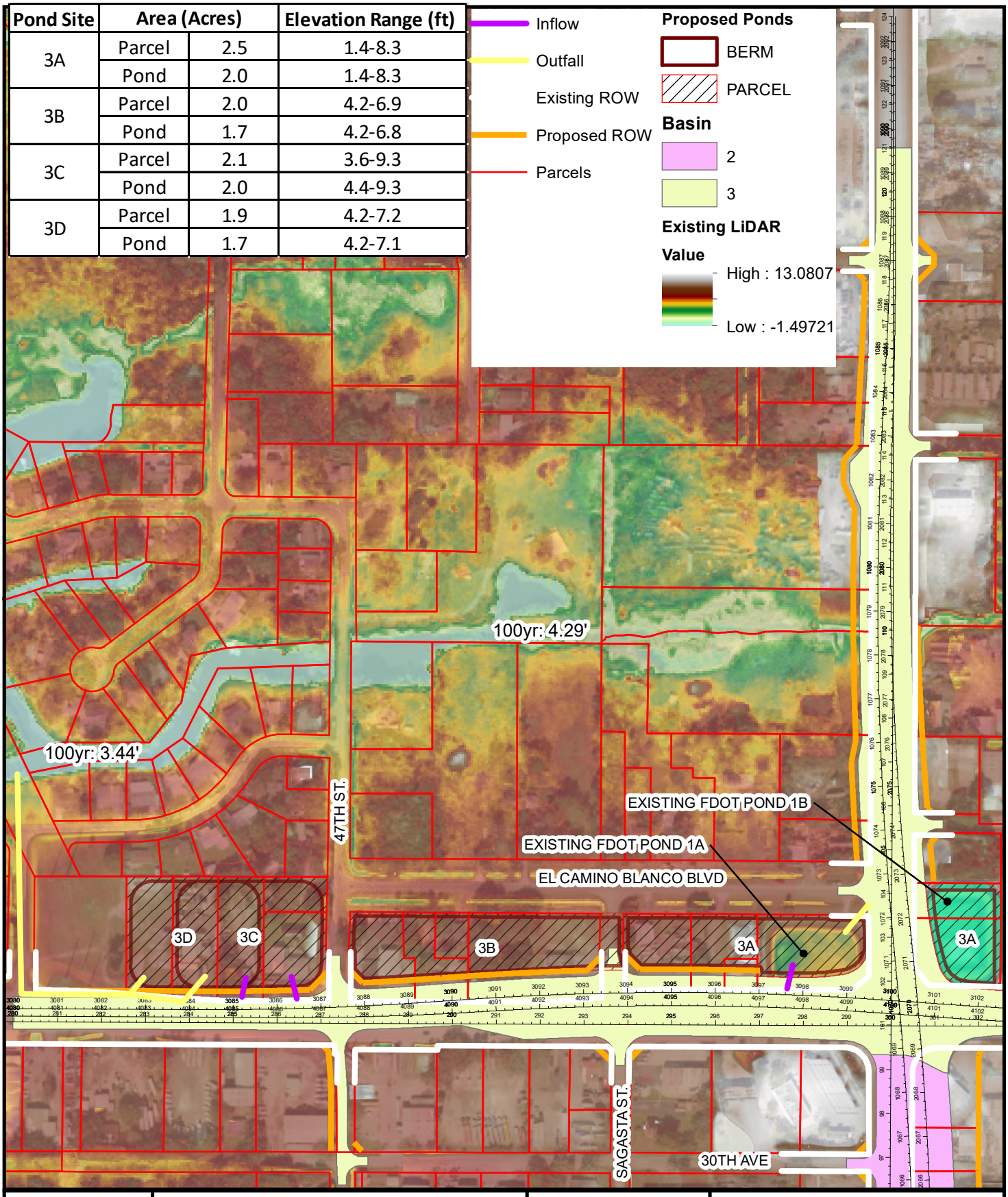
1" = 300'

RK&K

Pond Alternative
Basin 3 Aerial
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondSitesBasin3Aerial.mxd

Pond Site	Area (Acres)		Elevation Range (ft)
3A	Parcel	2.5	1.4-8.3
	Pond	2.0	1.4-8.3
3B	Parcel	2.0	4.2-6.9
	Pond	1.7	4.2-6.8
3C	Parcel	2.1	3.6-9.3
	Pond	2.0	4.4-9.3
3D	Parcel	1.9	4.2-7.2
	Pond	1.7	4.2-7.1



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

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Date: 9/16/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 300
1" = 300'

RK&K

Pond Alternative
Basin 3 LiDAR
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondSitesBasin3LiDAR.mxd

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 3A

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

ERP 27063.000 Existing Ponds to be reconfigured.

Pond 1A Treatment Volume	0.12 ac-ft
Pond 1B Treatment Volume	0.63 ac-ft
Total	0.75 ac-ft

Pond 1A Volume at DHW	0.62 ac-ft
Pond 1B Volume at DHW	2.76 ac-ft
	3.38 ac-ft

TREATMENT CALCULATIONS

Treatment volume required **0.75 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? Y
SWFWMD 25-yr 24-hr rainfall 7.9 in.

Calculate existing attenuation volume provided

Pond 1A

Weir Elevation	5.40
Area at 5.0 (measured from permit plans)	0.50 ac
Area at 6.9 (measured from permit plans)	0.71 ac
Area at Weir 5.4	0.56 ac
Area at DHW 6.1	0.79 ac
Attenuation volume	0.47 ac-ft

Pond 1B

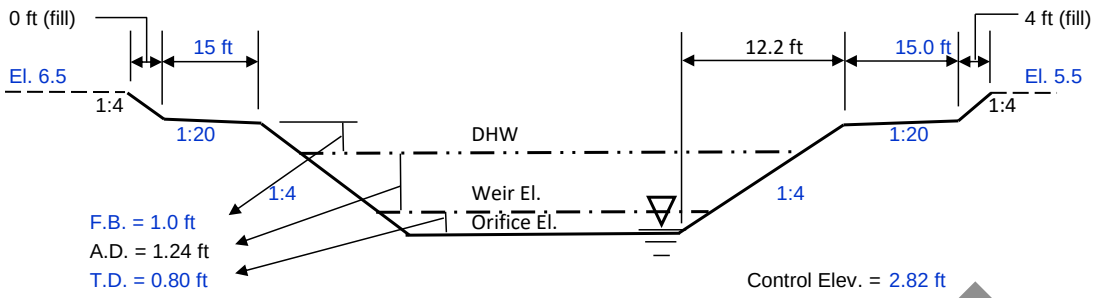
Weir Elevation	4.80
Area at 2.7 (measured from permit plans)	0.52 ac
Area at 5.0 (measured from permit plans)	0.65 ac
Area at Weir 4.8	0.64 ac
Area at 6.9 (measured from permit plans)	0.87 ac
Area at 9.5 (measured from permit plans)	0.97 ac
Area at DHW 7.7	0.90 ac
Attenuation volume	0.54 ac-ft

Pond 1A Attenuation Volume	0.47 ac-ft
Pond 1B Attenuation Volume	0.54 ac-ft
	1.01 ac-ft

Attenuation volume required (Post-Pre) **1.01 ac-ft**

DRAFT

POND SIZE ESTIMATE



Control Elev. = 2.82 ft
Tailwater Elev. = 2.00 ft

Approx. low edge of pavement elevation (LEOP)= 5.40
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (50 ft) = 0.04 ft
Head loss from SMF to Outfall (650 ft) = 0.52 ft
Available depth for T.D. + A.D. = 2.04 ft

Control based on ERP 4327063.000 Pond 1B with liner

Length/Width Ratio (Rr):	2
Treatment area provided by treatment depth (T.D.)	0.94 ac
Square dimension at bottom of T.D.	202.4 ft
Long Rectangular dimension at bottom of T.D. (R1)	286.2 ft
Short Rectangular dimension at bottom of T.D. (R2)	143.1 ft
Long Rectangular dimension at tie-in (R1)	345 ft
Short Rectangular dimension at tie-in (R2)	201 ft

	Required	Provided
Treatment Volume	**0.75 ac-ft**	**0.78 ac-ft**
Attenuation Volume	**1.01 ac-ft**	**1.31 ac-ft**

Minimum Pond Site Area Required: **2.00 ac**
(Includes 20% increase for conservatism)

DRAFT

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 3B - includes Pond 3A

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

Pre-Development (R/W Area)

Total Area = 19.25 ac
Impervious Area = 11.99 ac
Pervious Area = 7.25 ac

Post-Development (R/W Area)

Total Area = 19.25 ac
Impervious Area = 14.40 ac
Pervious Area = 4.85 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area	0.20 ac
Existing treatment volume in Ponds 1A and 1B	0.75 ac-ft
Treatment volume required	**0.95 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary?	Y
SWFWMD 25-yr 24-hr rainfall	7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.25 ac	3.60 ac	22.85 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			11.99 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			10.85 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN 80

DRAFT

	Area	*CN*	*Weighted*
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	11.99 ac	98	51.44
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	10.85 ac	80	38.01
		CN_{pre} =	89

SCS Method for Attenuation Volume:

S_{pre} = 1.18 in.

Q_{pre} = 6.68 in.

Pre-development runoff volume = **12.72 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.25 ac	3.60 ac	22.85 ac
Impervious Areas			
Water			2.98 ac
Pavement			14.40 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			5.47 ac

	Area	*CN*	*Weighted*
Impervious Areas			
Water	2.98 ac	100	13.04
Pavement	14.40 ac	98	61.76
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	5.47 ac	80	19.15
		CN_{post} =	94.0

SCS Method for Attenuation Volume:

S_{post} = 0.64 in.

Q_{post} = 7.22 in.

Post-development runoff volume = **13.74 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

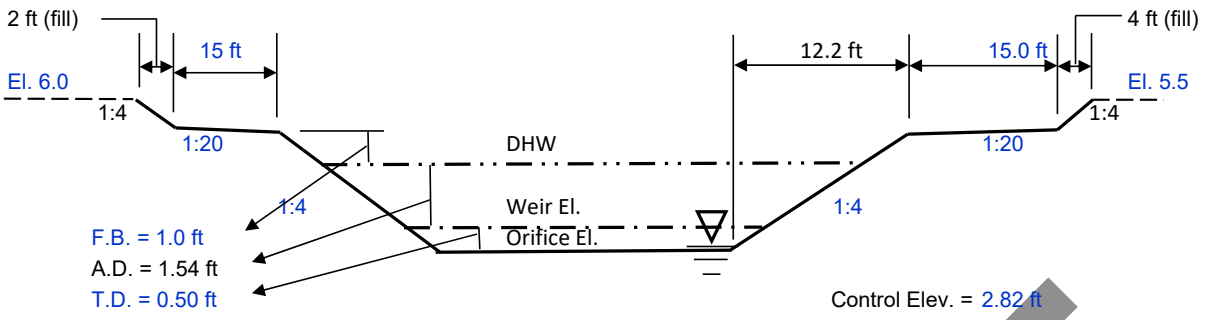
Attenuation volume required (Post-Pre) 1.02 ac-ft

Attenuation volume from existing Ponds 1A and 1B 1.01 ac-ft

Total Attenuation volume required **2.03 ac-ft**

DRAFT

POND SIZE ESTIMATE



Control Elev. = 2.82 ft
Tailwater Elev. = 2.00 ft

Approx. low edge of pavement elevation (LEOP)= 5.40
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (50 ft) = 0.04 ft
Head loss from SMF to Outfall (650 ft) = 0.52 ft
Available depth for T.D. + A.D. = 2.04 ft

Control based on ERP 4327063.000 Pond 1B with liner. SHW 3.7 NGVD. Assume compensatory treatment in pond and only draining east of 47th Street

Length/Width Ratio (Rr): 4

Treatment area provided by treatment depth (T.D.) 1.90 ac

Square dimension at bottom of T.D. 287.7 ft
Long Rectangular dimension at bottom of T.D. (R1) 575.4 ft
Short Rectangular dimension at bottom of T.D. (R2) 143.9 ft

Long Rectangular dimension at tie-in (R1) 636 ft
Short Rectangular dimension at tie-in (R2) 204 ft

	Required	Provided
Treatment Volume	**0.95 ac-ft**	**0.97 ac-ft**
Attenuation Volume	**2.03 ac-ft**	**3.19 ac-ft**

Minimum Pond Site Area Required: **3.60 ac**
(Includes 20% increase for conservatism)

DRAFT

US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 3C

Designed By: VV
Date: 10/27/2022
Checked By: EAL
Date: 10/27/2022

Pre-Development (R/W Area)

Total Area = 19.25 ac
Impervious Area = 11.99 ac
Pervious Area = 7.25 ac

Post-Development (R/W Area)

Total Area = 19.25 ac
Impervious Area = 14.40 ac
Pervious Area = 4.85 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area: 0.20 ac

Treatment volume required: **0.20 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? Y
SWFWMD 25-yr 24-hr rainfall: 7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.25 ac	2.00 ac	21.25 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			11.99 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			9.25 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN: 80

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	Area	*CN*	*Weighted*
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	11.99 ac	98	55.31
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	9.25 ac	80	34.85
		CN_{pre} =	90

SCS Method for Attenuation Volume:

S_{pre} = 1.09 in.

Q_{pre} = 6.77 in.

Pre-development runoff volume = **11.98 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.25 ac	2.00 ac	21.25 ac
Impervious Areas			
Water			1.73 ac
Pavement			14.40 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			5.12 ac

	Area	*CN*	*Weighted*
Impervious Areas			
Water	1.73 ac	100	8.15
Pavement	14.40 ac	98	66.41
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	5.12 ac	80	19.27
		CN_{post} =	93.8

SCS Method for Attenuation Volume:

S_{post} = 0.66 in.

Q_{post} = 7.20 in.

Post-development runoff volume = **12.75 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Attenuation volume required (Post-Pre) **0.77 ac-ft**

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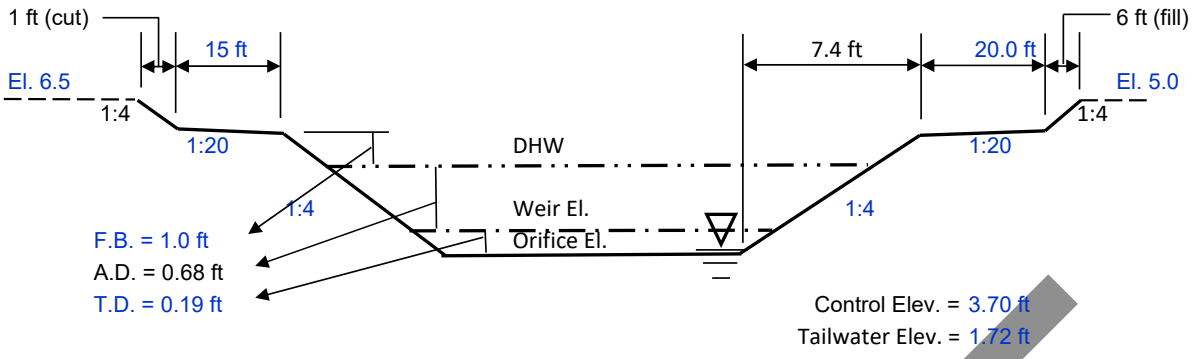
POND SIZE ESTIMATE



Approx. low edge of pavement elevation (LEOP)= 5.30
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (300 ft) = 0.24 ft
Head loss from SMF to Outfall (900 ft) = 0.72 ft
Available depth for T.D. + A.D. = 0.86 ft

Avg. SHW for Pond 3C is 3.7.

Length/Width Ratio (Rr): 1.5

Treatment area provided by treatment depth (T.D.) 1.08 ac

Square dimension at bottom of T.D. 216.9 ft
Long Rectangular dimension at bottom of T.D. (R1) 265.6 ft
Short Rectangular dimension at bottom of T.D. (R2) 177.1 ft

Long Rectangular dimension at tie-in (R1) 323 ft
Short Rectangular dimension at tie-in (R2) 234 ft

	Required	Provided
Treatment Volume	**0.20 ac-ft**	**0.20 ac-ft**
Attenuation Volume	**0.77 ac-ft**	**0.77 ac-ft**

Minimum Pond Site Area Required: **2.00 ac**
(Includes 10% increase for conservatism)

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US 41 at CSX
FPID 440749-1-22-01
Pond Siting Report
Pond 3D

Designed By:	VV
Date:	10/27/2022
Checked By:	EAL
Date:	10/27/2022

Pre-Development (R/W Area)

Total Area =	19.25 ac
Impervious Area =	11.99 ac
Pervious Area =	7.25 ac

Post-Development (R/W Area)

Total Area =	19.25 ac
Impervious Area =	14.40 ac
Pervious Area =	4.85 ac

TREATMENT CALCULATIONS

Treat 1 in. of runoff over new impervious area — 0.20 ac

Treatment volume required — **0.20 ac-ft**

ATTENUATION CALCULATIONS

Will attenuation be necessary? — Y
SWFWMD 25-yr 24-hr rainfall — 7.9 in.

Pre-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.25 ac	1.70 ac	20.95 ac
Impervious Areas			
Water			0.00 ac
Pavement (roadways, driveways, concrete, etc.)			11.99 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			8.95 ac

CN Calculations

Roadway Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Pond Site Pervious

Soil Type(s)	HSG	CN	%
30	A/D	80	100%
	Average CN	80	

Average Pervious CN — 80

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	Area	*CN*	*Weighted*
Impervious Areas			
Water	0.00 ac	100	0.00
Pavement	11.99 ac	98	56.11
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	8.95 ac	80	34.20
		CN_{pre} =	90

SCS Method for Attenuation Volume:

S_{pre} = 1.07 in.

Q_{pre} = 6.78 in.

Pre-development runoff volume = **11.84 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

ATTENUATION CALCULATIONS (CONT.)

Post-development Conditions

	R/W Area	Pond Area	Total Area
Total Area to be attenuated for	19.25 ac	1.70 ac	20.95 ac
Impervious Areas			
Water			1.38 ac
Pavement			14.40 ac
Residential area			0.00 ac
Commercial area			0.00 ac
Industrial area			0.00 ac
Open space			5.17 ac

	Area	*CN*	*Weighted*
Impervious Areas			
Water	1.38 ac	100	6.57
Pavement	14.40 ac	98	67.36
Residential area	0.00 ac	90	0.00
Commercial area	0.00 ac	94	0.00
Industrial area	0.00 ac	91	0.00
Open space	5.17 ac	80	19.76
		CN_{post} =	93.7

SCS Method for Attenuation Volume:

S_{post} = 0.67 in.

Q_{post} = 7.18 in.

Post-development runoff volume = **12.54 ac-ft**

$$S = \frac{1{,}000}{CN} - 10$$

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Attenuation volume required (Post-Pre) **0.70 ac-ft**

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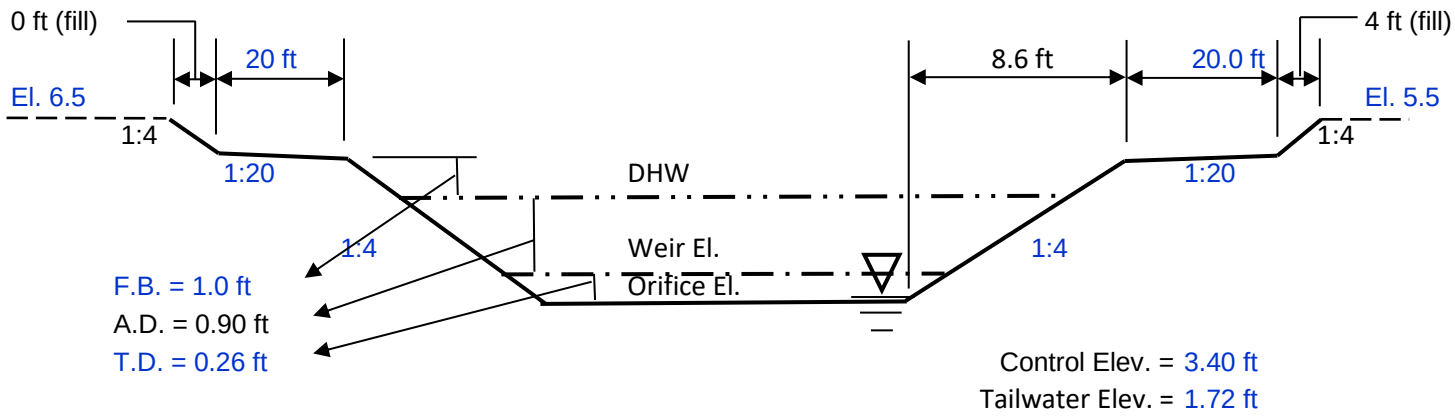
POND SIZE ESTIMATE



Approx. low edge of pavement elevation (LEOP)= 5.30
Approx. hydraulic clearance from LEOP = 0.50 ft
Head loss from LEOP to SMF (300 ft) = 0.24 ft
Head loss from SMF to Outfall (800 ft) = 0.64 ft
Available depth for T.D. + A.D. = 1.16 ft

Avg. SHW for Pond 3D is 3.9. Assume 3.4 for the control elevation

Length/Width Ratio (Rr):	1.3
Treatment area provided by treatment depth (T.D.)	0.77 ac
Square dimension at bottom of T.D.	183.1 ft
Long Rectangular dimension at bottom of T.D. (R1)	208.8 ft
Short Rectangular dimension at bottom of T.D. (R2)	160.6 ft
Long Rectangular dimension at tie-in (R1)	270 ft
Short Rectangular dimension at tie-in (R2)	222 ft

	Required	Provided
Treatment Volume	0.20 ac-ft	0.20 ac-ft
Attenuation Volume	0.70 ac-ft	0.74 ac-ft

Minimum Pond Site Area Required: **1.70 ac**
(Includes 20% increase for conservatism)

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Pond Alternatives Cost Estimate

					Basin 1					
					1A		1B		1C	
	Pay Item		Unit	Unit Cost[!]	Quanity	Cost	Quanity	Cost	Quanity	Cost
Clearing & Grubbing	Mixed	110-1-1	AC	$ 34,493.07	1.8	$ 62,087.53	1.9	$ 65,536.83	2.1	$ 72,435.45
Pipes (Outflow)	Pipe Culvert 36"S/CD	430-175-136	LF	$ 273.22		$ -		$ -		$ -
	Pipe Culvert 42"S/CD	430-175-142	LF	$ 307.50	650	$ 199,875.00	502	$ 154,365.00	62	$ 19,065.00
Pipes (Inflow)	Pipe Culvert 42"S/CD	430-175-142	LF	$ 307.50		$ -		$ -		$ -
	Pipe Culvert 48"S/CD	430-175-148	LF	$ 551.77		$ -	316	$ 174,359.32	663	$ 365,823.51
Stuctures	Type D Modified	425-1-549	EA	$ 6,000.00	1	$ 6,000.00	1	$ 6,000.00	1	$ 6,000.00
	Manhole P-8	425-2-61	EA	$ 9,541.24		$ -		$ -		$ -
	Manhole J-8	425-2-91	EA	$ 13,025.21	2	$ 26,050.42	3	$ 39,075.63	2	$ 26,050.42
Earthwork[*]	Subsoil Excavation	120-4	CY	$ 15.21	11226	$ 170,747.46	25698	$ 390,866.58	26508	$ 403,186.68
	Embankment	120-6	CY	$ 10.96	2445	$ 26,797.20	9054	$ 99,231.84	9821	$ 107,638.16
Liner[**]	Impermeable PVC	531-1-100	SY	$ 24.00		$ -	5246	$ 125,904.00	5460	$ 131,040.00
Performance Turf[***]	Sod	570-1-1	SY	$ 2.76	3877	$ 10,700.52	3139	$ 8,663.64	3442	$ 9,499.92
Contingency	Fencing, erosion control, etc.	999-25	20%			$ 100,451.63		$ 212,800.57		$ 228,147.83
						$ 602,709.75		$ 1,276,803.41		$ 1,368,886.96

*Earthwork determined from preliminary pond sizes in the pond sizing calculations. In the cases where liner is required, additional excavation 5-ft below pond bottom was assumed. It was also assumed that new clean fill would be required to replace the excavation for the liner

** Liner was assumed to match the inside berm area of the proposed pond

***Performance Turf assumes the entire pond area minus the area at the treatment elevation.

! Costs from FDOT Statewide Average Cost 8/1/22 to 1/31/23

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Pond Alternatives Cost Estimate

					Basin 2			
					2A		2B	
	Pay Item		Unit	Unit Cost[!]	Quanity	Cost	Quanity	Cost
Clearing & Grubbing	Mixed	110-1-1	AC	$ 34,493.07	2.7	$ 93,131.29	3	$ 103,479.21
Pipes (Outflow)	Pipe Culvert 36"S/CD	430-175-136	LF	$ 273.22		$ -		$ -
	Pipe Culvert 42"S/CD	430-175-142	LF	$ 307.50	705	$ 216,787.50	940	$ 289,050.00
Pipes (Inflow)	Pipe Culvert 42"S/CD	430-175-142	LF	$ 307.50		$ -		$ -
	Pipe Culvert 48"S/CD	430-175-148	LF	$ 551.77	195	$ 107,595.15	732	$ 403,895.64
Stuctures	Type D Modified	425-1-549	EA	$ 6,000.00	1	$ 6,000.00	1	$ 6,000.00
	Manhole P-8	425-2-61	EA	$ 9,541.24		$ -		$ -
	Manhole J-8	425-2-91	EA	$ 13,025.21	2	$ 26,050.42	4	$ 52,100.84
Earthwork*	Subsoil Excavation	120-4	CY	$ 15.21	23764	$ 361,450.44	12579	$ 191,326.59
	Embankment	120-6	CY	$ 10.96	24700	$ 270,712.00	19118	$ 209,533.28
Liner**	Impermeable PVC	531-1-100	SY	$ 24.00	6806	$ 163,344.00		$ -
Performance Turf***	Sod	570-1-1	SY	$ 2.76	5817	$ 16,054.92	6082	$ 16,786.32
Contingency	Fencing, erosion control, etc.	999-25	20%			$ 252,225.14		$ 254,434.38
						$ 1,513,350.86		$ 1,526,606.26

*Earthwork determined from preliminary pond sizes in the pond sizing calculations. In the cases where liner is required, additional excavation 5-ft below pond bottom was assumed. It was also assumed that new clean fill would be required to replace the excavation for the liner

** Liner was assumed to match the inside berm area of the proposed pond

***Performance Turf assumes the entire pond area minus the area at the treatment elevation.

! Costs from FDOT Statewide Average Cost 8/1/22 to 1/31/23

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Pond Alternatives Cost Estimate

					Basin 3					
					3B		3C		3D	
	Pay Item		Unit	Unit Cost[!]	Quanity	Cost	Quanity	Cost	Quanity	Cost
Clearing & Grubbing	Mixed	110-1-1	AC	$ 34,493.07	0.8	$ 27,594.46	2	$ 68,986.14	1.7	$ 58,638.22
Pipes (Outflow)	Pipe Culvert 36"S/CD	430-175-136	LF	$ 273.22		$ -	901	$ 246,171.22	822	$ 224,586.84
	Pipe Culvert 42"S/CD	430-175-142	LF	$ 307.50		$ -		$ -		$ -
Pipes (Inflow)	Pipe Culvert 42"S/CD	430-175-142	LF	$ 307.50		$ -		$ -		$ -
	Pipe Culvert 48"S/CD	430-175-148	LF	$ 551.77		$ -		$ -		$ -
Stuctures	Type D Modified	425-1-549	EA	$ 6,000.00	1	$ 6,000.00	1	$ 6,000.00	1	$ 6,000.00
	Manhole P-8	425-2-61	EA	$ 9,541.24		$ -	3	$ 28,623.72	3	$ 28,623.72
	Manhole J-8	425-2-91	EA	$ 13,025.21		$ -		$ -		$ -
Earthwork[*]	Subsoil Excavation	120-4	CY	$ 15.21	6386	$ 97,131.06	17771	$ 270,296.91	13982	$ 212,666.22
	Embankment	120-6	CY	$ 10.96	730	$ 8,000.80	739	$ 8,099.44	292	$ 3,200.32
Liner[**]	Impermeable PVC	531-1-100	SY	$ 24.00		$ -		$ -		$ -
Performance Turf[***]	Sod	570-1-1	SY	$ 2.76	1333	$ 3,679.08	3337	$ 9,210.12	2934	$ 8,097.84
Contingency	Fencing, erosion control, etc.	999-25	20%			$ 28,481.08		$ 127,477.51		$ 108,362.63
						$ 170,886.48		$ 764,865.06		$ 650,175.79

*Earthwork determined from preliminary pond sizes in the pond sizing calculations. In the cases where liner is required, additional excavation 5-ft below pond bottom was assumed. It was also assumed that new clean fill would be required to replace the excavation for the liner

** Liner was assumed to match the inside berm area of the proposed pond

***Performance Turf assumes the entire pond area minus the area at the treatment elevation.

! Costs from FDOT Statewide Average Cost 8/1/22 to 1/31/23

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APPENDIX G

SWMM Model Analysis

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US 41 at CSX

440749-1-52-01

Corrected Effective and Proposed Hydraulic Models

SWMM 5.2

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
216148	21.87	21.87	0	22.01	22.01	0	22.1	22.1	0	22.13	22.13	0	22.17	22.17	0	
216798	40.04	40.04	0	42.12	42.12	0	42.31	42.32	0.01	42.41	42.41	0	42.75	42.75	0	
216898	39.97	39.97	0	39.98	39.98	0	39.98	39.98	0	39.99	39.99	0	40	40	0	
216918	61.59	61.59	0	61.76	61.76	0	61.86	61.86	0	61.9	61.9	0	62.04	62.04	0	
217398	30.47	30.47	0	30.61	30.61	0	30.88	30.88	0	30.95	30.95	0	31.42	31.42	0	
220898	27.05	27.05	0	27.08	27.08	0	27.13	27.13	0	27.14	27.14	0	27.18	27.18	0	
220908	34.56	34.56	0	34.58	34.58	0	34.6	34.6	0	34.61	34.61	0	34.65	34.65	0	
221118	39.73	39.73	0	40.32	40.32	0	40.58	40.58	0	40.71	40.71	0	41.3	41.3	0	
221308	31.33	31.33	0	31.5	31.5	0	31.54	31.54	0	31.61	31.61	0	32.46	32.46	0	
222048	30.32	30.32	0	30.37	30.37	0	30.39	30.39	0	30.4	30.4	0	30.44	30.44	0	
222358	28.14	28.14	0	28.52	28.52	0	28.68	28.68	0	28.74	28.74	0	29.03	29.03	0	
222408	33	33	0	33.34	33.34	0	33.42	33.42	0	33.49	33.49	0	33.85	33.85	0	
222768	30.28	30.28	0	30.5	30.5	0	30.6	30.6	0	30.69	30.69	0	31.04	31.04	0	
222778	27.3	27.3	0	27.37	27.37	0	27.42	27.42	0	27.44	27.44	0	27.48	27.48	0	
222848	46.68	46.68	0	47.62	47.62	0	48.13	48.13	0	48.58	48.58	0	50.61	50.61	0	
222858	47.33	47.33	0	48.16	48.16	0	48.58	48.58	0	48.76	48.76	0	50.22	50.22	0	
222898	72.7	72.7	0	73.37	73.37	0	73.83	73.83	0	74.12	74.12	0	75.41	75.41	0	
222918	63.12	63.12	0	63.33	63.33	0	63.37	63.37	0	63.41	63.41	0	63.59	63.59	0	
223028	41.25	41.25	0	41.52	41.52	0	41.75	41.75	0	41.87	41.87	0	42.57	42.57	0	
223118	50.2	50.2	0	50.41	50.41	0	50.45	50.45	0	50.46	50.46	0	50.51	50.51	0	
223148	54.77	54.77	0	54.8	54.8	0	54.81	54.81	0	54.82	54.82	0	54.83	54.83	0	
223208	44.82	44.82	0	44.89	44.89	0	44.92	44.92	0	44.94	44.94	0	45.08	45.08	0	
223228	50.21	50.21	0	50.43	50.43	0	50.46	50.46	0	50.47	50.47	0	50.57	50.57	0	
223258	48.67	48.67	0	49.04	49.04	0	49.08	49.08	0	49.09	49.09	0	49.73	49.73	0	
223278	76.94	76.94	0	76.99	76.99	0	77.01	77.01	0	77.02	77.02	0	77.13	77.13	0	
223298	62.02	62.02	0	62.17	62.17	0	62.18	62.18	0	62.18	62.18	0	62.19	62.19	0	
223318	46.86	46.86	0	47.07	47.07	0	47.12	47.12	0	47.19	47.19	0	47.66	47.66	0	
223328	66.68	66.68	0	66.81	66.81	0	66.84	66.84	0	66.85	66.85	0	66.92	66.92	0	
223448	39.71	39.71	0	39.81	39.81	0	39.85	39.85	0	39.86	39.86	0	39.94	39.94	0	
223458	35.23	35.23	0	35.93	35.93	0	36.49	36.49	0	36.72	36.72	0	37.91	37.91	0	
223528	36.33	36.33	0	36.74	36.74	0	37.1	37.1	0	37.41	37.41	0	38.4	38.4	0	
223538	64.32	64.32	0	64.38	64.38	0	64.39	64.39	0	64.39	64.39	0	64.41	64.41	0	
280625	7.22	7.22	0	8.18	8.18	0	8.58	8.58	0	8.77	8.77	0	9.61	9.61	0	
200000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
200205	3	3	0	3	3	0	3	3	0	3	3	0	3	3	0	
201000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
202000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
202100	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
210000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
210795	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
210805	3	3	0	3	3	0	3	3	0	3	3	0	3	3	0	
212485	18	18	0	18	18	0	18	18	0	18	18	0	18	18	0	
212495	17	17	0	17	17	0	17	17	0	17	17	0	17	17	0	
212955	22	22	0	22	22	0	22	22	0	22	22	0	22	22	0	
214055	27	27	0	27	27	0	27	27	0	27	27	0	27	27	0	
214245	25	25	0	25	25	0	25	25	0	25	25	0	25	25	0	
216146	20.86	20.86	0	20.93	20.93	0	20.95	20.95	0	20.96	20.96	0	20.97	20.97	0	
216385	28	28	0	28	28	0	28	28	0	28	28	0	28	28	0	
216558	27.97	27.97	0	27.97	27.97	0	27.97	27.97	0	27.97	27.97	0	27.97	27.97	0	
216668	36.4	36.4	0	36.4	36.4	0	36.4	36.4	0	36.4	36.4	0	36.4	36.4	0	
216778	28.2	28.2	0	28.2	28.2	0	28.2	28.2	0	28.2	28.2	0	28.2	28.2	0	
216788	12.94	12.94	0	12.94	12.94	0	12.94	12.94	0	12.94	12.94	0	12.94	12.94	0	
216796	33.15	33.15	0	33.15	33.15	0	33.15	33.15	0	33.15	33.15	0	33.15	33.15	0	
216896	38.93	38.93	0	38.93	38.93	0	38.93	38.93	0	38.93	38.93	0	38.94	38.94	0	
216916	60.58	60.58	0	60.66	60.66	0	60.69	60.69	0	60.7	60.7	0	60.74	60.74	0	
217396	29.43	29.43	0	29.48	29.48	0	29.54	29.54	0	29.56	29.56	0	29.65	29.65	0	
217498	34.57	34.57	0	34.57	34.57	0	34.57	34.57	0	34.57	34.57	0	34.57	34.57	0	
220896	26.04	26.04	0	26.06	26.06	0	26.08	26.08	0	26.08	26.08	0	26.09	26.09	0	
220906	33.55	33.55	0	33.56	33.56	0	33.57	33.57	0	33.57	33.57	0	33.59	33.59	0	
220938	27.28	27.28	0	27.28	27.28	0	27.28	27.28	0	27.28	27.28	0	27.28	27.28	0	
221116	31.05	31.05	0	31.05	31.05	0	31.05	31.05	0	31.05	31.05	0	31.05	31.05	0	
221228	28.42	28.42	0	28.42	28.42	0	28.42	28.42	0	28.42	28.42	0	28.42	28.42	0	
221306	30.21	30.21	0	30.26	30.26	0	30.27	30.27	0	30.29	30.29	0	30.47	30.47	0	
222046	30.3	30.3	0	30.33	30.33	0	30.34	30.34	0	30.35	30.35	0	30.37	30.37	0	
222088	33.08	33.08	0	33.08	33.08	0	33.08	33.08	0	33.08	33.08	0	33.08	33.08	0	
222168	26.16	26.16	0	26.16	26.16	0	26.16	26.16	0	26.16	26.16	0	26.16	26.16	0	
222356	27.09	27.09	0	27.19	27.19	0	27.22	27.22	0	27.24	27.24	0	27.29	27.29	0	
222378	31.14	31.14	0	31.14	31.14	0	31.14	31.14	0	31.14	31.14	0	31.14	31.14	0	
222406	32	32	0	32.14	32.14	0	32.16	32.16	0	32.17	32.17	0	32.25	32.25	0	
222478	33.08	33.08	0	33.08	33.08	0	33.08	33.08	0	33.08	33.08	0	33.08	33.08	0	
222483	33.23	33.23	0	33.23	33.23	0	33.23	33.23	0	33.23	33.23	0	33.23	33.23	0	
222493	38	38	0	38	38	0	38	38	0	38	38	0	38	38	0	
222503	33	33	0	33	33	0	33	33	0	33	33	0	33	33	0	
222638	30.89	30.89	0	30.89	30.89	0	30.89	30.89	0	30.89	30.89	0	30.89	30.89	0	
222658	29.78	29.78	0	29.78	29.78	0	29.78	29.78	0	29.78	29.78	0	29.78	29.78	0	
222698	23.62	23.62	0	23.62	23.62	0	23.62	23.62	0	23.62	23.62	0	23.62	23.62	0	
222718	33	33	0	33	33	0	33	33	0	33	33	0	33	33	0	
222766	29.25	29.25	0	29.32	29.32	0	29.34	29.34	0	29.36	29.36	0	29.43	29.43	0	
222776	26.15	26.15	0	26.17	26.17	0	26.19	26.19	0	26.2	26.2	0	26.22	26.22	0	
222798	15.9	15.9	0	15.9	15.9	0	15.9	15.9	0	15.9	15.9	0	15.9	15.9	0	
222846	45.74	45.74	0	46.21	46.21	0	46.48	46.48	0	46.73	46.73	0	47.82	47.82	0	
222856	46.54	46.54	0	46.94	46.94	0	47.15	47.15	0	47.24	47.24	0	47.99	47.99	0	
222888	68.12	68.12	0	68.12	68.12	0	68.12	68.12	0	68.12	68.12	0	68.12	68.12	0	
222896	71.56	71.56	0	71.7	71.7	0	71.79	71.79	0	71.84	71.84	0	72.07	72.07	0	
222908	48	48	0	48	48	0	48	48	0	48	48	0	48	48	0	
222916	53.81	53.81	0	54	54	0	54.04	54.04	0	54.07	54.07	0	54.23	54.23	0	
222938	68.34	68.34	0	68.34	68.34	0	68.34	68.34	0	68.34	68.34	0	68.34	68.34	0	
222948	76.39	76.39	0	76.39	76.39	0	76.39	76.39	0	76.39	76.39	0	76.39	76.39	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
222988	79.03	79.03	0	79.03	79.03	0	79.03	79.03	0	79.03	79.03	0	79.03	79.03	0	
222998	63.97	63.97	0	63.97	63.97	0	63.97	63.97	0	63.97	63.97	0	63.97	63.97	0	
223026	38.12	38.12	0	38.12	38.12	0	38.12	38.12	0	38.12	38.12	0	38.12	38.12	0	
223038	36.14	36.14	0	36.14	36.14	0	36.14	36.14	0	36.14	36.14	0	36.14	36.14	0	
223116	48.88	48.88	0	49.01	49.01	0	49.03	49.03	0	49.03	49.03	0	49.07	49.07	0	
223138	47.3	47.3	0	47.3	47.3	0	47.3	47.3	0	47.3	47.3	0	47.3	47.3	0	
223146	51.54	51.54	0	51.57	51.57	0	51.58	51.58	0	51.59	51.59	0	51.6	51.6	0	
223178	42.77	42.77	0	42.77	42.77	0	42.77	42.77	0	42.77	42.77	0	42.77	42.77	0	
223206	43.69	43.69	0	43.73	43.73	0	43.74	43.74	0	43.75	43.75	0	43.82	43.82	0	
223226	45.35	45.35	0	45.35	45.35	0	45.35	45.35	0	45.35	45.35	0	45.35	45.35	0	
223256	47.37	47.37	0	47.58	47.58	0	47.6	47.6	0	47.61	47.61	0	47.98	47.98	0	
223276	75.92	75.92	0	75.95	75.95	0	75.96	75.96	0	75.96	75.96	0	75.99	75.99	0	
223288	74.67	74.67	0	74.67	74.67	0	74.67	74.67	0	74.67	74.67	0	74.67	74.67	0	
223296	61	61	0	61.06	61.06	0	61.07	61.07	0	61.07	61.07	0	61.07	61.07	0	
223308	66.17	66.17	0	66.17	66.17	0	66.17	66.17	0	66.17	66.17	0	66.17	66.17	0	
223316	43.83	43.83	0	43.83	43.83	0	43.83	43.83	0	43.83	43.83	0	43.83	43.83	0	
223326	59.11	59.11	0	59.11	59.11	0	59.11	59.11	0	59.11	59.11	0	59.11	59.11	0	
223338	65.39	65.39	0	65.39	65.39	0	65.39	65.39	0	65.39	65.39	0	65.39	65.39	0	
223348	63.2	63.2	0	63.2	63.2	0	63.2	63.2	0	63.2	63.2	0	63.2	63.2	0	
223408	38.32	38.32	0	38.32	38.32	0	38.32	38.32	0	38.32	38.32	0	38.32	38.32	0	
223418	31.55	31.55	0	31.55	31.55	0	31.55	31.55	0	31.55	31.55	0	31.55	31.55	0	
223428	39.64	39.64	0	39.64	39.64	0	39.64	39.64	0	39.64	39.64	0	39.64	39.64	0	
223446	38.44	38.44	0	38.5	38.5	0	38.52	38.52	0	38.53	38.53	0	38.57	38.57	0	
223456	33.96	33.96	0	34.1	34.1	0	34.2	34.2	0	34.24	34.24	0	34.45	34.45	0	
223468	50	50	0	50	50	0	50	50	0	50	50	0	50	50	0	
223478	53.9	53.9	0	53.9	53.9	0	53.9	53.9	0	53.9	53.9	0	53.9	53.9	0	
223488	53.02	53.02	0	53.02	53.02	0	53.02	53.02	0	53.02	53.02	0	53.02	53.02	0	
223526	35.15	35.15	0	35.24	35.24	0	35.3	35.3	0	35.36	35.36	0	35.54	35.54	0	
223536	55.33	55.33	0	55.33	55.33	0	55.33	55.33	0	55.33	55.33	0	55.33	55.33	0	
223548	70.09	70.09	0	70.09	70.09	0	70.09	70.09	0	70.09	70.09	0	70.09	70.09	0	
223558	72.9	72.9	0	72.9	72.9	0	72.9	72.9	0	72.9	72.9	0	72.9	72.9	0	
230000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
240000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
250000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
250195	15	15	0	15	15	0	15	15	0	15	15	0	15	15	0	
250435	9.5	9.5	0	9.5	9.5	0	9.5	9.5	0	9.5	9.5	0	9.5	9.5	0	
260000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
262360	40	40	0	40	40	0	40	40	0	40	40	0	40	40	0	
266278	31.81	31.81	0	31.81	31.81	0	31.81	31.81	0	31.81	31.81	0	31.81	31.81	0	
266800	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
270000	1.62	1.62	0	1.74	1.74	0	1.82	1.82	0	1.85	1.85	0	2.01	2.01	0	
280000	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	1.62	1.62	0	
280448	22	22	0	22	22	0	22	22	0	22	22	0	22	22	0	
280465	22	22	0	22	22	0	22	22	0	22	22	0	22	22	0	
280623	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
200010	3.23	3.23	0	4.86	4.87	0.01	5.16	5.16	0	5.29	5.29	0	5.89	5.88	-0.01	
200020	3.43	3.43	0	5.66	5.67	0.01	5.88	5.88	0	5.96	5.96	0	6.33	6.33	0	
200030	3.62	3.62	0	5.8	5.81	0.01	6.02	6.02	0	6.11	6.11	0	6.5	6.5	0	
200040	3.66	3.66	0	5.98	5.99	0.01	6.22	6.22	0	6.31	6.31	0	6.75	6.74	-0.01	
200050	3.67	3.67	0	5.98	5.99	0.01	6.22	6.23	0.01	6.32	6.32	0	6.76	6.75	-0.01	
200060	4.22	4.22	0	6.49	6.5	0.01	6.9	6.9	0	7.08	7.08	0	7.95	7.94	-0.01	
200070	4.4	4.4	0	6.5	6.51	0.01	6.91	6.91	0	7.09	7.09	0	7.95	7.95	0	
200080	4.46	4.47	0.01	6.75	6.76	0.01	7.3	7.31	0.01	7.58	7.58	0	9.05	9.05	0	
200090	5.13	5.13	0	6.84	6.85	0.01	7.38	7.38	0	7.65	7.65	0	9.07	9.07	0	
200100	5.89	5.89	0	6.99	7	0.01	7.51	7.51	0	7.76	7.76	0	9.12	9.12	0	
200110	6.66	6.66	0	7.57	7.58	0.01	8.05	8.05	0	8.26	8.26	0	9.3	9.3	0	
200120	6.77	6.77	0	7.66	7.66	0	8.14	8.14	0	8.35	8.35	0	9.34	9.34	0	
200130	8.38	8.38	0	9.37	9.37	0	9.69	9.69	0	9.82	9.82	0	10.31	10.31	0	
200140	8.74	8.74	0	9.6	9.6	0	9.94	9.94	0	10.09	10.09	0	10.63	10.63	0	
200150	9.27	9.27	0	9.87	9.87	0	10.18	10.18	0	10.32	10.32	0	10.89	10.89	0	
200160	10.1	10.1	0	10.75	10.75	0	11.09	11.09	0	11.25	11.25	0	11.95	11.95	0	
200170	10.68	10.68	0	12.07	12.07	0	12.31	12.31	0	12.41	12.41	0	12.92	12.92	0	
200180	10.84	10.84	0	12.15	12.15	0	12.39	12.39	0	12.49	12.49	0	13.01	13.01	0	
200200	3.67	3.67	0	5.98	5.99	0.01	6.23	6.23	0	6.32	6.32	0	6.76	6.75	-0.01	
200210	3.67	3.67	0	6.06	6.07	0.01	6.3	6.3	0	6.39	6.39	0	6.8	6.79	-0.01	
200220	3.67	3.67	0	6.08	6.09	0.01	6.34	6.34	0	6.44	6.44	0	6.88	6.86	-0.02	
200230	3.86	3.81	-0.05	6.54	6.56	0.02	6.92	6.92	0	7.07	7.07	0	7.75	7.71	-0.04	
200240	6.53	6.53	0	6.78	6.77	-0.01	7.05	7.06	0.01	7.3	7.3	0	8.49	8.46	-0.03	
200250	8.61	8.61	0	8.93	8.93	0	9.07	9.07	0	9.14	9.14	0	9.52	9.52	0	
200260	4.07	4	-0.07	6.49	6.52	0.03	6.96	6.96	0	7.12	7.12	0	7.82	7.78	-0.04	
200270	4.82	4.82	0	6.49	6.52	0.03	6.96	6.96	0	7.12	7.12	0	7.82	7.78	-0.04	
200280	3.89	3.84	-0.05	6.58	6.6	0.02	6.96	6.96	0	7.12	7.12	0	7.82	7.78	-0.04	
200300	3.67	3.67	0	5.98	5.99	0.01	6.22	6.23	0.01	6.32	6.32	0	6.76	6.75	-0.01	
200310	3.67	3.67	0	5.99	5.99	0	6.23	6.23	0	6.33	6.33	0	6.79	6.78	-0.01	
200320	3.67	3.67	0	6.48	6.49	0.01	6.89	6.89	0	7.06	7.06	0	7.92	7.92	0	
200330	6.78	6.83	0.05	8.1	8.11	0.01	8.3	8.3	0	8.37	8.38	0.01	9.19	9.19	0	Within Channel Banks
200400	4.47	4.48	0.01	6.83	6.84	0.01	7.34	7.34	0	7.6	7.61	0.01	9.05	9.05	0	
200410	5.32	5.32	0	6.87	6.88	0.01	7.35	7.35	0	7.61	7.61	0	9.05	9.05	0	
200420	5.32	5.32	0	6.95	6.95	0	7.48	7.48	0	7.74	7.74	0	9.08	9.08	0	
200430	5.36	5.36	0	7.05	7.06	0.01	7.57	7.57	0	7.8	7.8	0	9.08	9.08	0	
200440	5.4	5.4	0	7.41	7.41	0	7.98	7.98	0	8.25	8.25	0	9.24	9.24	0	
200450	5.72	5.72	0	7.52	7.52	0	8.02	8.02	0	8.27	8.27	0	9.24	9.24	0	
200460	5.72	5.72	0	7.58	7.58	0	8.17	8.17	0	8.44	8.44	0	9.31	9.31	0	
200470	5.82	5.82	0	7.69	7.69	0	8.26	8.26	0	8.51	8.51	0	9.32	9.32	0	
200480	5.82	5.82	0	7.69	7.69	0	8.24	8.24	0	8.46	8.46	0	9.29	9.29	0	
200490	5.82	5.82	0	7.69	7.69	0	8.24	8.24	0	8.46	8.46	0	9.29	9.29	0	
200500	5.32	5.32	0	6.87	6.88	0.01	7.35	7.35	0	7.59	7.59	0	9.05	9.05	0	
200600	6.67	6.67	0	7.62	7.62	0	8.15	8.15	0	8.39	8.39	0	9.35	9.35	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
200610	6.71	6.71	0	7.73	7.73	0	8.33	8.33	0	8.59	8.59	0	9.36	9.36	0	
200620	6.72	6.72	0	7.76	7.76	0	8.38	8.38	0	8.66	8.66	0	9.52	9.52	0	
200630	6.72	6.72	0	7.84	7.84	0	8.53	8.53	0	8.83	8.83	0	9.84	9.84	0	
200640	7.64	7.64	0	8.33	8.33	0	8.77	8.77	0	8.96	8.96	0	9.88	9.88	0	
200650	7.69	7.69	0	8.32	8.32	0	8.64	8.64	0	8.82	8.82	0	9.81	9.81	0	
201010	1.78	1.78	0	2	2	0	2.13	2.13	0	2.19	2.19	0	2.55	2.55	0	
201020	1.92	1.92	0	2.25	2.25	0	2.43	2.43	0	2.52	2.52	0	2.96	2.96	0	
201030	2.04	2.04	0	2.46	2.46	0	2.67	2.67	0	2.77	2.77	0	3.23	3.23	0	
201040	2.24	2.24	0	2.71	2.71	0	2.91	2.91	0	3	3	0	3.42	3.42	0	
201050	2.34	2.34	0	2.79	2.79	0	2.97	2.97	0	3.06	3.06	0	3.46	3.46	0	
201060	3.2	3.2	0	3.77	3.77	0	3.93	3.93	0	4	4	0	4.27	4.27	0	
201070	3.52	3.52	0	4.42	4.42	0	4.75	4.75	0	4.89	4.89	0	5.54	5.54	0	
201080	3.89	3.89	0	4.69	4.69	0	5	5	0	5.14	5.14	0	5.72	5.72	0	
201090	3.95	3.95	0	4.71	4.71	0	5.01	5.01	0	5.15	5.15	0	5.73	5.73	0	
201100	4.37	4.37	0	5.15	5.15	0	5.48	5.48	0	5.7	5.7	0	6.64	6.64	0	
201110	4.69	4.69	0	5.64	5.64	0	6.12	6.12	0	6.38	6.38	0	7.7	7.7	0	
201120	5.42	5.42	0	6.01	6.01	0	6.24	6.24	0	6.51	6.51	0	7.84	7.84	0	
201130	5.43	5.43	0	6.05	6.05	0	6.4	6.4	0	6.7	6.7	0	8.05	8.05	0	
201140	5.99	5.99	0	6.52	6.52	0	7.06	7.06	0	7.42	7.42	0	8.72	8.72	0	
201150	6	6	0	6.91	6.91	0	7.46	7.46	0	7.9	7.91	0.01	9.23	9.23	0	
201160	6.48	6.48	0	7.46	7.46	0	8.04	8.04	0	8.49	8.49	0	9.54	9.54	0	
201170	7.49	7.49	0	7.97	7.97	0	8.35	8.35	0	8.63	8.63	0	9.55	9.55	0	
201180	7.5	7.5	0	7.99	7.99	0	8.38	8.38	0	8.67	8.67	0	9.76	9.76	0	
201190	7.9	7.9	0	8.32	8.32	0	8.62	8.62	0	8.8	8.8	0	9.81	9.81	0	
201200	1.96	1.96	0	2.31	2.31	0	2.5	2.5	0	2.59	2.59	0	3.04	3.04	0	
201210	1.97	1.97	0	2.34	2.34	0	2.53	2.53	0	2.62	2.62	0	3.06	3.06	0	
201220	2.18	2.18	0	2.62	2.62	0	2.81	2.81	0	2.89	2.89	0	3.28	3.28	0	
201230	2.77	2.77	0	3.43	3.43	0	3.69	3.69	0	3.8	3.8	0	4.39	4.39	0	
201240	2.87	2.87	0	3.58	3.58	0	3.82	3.82	0	4.05	4.07	0.02	6.02	6	-0.02	
201250	2.88	2.88	0	3.59	3.59	0	3.83	3.83	0	4.12	4.14	0.02	6.31	6.29	-0.02	
201260	3.36	3.36	0	4.24	4.24	0	5.03	5.04	0.01	5.36	5.36	0	6.32	6.3	-0.02	
201270	4.31	4.31	0	4.62	4.62	0	5.14	5.15	0.01	5.39	5.39	0	6.32	6.3	-0.02	
201280	4.03	4.03	0	4.6	4.6	0	5.12	5.13	0.01	5.38	5.38	0	6.32	6.3	-0.02	
201290	4.09	4.09	0	4.61	4.61	0	5.14	5.15	0.01	5.39	5.39	0	6.33	6.31	-0.02	
201300	2.9	2.9	0	3.61	3.61	0	3.84	3.84	0	3.94	3.94	0	4.41	4.4	-0.01	
201310	3.04	3.04	0	3.69	3.69	0	3.87	3.87	0	3.95	3.95	0	4.4	4.4	0	
201400	2.04	2.04	0	2.46	2.46	0	2.67	2.67	0	2.77	2.77	0	3.23	3.23	0	
201410	2.14	2.14	0	2.57	2.57	0	2.78	2.78	0	2.87	2.87	0	3.32	3.32	0	
201420	3.23	3.23	0	4	4	0	4.3	4.3	0	4.43	4.43	0	5.02	5.02	0	
201430	4.37	4.37	0	5.15	5.15	0	5.48	5.48	0	5.7	5.7	0	6.48	6.48	0	
201440	5.68	5.68	0	6.04	6.04	0	6.21	6.21	0	6.27	6.27	0	6.51	6.51	0	
201450	4.69	4.69	0	5.64	5.64	0	6.12	6.12	0	6.38	6.38	0	7.7	7.7	0	
201460	4.7	4.7	0	5.86	5.86	0	7.19	7.19	0	7.59	7.59	0	9.05	9.05	0	
201470	3.19	3.19	0	5.64	5.64	0	6.12	6.12	0	6.38	6.38	0	7.7	7.7	0	
201480	4.05	4.05	0	5.64	5.64	0	6.12	6.12	0	6.38	6.38	0	7.7	7.7	0	
201490	4.7	4.7	0	5.64	5.64	0	6.12	6.12	0	6.38	6.38	0	7.7	7.7	0	
201500	6.08	6.08	0	6.31	6.31	0	6.43	6.43	0	6.49	6.49	0	7.81	7.81	0	
201510	3.43	3.43	0	4.23	4.23	0	6.12	6.12	0	6.38	6.38	0	7.7	7.7	0	
201600	5.66	5.66	0	6.34	6.34	0	6.52	6.52	0	6.6	6.6	0	7.84	7.84	0	
201610	5.8	5.8	0	6.37	6.37	0	6.54	6.54	0	6.61	6.61	0	7.84	7.84	0	
201620	6.32	6.32	0	6.59	6.59	0	6.75	6.75	0	6.83	6.83	0	7.84	7.84	0	
201630	5.42	5.42	0	6.02	6.02	0	6.24	6.24	0	6.51	6.51	0	7.84	7.84	0	
201640	6.39	6.39	0	6.68	6.68	0	6.83	6.83	0	6.91	6.91	0	7.84	7.84	0	
201650	6.39	6.39	0	6.68	6.68	0	6.83	6.83	0	6.91	6.91	0	7.84	7.84	0	
201660	6.15	6.15	0	7.05	7.05	0	7.5	7.5	0	7.93	7.93	0	9.76	9.76	0	
201670	6.59	6.59	0	7.09	7.09	0	7.5	7.5	0	7.93	7.93	0	9.76	9.76	0	
201700	8.98	8.98	0	9.37	9.37	0	9.68	9.68	0	9.81	9.81	0	10.3	10.3	0	
201710	9	9	0	9.37	9.37	0	9.51	9.51	0	9.59	9.59	0	9.93	9.93	0	
201720	9.57	9.57	0	10.06	10.06	0	10.48	10.48	0	10.7	10.7	0	11.43	11.43	0	
201730	9.57	9.57	0	10.06	10.06	0	10.48	10.48	0	10.7	10.7	0	11.43	11.43	0	
201740	9.57	9.57	0	9.96	9.96	0	10.22	10.22	0	10.34	10.34	0	10.8	10.8	0	
201750	9.57	9.57	0	9.96	9.96	0	10.22	10.22	0	10.33	10.34	0.01	10.78	10.78	0	
201760	10.11	10.11	0	10.78	10.78	0	11.12	11.12	0	11.28	11.28	0	12.02	12.02	0	
201770	10.13	10.13	0	10.83	10.83	0	11.18	11.18	0	11.34	11.34	0	12.02	12.02	0	
201780	10.1	10.1	0	10.72	10.72	0	11.07	11.07	0	11.23	11.23	0	11.94	11.94	0	
201900	9.57	9.57	0	10.06	10.06	0	10.48	10.48	0	10.7	10.7	0	11.43	11.43	0	
201910	9.59	9.59	0	10.09	10.09	0	10.53	10.53	0	10.75	10.75	0	11.47	11.48	0.01	
201920	10.17	10.17	0	10.8	10.8	0	10.98	10.98	0	11.05	11.05	0	11.51	11.51	0	
201930	11.34	11.34	0	12.36	12.36	0	12.51	12.51	0	12.57	12.57	0	12.82	12.82	0	
201940	11.92	11.92	0	12.47	12.47	0	12.59	12.59	0	12.64	12.64	0	12.86	12.86	0	
201950	10.93	10.93	0	11.38	11.38	0	11.65	11.65	0	11.79	11.79	0	12.36	12.36	0	
201952	12.48	12.48	0	12.88	12.88	0	12.99	12.99	0	13	13	0	13.07	13.07	0	
201954	13.7	13.7	0	13.92	13.92	0	14.01	14.01	0	14.06	14.06	0	14.39	14.39	0	
201960	12.49	12.49	0	12.9	12.9	0	13.08	13.08	0	13.13	13.13	0	13.31	13.31	0	
201970	12.49	12.49	0	12.91	12.91	0	13.1	13.1	0	13.15	13.15	0	13.34	13.34	0	
201980	12.58	12.58	0	13.05	13.05	0	13.23	13.23	0	13.3	13.3	0	13.64	13.64	0	
202010	4.13	4.13	0	4.79	4.79	0	5.07	5.07	0	5.17	5.17	0	5.61	5.61	0	
202110	2	2	0	2.4	2.4	0	2.6	2.6	0	2.69	2.69	0	3.15	3.15	0	
210010	2.49	2.49	0	3.17	3.18	0.01	3.43	3.45	0.02	3.54	3.56	0.02	4.02	4.08	0.06	
210020	2.92	2.92	0	3.75	3.76	0.01	4.06	4.07	0.01	4.19	4.21	0.02	4.72	4.77	0.05	
210028	4.67	4.66	-0.01	5.62	5.63	0.01	5.96	5.98	0.02	6.1	6.13	0.03	6.7	6.77	0.07	
210030	4.73	4.72	-0.01	5.73	5.74	0.01	6.1	6.13	0.03	6.26	6.3	0.04	6.92	7	0.08	
210040	5.84	5.69	-0.15	7.06	6.93	-0.13	7.46	7.36	-0.1	7.63	7.55	-0.08	8.35	8.36	0.01	
210050	6	6.08	0.08	7.4	7.43	0.03	7.87	7.88	0.01	8.09	8.08	-0.01	8.98	8.89	-0.09	Within Channel Banks
210060	6.72	6.77	0.05	8.48	8.49	0.01	9.04	9.04	0	9.28	9.26	-0.02	10.17	10.11	-0.06	Within Channel Banks
210070	6.87	6.92	0.05	8.87	8.89	0.02	9.5	9.5	0	9.76	9.75	-0.01	10.74	10.7	-0.04	Within Channel Banks
210080	6.94	6.99	0.05	8.97	8.98	0.01	9.6	9.6	0	9.86	9.85	-0.01	10.85	10.82	-0.03	Within Channel Banks
210085	6.92	6.97	0.05	8.94	8.95	0.01	9.56	9.56	0	9.82	9.82	0	10.8	10.77	-0.03	Within Channel Banks

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
210090	6.95	7	0.05	8.98	8.99	0.01	9.6	9.6	0	9.86	9.86	0	10.85	10.82	-0.03	Within Channel Banks
210100	7.28	7.32	0.04	9.33	9.34	0.01	9.94	9.94	0	10.2	10.2	0	11.19	11.17	-0.02	
210110	7.35	7.39	0.04	9.52	9.53	0.01	10.15	10.16	0.01	10.42	10.42	0	11.47	11.46	-0.01	
210120	7.96	7.98	0.02	10.08	10.08	0	10.7	10.71	0.01	10.96	10.97	0.01	12.03	12.02	-0.01	
210130	8.05	8.07	0.02	10.17	10.18	0.01	10.8	10.8	0	11.05	11.06	0.01	12.12	12.11	-0.01	
210140	8.23	8.25	0.02	10.38	10.38	0	11	11	0	11.25	11.26	0.01	12.31	12.31	0	
210150	8.46	8.47	0.01	10.82	10.83	0.01	11.48	11.48	0	11.73	11.73	0	12.73	12.73	0	
210160	9.1	9.11	0.01	11.38	11.38	0	12.03	12.03	0	12.26	12.26	0	13.15	13.15	0	
210170	10.2	10.2	0	12.19	12.19	0	12.81	12.81	0	13.03	13.04	0.01	13.83	13.83	0	
210180	11.02	11.02	0	13.46	13.46	0	14.34	14.34	0	14.66	14.66	0	15.88	15.88	0	
210185	11.87	11.87	0	13.98	13.98	0	14.78	14.78	0	15.07	15.07	0	16.2	16.2	0	
210190	12.96	12.96	0	14.76	14.76	0	15.43	15.43	0	15.68	15.68	0	16.67	16.67	0	
210200	13.08	13.08	0	14.95	14.95	0	15.69	15.69	0	15.97	15.97	0	17.11	17.11	0	
210210	14.25	14.25	0	16.21	16.21	0	16.87	16.87	0	17.13	17.13	0	18.15	18.15	0	
210220	14.46	14.46	0	16.71	16.71	0	17.58	17.58	0	17.94	17.94	0	19.4	19.4	0	
210230	15.59	15.59	0	17.66	17.66	0	18.38	18.38	0	18.68	18.68	0	19.95	19.95	0	
210240	16.22	16.22	0	18.36	18.36	0	19.05	19.05	0	19.32	19.32	0	20.48	20.48	0	
210250	17.41	17.41	0	19.52	19.52	0	20.15	20.15	0	20.4	20.4	0	21.45	21.45	0	
210260	18.25	18.25	0	20.39	20.39	0	21.04	21.04	0	21.3	21.3	0	22.46	22.46	0	
210270	18.27	18.27	0	20.42	20.42	0	21.07	21.07	0	21.34	21.34	0	22.5	22.5	0	
210280	19.54	19.54	0	21.61	21.61	0	22.28	22.28	0	22.58	22.58	0	23.93	23.93	0	
210290	19.71	19.71	0	21.74	21.74	0	22.43	22.43	0	22.74	22.74	0	24.13	24.13	0	
210300	20.06	20.06	0	21.96	21.96	0	22.67	22.67	0	22.99	22.99	0	24.42	24.42	0	
210310	21.05	21.05	0	22.65	22.65	0	23.42	23.42	0	23.76	23.76	0	25.21	25.21	0	
210320	21.08	21.08	0	22.69	22.69	0	23.46	23.46	0	23.81	23.81	0	25.31	25.31	0	
210330	21.46	21.46	0	22.92	22.92	0	23.63	23.63	0	23.95	23.95	0	25.41	25.41	0	
210340	23.14	23.14	0	24.31	24.31	0	24.87	24.87	0	25.15	25.15	0	26.38	26.38	0	
210350	23.8	23.8	0	25.12	25.12	0	25.73	25.73	0	26	26	0	27.15	27.15	0	
210360	24.89	24.89	0	26.25	26.25	0	26.81	26.81	0	27.09	27.09	0	28.27	28.27	0	
210370	25.03	25.03	0	26.43	26.43	0	27.01	27.01	0	27.3	27.3	0	28.48	28.48	0	
210380	25.03	25.03	0	26.43	26.43	0	27.03	27.03	0	27.31	27.31	0	28.51	28.51	0	
210390	25.12	25.12	0	26.58	26.58	0	27.19	27.19	0	27.49	27.49	0	28.7	28.7	0	
210400	26.22	26.22	0	27.86	27.86	0	28.44	28.44	0	28.7	28.7	0	29.67	29.67	0	
210410	26.22	26.22	0	27.87	27.87	0	28.46	28.46	0	28.72	28.72	0	29.7	29.7	0	
210420	26.26	26.26	0	27.91	27.91	0	28.49	28.49	0	28.75	28.75	0	29.73	29.73	0	
210430	26.45	26.45	0	28.38	28.38	0	29.11	29.11	0	29.46	29.46	0	30.76	30.76	0	
210450	26.64	26.64	0	28.53	28.53	0	29.24	29.24	0	29.58	29.58	0	30.83	30.83	0	
210460	26.74	26.74	0	28.57	28.57	0	29.27	29.27	0	29.6	29.6	0	30.85	30.85	0	
210470	26.96	26.96	0	28.74	28.74	0	29.42	29.42	0	29.73	29.73	0	30.93	30.93	0	
210480	27.22	27.22	0	28.9	28.9	0	29.52	29.52	0	29.8	29.8	0	30.95	30.95	0	
210490	27.32	27.32	0	29.03	29.03	0	29.63	29.63	0	29.88	29.88	0	31	31	0	
210500	27.46	27.46	0	29.16	29.16	0	29.76	29.76	0	30	30	0	31.08	31.08	0	
210510	27.51	27.51	0	29.36	29.36	0	30.03	30.03	0	30.29	30.29	0	31.44	31.44	0	
210520	27.58	27.58	0	29.45	29.45	0	30.11	30.11	0	30.34	30.34	0	31.47	31.47	0	
210530	28.86	28.86	0	29.8	29.8	0	30.6	30.6	0	30.97	30.97	0	33.92	33.92	0	
210540	28.89	28.89	0	29.91	29.91	0	30.82	30.82	0	31.24	31.24	0	35.32	35.32	0	
210550	35.41	35.41	0	36.56	36.56	0	37.14	37.14	0	37.42	37.42	0	38.61	38.61	0	
210560	35.41	35.41	0	36.58	36.58	0	37.2	37.2	0	37.51	37.51	0	39.12	39.12	0	
210570	35.41	35.41	0	36.67	36.67	0	37.61	37.61	0	38.07	38.07	0	40.51	40.51	0	
210580	35.42	35.42	0	36.74	36.74	0	37.7	37.7	0	38.16	38.16	0	40.7	40.7	0	
210590	35.46	35.46	0	36.65	36.65	0	37.43	37.43	0	37.78	37.78	0	39.38	39.38	0	
210600	35.83	35.83	0	36.82	36.82	0	37.57	37.57	0	37.94	37.94	0	39.61	39.61	0	
210610	35.83	35.83	0	36.82	36.82	0	37.57	37.57	0	37.93	37.93	0	39.98	39.98	0	
210620	34.28	34.28	0	35.98	35.98	0	37.49	37.49	0	38.07	38.07	0	39.98	39.98	0	
210630	38.9	38.9	0	39.78	39.78	0	40.54	40.54	0	41.14	41.14	0	43.7	43.7	0	
210640	41.52	41.52	0	42.32	42.32	0	43.2	43.2	0	43.53	43.53	0	46.44	46.44	0	
210650	50.13	50.13	0	52.83	52.83	0	53.07	53.07	0	53.14	53.14	0	53.7	53.7	0	
210660	53.88	53.88	0	54.41	54.41	0	54.67	54.67	0	54.85	54.85	0	55.48	55.48	0	
210670	53.88	53.88	0	54.41	54.41	0	54.68	54.68	0	54.86	54.86	0	55.53	55.53	0	
210680	53.88	53.88	0	54.48	54.48	0	54.73	54.73	0	54.88	54.88	0	55.61	55.61	0	
210700	2.95	2.94	-0.01	3.8	3.8	0	4.1	4.12	0.02	4.23	4.25	0.02	4.76	4.81	0.05	
210710	2.98	2.97	-0.01	3.88	3.88	0	4.16	4.18	0.02	4.28	4.3	0.02	4.8	4.85	0.05	
210720	3.09	3.08	-0.01	4.03	4.03	0	4.31	4.32	0.01	4.42	4.44	0.02	4.92	4.97	0.05	
210730	3.18	3.16	-0.02	4.39	4.39	0	4.75	4.76	0.01	4.9	4.92	0.02	5.57	5.62	0.05	
210740	3.84	3.79	-0.05	4.94	4.94	0	5.22	5.23	0.01	5.35	5.36	0.01	5.9	5.94	0.04	
210750	4.01	3.95	-0.06	5.44	5.45	0.01	5.84	5.87	0.03	6.02	6.05	0.03	6.74	6.81	0.07	
210760	4.19	4.14	-0.05	5.43	5.44	0.01	5.81	5.83	0.02	5.98	6.01	0.03	6.69	6.76	0.07	
210770	4.31	4.25	-0.06	5.41	5.42	0.01	5.7	5.72	0.02	5.82	5.84	0.02	6.29	6.29	0	
210780	4.78	4.76	-0.02	5.39	5.39	0	5.61	5.62	0.01	5.7	5.71	0.01	6.1	6.07	-0.03	
210790	4.79	4.77	-0.02	5.38	5.39	0.01	5.6	5.61	0.01	5.68	5.69	0.01	6.06	6.06	0	
210800	4.86	4.83	-0.03	5.41	5.4	-0.01	5.6	5.6	0	5.68	5.68	0	6.06	6.07	0.01	
210810	4.19	4.16	-0.03	5.72	5.73	0.01	6.1	6.12	0.02	6.26	6.29	0.03	6.92	6.99	0.07	
210900	6	6.08	0.08	7.4	7.43	0.03	7.87	7.88	0.01	8.09	8.08	-0.01	9.05	8.95	-0.1	Within Channel Banks
210910	7.11	6.31	-0.8	7.45	7.35	-0.1	7.89	7.86	-0.03	8.12	8.09	-0.03	9.06	8.96	-0.1	
210920	7.13	6.32	-0.81	7.48	7.32	-0.16	7.91	7.84	-0.07	8.17	8.09	-0.08	9.15	9.08	-0.07	
210930	7.16	6.57	-0.59	7.51	7.24	-0.27	7.91	7.81	-0.1	8.17	8.07	-0.1	9.14	9.07	-0.07	
210940	7.19	6.6	-0.59	7.61	7.12	-0.49	7.94	7.64	-0.3	8.15	7.87	-0.28	8.96	8.79	-0.17	
210950	7.2	6.6	-0.6	7.63	7.1	-0.53	7.95	7.59	-0.36	8.15	7.82	-0.33	8.92	8.72	-0.2	
210960	7.26	6.62	-0.64	7.75	7.13	-0.62	8.01	7.42	-0.59	8.17	7.62	-0.55	8.74	8.42	-0.32	
210970	7.26	6.62	-0.64	7.75	7.13	-0.62	8.01	7.42	-0.59	8.17	7.62	-0.55	8.74	8.42	-0.32	
210980	7.49	7.5	0.01	7.61	7.7	0.09	7.92	7.85	-0.07	8.21	8.14	-0.07	9.18	9.11	-0.07	Within Channel Banks
210990	7.51	7.51	0	7.76	7.81	0.05	7.95	7.95	0	8.8	8.74	-0.06	11.3	11.29	-0.01	Dummy Node
211000	7.57	7.61	0.04	8.92	8.93	0.01	9.51	9.51	0	9.76	9.76	0	10.72	10.69	-0.03	
211010	9.67	9.67	0	10.4	10.4	0	10.71	10.71	0	10.8	10.8	0	11.3	11.3	0	
211020	9.89	9.89	0	10.73	10.73	0	11.05	11.05	0	11.17	11.17	0	11.73	11.73	0	
211030	10.23	10.23	0	11.18	11.18	0	11.53	11.53	0	11.67	11.67	0	12.33	12.33	0	
211040	10.28	10.28	0	11.33	11.33	0	11.72	11.72	0	11.88	11.88	0	12.52	12.52	0	
211050	10.29	10.29	0	11.36	11.36	0	11.76	11.76	0	11.93	11.93	0	12.58	12.58	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
211060	11.21	11.21	0	11.91	11.91	0	12.2	12.2	0	12.32	12.32	0	12.77	12.77	0	
211070	8.46	8.46	0	9.34	9.36	0.02	10.07	10.07	0	10.35	10.35	0	11.42	11.4	-0.02	
211080	8.97	8.97	0	9.28	9.28	0	9.51	9.51	0	9.76	9.76	0	10.72	10.69	-0.03	
211100	8.41	8.41	0	9.33	9.34	0.01	9.94	9.94	0	10.2	10.2	0	11.19	11.17	-0.02	
211110	8.64	8.64	0	8.94	8.95	0.01	9.56	9.56	0	9.82	9.82	0	10.81	10.78	-0.03	
211120	9.88	9.88	0	10.39	10.39	0	10.62	10.62	0	10.73	10.73	0	11.21	11.21	0	
211130	9.36	9.36	0	10.57	10.57	0	10.71	10.71	0	10.77	10.77	0	11.47	11.46	-0.01	
211140	6.87	6.91	0.04	8.3	8.3	0	8.6	8.6	0	8.73	8.73	0	9.39	9.39	0	
211200	8.49	8.49	0	10.16	10.17	0.01	10.7	10.71	0.01	10.92	10.92	0	11.83	11.83	0	
211210	9.84	9.84	0	10.45	10.45	0	10.73	10.73	0	10.86	10.86	0	11.36	11.36	0	
211220	10.79	10.79	0	11.21	11.21	0	11.49	11.49	0	11.71	11.71	0	12.45	12.45	0	
211230	11.79	11.79	0	12.07	12.07	0	12.18	12.18	0	12.23	12.23	0	12.48	12.48	0	
211300	7.99	8.01	0.02	10.11	10.11	0	10.74	10.75	0.01	11.01	11.01	0	12.08	12.08	0	
211310	8	8.02	0.02	10.13	10.14	0.01	10.79	10.79	0	11.06	11.07	0.01	12.15	12.15	0	
211320	8.04	8.06	0.02	10.17	10.17	0	10.83	10.84	0.01	11.11	11.11	0	12.21	12.21	0	
211330	8.12	8.13	0.01	10.2	10.2	0	10.87	10.87	0	11.15	11.15	0	12.26	12.26	0	
211340	8.83	8.84	0.01	10.31	10.31	0	10.97	10.97	0	11.24	11.25	0.01	12.35	12.35	0	
211350	9.14	9.15	0.01	10.51	10.51	0	11.18	11.18	0	11.46	11.47	0.01	12.58	12.58	0	
211360	10.35	10.35	0	11.75	11.75	0	12.52	12.53	0.01	12.81	12.81	0	13.86	13.86	0	
211370	10.8	10.8	0	12.51	12.51	0	13.16	13.16	0	13.44	13.44	0	14.48	14.48	0	
211380	12.8	12.8	0	13.89	13.89	0	14.32	14.32	0	14.5	14.5	0	15.33	15.33	0	
211390	12.9	12.9	0	14.15	14.15	0	14.64	14.64	0	14.83	14.83	0	15.62	15.62	0	
211400	13.53	13.53	0	14.83	14.83	0	15.32	15.32	0	15.5	15.5	0	16.19	16.19	0	
211410	13.78	13.78	0	15.04	15.04	0	15.56	15.56	0	15.74	15.74	0	16.44	16.44	0	
211420	14.07	14.07	0	15.37	15.37	0	15.91	15.91	0	16.09	16.09	0	16.79	16.79	0	
211430	14.49	14.49	0	15.9	15.9	0	16.24	16.24	0	16.39	16.39	0	16.97	16.97	0	
211440	14.54	14.54	0	15.92	15.92	0	16.27	16.27	0	16.42	16.42	0	17.03	17.03	0	
211450	14.54	14.54	0	15.92	15.92	0	16.27	16.27	0	16.42	16.42	0	17.03	17.03	0	
211460	8.02	8.04	0.02	10.16	10.17	0.01	10.81	10.82	0.01	11.08	11.09	0.01	12.16	12.16	0	
211470	8.03	8.05	0.02	10.31	10.31	0	11.05	11.05	0	11.32	11.32	0	12.34	12.34	0	
211475	11.87	11.87	0	12.51	12.51	0	12.59	12.59	0	12.62	12.62	0	12.88	12.88	0	
211480	8.06	8.07	0.01	10.78	10.79	0.01	11.53	11.53	0	11.76	11.77	0.01	12.68	12.68	0	
211490	11.25	11.25	0	12	12	0	12.28	12.28	0	12.4	12.4	0	12.92	12.92	0	
211500	11.26	11.26	0	12	12	0	12.28	12.28	0	12.4	12.4	0	12.92	12.92	0	
211510	11.78	11.78	0	12.15	12.15	0	12.35	12.35	0	12.44	12.44	0	13.16	13.16	0	
211520	12.52	12.52	0	12.8	12.8	0	12.93	12.93	0	13	13	0	13.22	13.22	0	
211530	12.51	12.51	0	12.63	12.63	0	12.71	12.71	0	12.75	12.75	0	12.87	12.87	0	
211540	8.01	8.03	0.02	10.14	10.15	0.01	10.8	10.8	0	11.07	11.07	0	12.16	12.16	0	
211550	8.01	8.03	0.02	10.14	10.15	0.01	10.8	10.81	0.01	11.08	11.08	0	12.17	12.17	0	
211560	8.04	8.06	0.02	10.16	10.17	0.01	10.85	10.86	0.01	11.13	11.13	0	12.22	12.22	0	
211570	8.06	8.08	0.02	10.18	10.19	0.01	10.89	10.9	0.01	11.17	11.17	0	12.27	12.27	0	
211580	8.07	8.09	0.02	10.18	10.19	0.01	10.93	10.93	0	11.21	11.21	0	12.3	12.3	0	
211590	8.12	8.14	0.02	10.22	10.23	0.01	11.45	11.45	0	11.72	11.72	0	12.73	12.73	0	
211600	9.68	9.68	0	10.23	10.23	0	11.08	11.09	0.01	11.38	11.38	0	12.37	12.37	0	
211605	11.78	11.78	0	12.11	12.11	0	12.47	12.47	0	12.58	12.58	0	13.01	13.01	0	
211610	8.07	8.09	0.02	10.19	10.2	0.01	10.86	10.87	0.01	11.14	11.14	0	12.26	12.26	0	
211620	8.03	8.04	0.01	10.16	10.17	0.01	10.8	10.81	0.01	11.08	11.08	0	12.16	12.16	0	
211630	9.69	9.69	0	10.43	10.43	0	10.81	10.81	0	11.08	11.09	0.01	12.16	12.16	0	
211640	9.69	9.69	0	10.44	10.44	0	10.81	10.82	0.01	11.09	11.09	0	12.16	12.16	0	
211650	9.7	9.7	0	10.65	10.65	0	11.06	11.06	0	11.22	11.22	0	12.16	12.16	0	
211660	8.12	8.13	0.01	10.19	10.2	0.01	10.86	10.87	0.01	11.14	11.14	0	12.26	12.26	0	
211670	8.04	8.06	0.02	10.17	10.17	0	10.83	10.84	0.01	11.11	11.11	0	12.21	12.21	0	
211680	0.12	0.12	0	0.12	0.12	0	0.12	0.12	0	0.12	0.12	0	0.12	0.12	0	
211690	8.04	8.06	0.02	10.17	10.17	0	10.83	10.84	0.01	11.11	11.11	0	12.21	12.21	0	
211700	8.08	8.09	0.01	10.17	10.17	0	10.83	10.84	0.01	11.11	11.11	0	12.21	12.21	0	
211710	16.38	16.38	0	16.61	16.61	0	16.72	16.72	0	16.77	16.77	0	16.99	16.99	0	
211720	16.62	16.62	0	16.83	16.83	0	17.04	17.04	0	17.17	17.17	0	17.7	17.7	0	
211730	12.2	12.2	0	12.5	12.5	0	12.61	12.61	0	12.66	12.66	0	12.84	12.84	0	
211740	13.8	13.8	0	14.34	14.34	0	14.44	14.44	0	14.49	14.49	0	14.72	14.72	0	
211750	13.69	13.69	0	14.36	14.36	0	14.58	14.58	0	14.66	14.66	0	15.01	15.01	0	
211760	15.56	15.56	0	16.54	16.54	0	16.93	16.93	0	17.09	17.09	0	17.66	17.66	0	
211770	12.91	12.91	0	14.16	14.16	0	14.64	14.64	0	14.83	14.83	0	15.62	15.62	0	
211780	12.92	12.92	0	14.2	14.2	0	14.67	14.67	0	14.85	14.85	0	15.62	15.62	0	
211790	13.01	13.01	0	14.23	14.23	0	14.68	14.68	0	14.85	14.85	0	15.62	15.62	0	
211800	13.04	13.04	0	14.31	14.31	0	14.74	14.74	0	14.9	14.9	0	15.62	15.62	0	
211810	13.29	13.29	0	14.35	14.35	0	14.76	14.76	0	14.92	14.92	0	15.62	15.62	0	
211820	13.41	13.41	0	14.46	14.46	0	14.88	14.88	0	15.04	15.04	0	15.57	15.57	0	
211840	12.94	12.94	0	14.22	14.22	0	14.67	14.67	0	14.85	14.85	0	15.62	15.62	0	
211850	13.01	13.01	0	14.23	14.23	0	14.68	14.68	0	14.85	14.85	0	15.62	15.62	0	
211860	13.06	13.06	0	14.32	14.32	0	14.74	14.74	0	14.9	14.9	0	15.62	15.62	0	
211870	15.53	15.53	0	15.72	15.72	0	15.82	15.82	0	15.86	15.86	0	16.02	16.02	0	
211880	14.37	14.37	0	16.32	16.32	0	16.57	16.57	0	16.6	16.6	0	16.86	16.86	0	
211890	14.38	14.38	0	15.6	15.6	0	16.13	16.13	0	16.34	16.34	0	17.19	17.19	0	
211900	16.43	16.43	0	17.59	17.59	0	18.21	18.21	0	18.51	18.51	0	19.7	19.7	0	
211910	14.38	14.38	0	15.6	15.6	0	16.13	16.13	0	16.34	16.34	0	17.19	17.19	0	
211920	18.12	18.12	0	18.77	18.77	0	19.2	19.2	0	19.35	19.35	0	19.94	19.94	0	
211930	18.29	18.29	0	18.98	18.98	0	19.28	19.28	0	19.4	19.4	0	19.96	19.96	0	
211940	15.77	15.77	0	16.15	16.15	0	16.36	16.36	0	16.47	16.47	0	17	17	0	
211950	20.4	20.4	0	20.72	20.72	0	20.86	20.86	0	20.93	20.93	0	21.23	21.23	0	
212000	8.06	8.08	0.02	10.17	10.18	0.01	10.77	10.78	0.01	11.02	11.03	0.01	12.08	12.07	-0.01	
212010	8.06	8.08	0.02	10.17	10.17	0	10.76	10.76	0	11	11.01	0.01	12.04	12.04	0	
212020	8.06	8.08	0.02	10.17	10.18	0.01	10.73	10.74	0.01	10.92	10.93	0.01	11.72	11.71	-0.01	
212030	8.07	8.08	0.01	10.17	10.18	0.01	10.69	10.69	0	10.8	10.81	0.01	11.36	11.35	-0.01	
212040	9.42	9.42	0	10.17	10.18	0.01	10.68	10.68	0	10.76	10.76	0	11.25	11.24	-0.01	
212050	9.15	9.16	0.01	11.36	11.37	0.01	11.84	11.84	0	11.94	11.94	0	12.74	12.74	0	
212060	10.93	10.93	0	11.37	11.37	0	11.84	11.84	0	11.94	11.94	0	12.74	12.74	0	
212100	11.18	11.18	0	11.55	11.56	0.01	12.07	12.07	0	12.28	12.28	0	13.12	13.12	0	
212110	11.54	11.54	0	12.09	12.09	0	12.33	12.33	0	12.45	12.45	0	13.04	13.05	0.01	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
212120	12.71	12.71	0	14.34	14.34	0	14.57	14.57	0	14.65	14.65	0	15.07	15.07	0	
212130	12.72	12.72	0	13.86	13.86	0	14.23	14.23	0	14.37	14.37	0	14.93	14.93	0	
212140	10.35	10.35	0	12.73	12.73	0	13.43	13.44	0.01	13.69	13.69	0	14.54	14.54	0	
212150	10.44	10.44	0	12.98	12.98	0	13.74	13.74	0	14.04	14.04	0	14.93	14.93	0	
212160	10.46	10.46	0	13.01	13.01	0	13.76	13.77	0.01	14.07	14.07	0	14.99	14.99	0	
212170	10.5	10.5	0	13.04	13.04	0	13.79	13.79	0	14.11	14.11	0	15.06	15.06	0	
212180	10.85	10.85	0	13.27	13.27	0	13.97	13.97	0	14.36	14.36	0	15.54	15.54	0	
212190	10.87	10.87	0	13.13	13.13	0	13.64	13.64	0	13.89	13.89	0	14.59	14.59	0	
212200	10.88	10.88	0	13.09	13.09	0	13.26	13.26	0	13.3	13.3	0	13.39	13.39	0	
212210	13.11	13.11	0	15.11	15.11	0	16.41	16.41	0	16.8	16.8	0	17.68	17.68	0	
212220	13.33	13.33	0	15.19	15.19	0	15.46	15.46	0	15.61	15.61	0	16.43	16.43	0	
212230	11	11	0	13.52	13.52	0	14.26	14.26	0	14.73	14.73	0	16.27	16.28	0.01	
212240	11.56	11.56	0	13.57	13.57	0	13.82	13.82	0	13.9	13.9	0	14.1	14.1	0	
212250	11.99	11.99	0	15.7	15.7	0	16.05	16.05	0	16.18	16.18	0	16.78	16.78	0	
212260	14.16	14.16	0	16.92	16.92	0	17.14	17.14	0	17.22	17.22	0	17.71	17.71	0	
212270	11.87	11.87	0	13.99	13.99	0	14.82	14.82	0	15.11	15.11	0	16.23	16.23	0	
212280	14.48	14.48	0	14.91	14.91	0	15.21	15.21	0	15.37	15.37	0	16.3	16.3	0	
212290	14.48	14.48	0	14.91	14.91	0	15.36	15.36	0	15.62	15.62	0	16.75	16.75	0	
212300	14.53	14.53	0	15.66	15.66	0	16.62	16.62	0	17.16	17.16	0	18.68	18.68	0	
212320	14.44	14.44	0	16.25	16.25	0	16.79	16.79	0	16.97	16.97	0	17.64	17.64	0	
212330	14.83	14.83	0	16.71	16.71	0	17.25	17.25	0	17.4	17.4	0	17.98	17.98	0	
212400	16.33	16.33	0	17.18	17.18	0	17.53	17.53	0	17.69	17.69	0	18.39	18.39	0	
212410	16.71	16.71	0	17.66	17.66	0	18	18	0	18.16	18.16	0	18.82	18.82	0	
212420	16.81	16.81	0	17.79	17.79	0	18.12	18.12	0	18.26	18.26	0	18.91	18.91	0	
212430	17.2	17.2	0	18.17	18.17	0	18.49	18.49	0	18.62	18.62	0	19.24	19.24	0	
212440	17.39	17.39	0	18.42	18.42	0	18.74	18.74	0	18.88	18.88	0	19.48	19.48	0	
212450	17.47	17.47	0	18.53	18.53	0	18.86	18.86	0	18.99	18.99	0	19.58	19.58	0	
212460	17.5	17.5	0	18.57	18.57	0	18.89	18.89	0	19.02	19.02	0	19.6	19.6	0	
212470	17.88	17.88	0	18.81	18.81	0	19.06	19.06	0	19.17	19.17	0	19.66	19.66	0	
212480	18.17	18.17	0	19.15	19.15	0	19.4	19.4	0	19.49	19.49	0	19.87	19.87	0	
212490	18.23	18.23	0	19.17	19.17	0	19.4	19.4	0	19.49	19.49	0	19.86	19.86	0	
212500	18.64	18.64	0	19.21	19.21	0	19.38	19.38	0	19.45	19.45	0	19.78	19.78	0	
212510	16.74	16.74	0	17.41	17.41	0	17.69	17.69	0	17.83	17.83	0	18.44	18.44	0	
212520	16.76	16.76	0	17.41	17.41	0	17.7	17.7	0	17.83	17.83	0	18.44	18.44	0	
212530	16.84	16.84	0	17.36	17.36	0	17.53	17.53	0	17.6	17.6	0	17.91	17.91	0	
212540	17.58	17.58	0	18.27	18.27	0	18.5	18.5	0	18.61	18.61	0	19.21	19.21	0	
212550	16.88	16.88	0	18.01	18.01	0	18.38	18.38	0	18.5	18.5	0	19.16	19.16	0	
212560	16.95	16.95	0	18.04	18.04	0	18.38	18.38	0	18.5	18.5	0	19.13	19.13	0	
212570	17.2	17.2	0	18.22	18.22	0	18.41	18.41	0	18.49	18.49	0	18.73	18.73	0	
212580	17.5	17.5	0	18.57	18.57	0	18.89	18.89	0	19.03	19.03	0	19.63	19.63	0	
212590	17.68	17.68	0	19.19	19.19	0	19.58	19.58	0	19.74	19.74	0	20.36	20.36	0	
212600	17.49	17.49	0	18.56	18.56	0	18.89	18.89	0	19.03	19.03	0	19.66	19.66	0	
212610	17.67	17.67	0	19.42	19.42	0	19.79	19.79	0	19.94	19.94	0	20.65	20.65	0	
212620	17.88	17.88	0	20.06	20.06	0	20.65	20.65	0	20.9	20.9	0	21.8	21.8	0	
212630	18.22	18.22	0	20.98	20.98	0	21.55	21.55	0	21.74	21.74	0	22.49	22.49	0	
212640	17.85	17.85	0	19.45	19.45	0	19.8	19.8	0	19.95	19.95	0	20.56	20.56	0	
212650	18.65	18.65	0	19.66	19.66	0	19.82	19.82	0	19.88	19.88	0	20.2	20.2	0	
212660	18.19	18.19	0	19.27	19.27	0	19.61	19.61	0	19.75	19.75	0	20.27	20.27	0	
212670	18.19	18.19	0	19.19	19.19	0	19.54	19.54	0	19.69	19.69	0	20.27	20.27	0	
212680	18.12	18.12	0	19.19	19.19	0	19.54	19.54	0	19.69	19.69	0	20.27	20.27	0	
212690	19.42	19.42	0	19.82	19.82	0	19.92	19.92	0	19.97	19.97	0	20.27	20.27	0	
212700	17.03	17.03	0	18.27	18.27	0	18.79	18.79	0	18.92	18.92	0	19.3	19.3	0	
212710	18.72	18.72	0	18.94	18.94	0	19.02	19.02	0	19.06	19.06	0	19.33	19.33	0	
212720	15.19	15.19	0	15.58	15.58	0	15.77	15.78	0.01	16.11	16.11	0	17.41	17.41	0	
212730	17.34	17.34	0	17.81	17.81	0	18.05	18.05	0	18.16	18.16	0	18.66	18.66	0	
212740	14.46	14.46	0	16.72	16.72	0	17.6	17.6	0	17.97	17.97	0	19.48	19.48	0	
212750	16.8	16.8	0	17.22	17.22	0	17.62	17.62	0	18.05	18.05	0	19.58	19.58	0	
212760	20.67	20.67	0	21.14	21.14	0	21.27	21.27	0	21.33	21.33	0	21.64	21.64	0	
212770	20.87	20.87	0	21.54	21.54	0	21.78	21.78	0	21.88	21.88	0	22.33	22.33	0	
212780	17.81	17.81	0	18.77	18.77	0	19.24	19.24	0	19.36	19.36	0	19.95	19.95	0	
212790	19.61	19.61	0	20.31	20.31	0	20.9	20.9	0	21.18	21.18	0	22.33	22.33	0	
212900	19.7	19.7	0	20.72	20.72	0	21.09	21.09	0	21.24	21.24	0	21.92	21.92	0	
212910	19.98	19.98	0	21.03	21.03	0	21.39	21.39	0	21.54	21.54	0	22.18	22.18	0	
212920	20.11	20.11	0	21.24	21.24	0	21.63	21.63	0	21.79	21.79	0	22.45	22.45	0	
212930	20.15	20.15	0	21.27	21.27	0	21.66	21.66	0	21.82	21.82	0	22.49	22.49	0	
212940	20.33	20.33	0	21.73	21.73	0	22.21	22.21	0	22.39	22.39	0	22.98	22.98	0	
212950	20.59	20.59	0	21.82	21.82	0	22.27	22.27	0	22.45	22.45	0	23.01	23.01	0	
212960	21.43	21.43	0	22.29	22.29	0	22.78	22.78	0	22.97	22.97	0	23.5	23.5	0	
212970	21.55	21.55	0	22.17	22.17	0	22.52	22.52	0	22.67	22.67	0	23.23	23.23	0	
212980	20.61	20.61	0	21.95	21.95	0	22.44	22.44	0	22.63	22.63	0	23.69	23.69	0	
212990	22.12	22.12	0	22.94	22.94	0	23.26	23.26	0	23.38	23.38	0	23.75	23.75	0	
213100	16.65	16.65	0	18.37	18.37	0	19.06	19.06	0	19.34	19.34	0	20.96	20.96	0	
213110	19.44	19.44	0	20.39	20.39	0	20.93	20.93	0	21.2	21.2	0	21.87	21.87	0	
213120	19.44	19.44	0	20.4	20.4	0	20.93	20.93	0	21.2	21.2	0	22	22	0	
213130	19.44	19.44	0	20.4	20.4	0	20.94	20.94	0	21.2	21.2	0	22.04	22.04	0	
213140	16.25	16.25	0	18.53	18.53	0	19.27	19.27	0	19.71	19.71	0	21.62	21.62	0	
213150	19.78	19.78	0	20.65	20.65	0	20.95	20.95	0	21.08	21.08	0	21.78	21.78	0	
213160	19.03	19.03	0	20.54	20.54	0	21.11	21.11	0	21.33	21.33	0	22.24	22.24	0	
213170	19.25	19.25	0	21.33	21.33	0	22.25	22.25	0	22.6	22.6	0	23.6	23.6	0	
213180	20.29	20.29	0	21.93	21.93	0	22.64	22.64	0	22.9	22.9	0	23.93	23.93	0	
213190	20.4	20.4	0	22.4	22.4	0	23.3	23.3	0	23.61	23.61	0	24.47	24.47	0	
213200	20.58	20.58	0	21.82	21.82	0	22.47	22.47	0	22.76	22.76	0	23.87	23.87	0	
213210	18.7	18.7	0	19.17	19.17	0	19.43	19.43	0	19.56	19.56	0	20.24	20.24	0	
213220	22.82	22.82	0	23.35	23.35	0	23.58	23.58	0	23.68	23.68	0	24.2	24.2	0	
213230	28.24	28.24	0	28.4	28.4	0	28.47	28.47	0	28.51	28.51	0	28.66	28.66	0	
213240	20.54	20.54	0	22.57	22.57	0	23.12	23.12	0	23.33	23.33	0	24.09	24.09	0	
213250	21.7	21.7	0	22.63	22.63	0	23.13	23.13	0	23.34	23.34	0	24.09	24.09	0	
213260	19.52	19.52	0	21.5	21.5	0	22.2	22.2	0	22.52	22.52	0	23.96	23.96	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
213270	19.44	19.44	0	21.46	21.46	0	22.2	22.2	0	22.53	22.53	0	24.09	24.09	0	
213300	25.92	25.92	0	26.67	26.67	0	27.04	27.04	0	27.21	27.21	0	27.92	27.92	0	
213310	25.92	25.92	0	26.67	26.67	0	27.04	27.04	0	27.21	27.21	0	27.92	27.92	0	
213320	28.73	28.73	0	30.13	30.13	0	30.6	30.6	0	30.8	30.8	0	31.67	31.67	0	
213330	26.11	26.11	0	26.61	26.61	0	26.78	26.78	0	26.86	26.86	0	27.2	27.2	0	
213340	24.7	24.7	0	25.35	25.35	0	25.72	25.72	0	25.89	25.89	0	26.32	26.32	0	
213350	22.99	22.99	0	24.09	24.09	0	24.34	24.34	0	24.44	24.44	0	24.87	24.87	0	
213360	24.09	24.09	0	24.53	24.53	0	24.78	24.78	0	24.89	24.89	0	25.38	25.38	0	
213370	24.64	24.64	0	25.02	25.02	0	25.18	25.18	0	25.25	25.25	0	25.52	25.52	0	
213380	22.99	22.99	0	24.09	24.09	0	24.34	24.34	0	24.44	24.44	0	24.87	24.87	0	
213390	23.67	23.67	0	24.12	24.12	0	24.34	24.34	0	24.44	24.44	0	24.87	24.87	0	
213500	22.37	22.37	0	23.04	23.04	0	23.68	23.68	0	23.98	23.98	0	25.43	25.43	0	
213510	23.2	23.2	0	23.8	23.8	0	24.39	24.39	0	24.64	24.64	0	25.66	25.66	0	
213520	24.41	24.41	0	26.03	26.03	0	26.26	26.26	0	26.34	26.34	0	26.68	26.68	0	
213530	26.2	26.2	0	26.9	26.9	0	27.09	27.09	0	27.16	27.16	0	27.44	27.44	0	
213540	26.22	26.22	0	26.96	26.96	0	27.2	27.2	0	27.29	27.29	0	27.68	27.68	0	
213550	26.27	26.27	0	27.06	27.06	0	27.32	27.32	0	27.42	27.42	0	27.81	27.81	0	
213560	26.27	26.27	0	27.06	27.06	0	27.33	27.33	0	27.42	27.42	0	27.82	27.82	0	
213570	26.27	26.27	0	27.08	27.08	0	27.35	27.35	0	27.46	27.46	0	27.87	27.87	0	
213580	26.28	26.28	0	27.12	27.12	0	27.4	27.4	0	27.5	27.5	0	27.91	27.91	0	
213590	26.73	26.73	0	27.46	27.46	0	27.65	27.65	0	27.73	27.73	0	28.07	28.07	0	
213600	26.74	26.74	0	27.5	27.5	0	27.71	27.71	0	27.79	27.79	0	28.19	28.19	0	
213610	26.88	26.88	0	27.82	27.82	0	28.16	28.16	0	28.29	28.29	0	28.83	28.83	0	
213620	22.37	22.37	0	23.04	23.04	0	23.68	23.68	0	23.98	23.98	0	25.43	25.43	0	
213630	23.47	23.47	0	23.79	23.79	0	23.86	23.86	0	23.98	23.98	0	25.43	25.43	0	
213640	24.45	24.45	0	26.17	26.17	0	26.47	26.47	0	26.58	26.58	0	27.08	27.08	0	
213650	26.58	26.58	0	27.03	27.03	0	27.26	27.26	0	27.36	27.36	0	27.79	27.79	0	
213660	26.86	26.86	0	26.86	26.86	0	26.86	26.86	0	26.86	26.86	0	26.95	26.95	0	
213670	26.19	26.19	0	27.12	27.12	0	27.41	27.41	0	27.51	27.51	0	27.93	27.93	0	
213680	26.06	26.06	0	27.12	27.12	0	27.41	27.41	0	27.51	27.51	0	27.93	27.93	0	
213690	26.27	26.27	0	27.08	27.08	0	27.36	27.36	0	27.46	27.46	0	27.92	27.92	0	
213700	23.2	23.2	0	24.5	24.5	0	25.11	25.11	0	25.41	25.41	0	26.68	26.68	0	
213710	23.33	23.33	0	24.62	24.62	0	25.22	25.22	0	25.5	25.5	0	26.71	26.71	0	
213720	23	23	0	23.73	23.73	0	24.86	24.86	0	25.15	25.15	0	26.38	26.38	0	
213730	23.14	23.14	0	24.31	24.31	0	24.87	24.87	0	25.15	25.15	0	26.38	26.38	0	
213740	23.43	23.43	0	24.31	24.31	0	24.87	24.87	0	25.15	25.15	0	26.38	26.38	0	
213750	23.82	23.82	0	24.31	24.31	0	24.87	24.87	0	25.15	25.15	0	26.38	26.38	0	
213760	24.78	24.78	0	25.19	25.19	0	25.38	25.38	0	25.48	25.48	0	26.38	26.38	0	
213800	23.78	23.78	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.06	27.06	0	
213810	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.06	27.06	0	
213820	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.06	27.06	0	
213830	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.06	27.06	0	
213840	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.15	27.15	0	
213850	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.41	27.41	0	
213860	23.7	23.7	0	24.89	24.89	0	25.44	25.44	0	25.69	25.69	0	26.8	26.8	0	
213870	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.06	27.06	0	
213875	25.71	25.71	0	26.43	26.43	0	26.61	26.61	0	26.69	26.69	0	27.07	27.07	0	
213880	25.75	25.75	0	26.43	26.43	0	26.61	26.61	0	26.69	26.69	0	27.07	27.07	0	
213890	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.06	27.06	0	
213900	23.77	23.77	0	25.06	25.06	0	25.66	25.66	0	25.92	25.92	0	27.18	27.18	0	
214000	23.8	23.8	0	25.12	25.12	0	25.75	25.75	0	26.03	26.03	0	27.16	27.16	0	
214010	25.25	25.25	0	26.05	26.05	0	26.35	26.35	0	26.51	26.51	0	27.37	27.37	0	
214020	25.31	25.31	0	26.16	26.16	0	26.47	26.47	0	26.64	26.64	0	27.53	27.53	0	
214030	25.83	25.83	0	26.56	26.56	0	26.89	26.89	0	27.06	27.06	0	27.86	27.86	0	
214040	26.48	26.48	0	27.04	27.04	0	27.34	27.34	0	27.5	27.5	0	28.18	28.18	0	
214050	26.77	26.77	0	27.33	27.33	0	27.6	27.6	0	27.78	27.78	0	28.55	28.55	0	
214060	27.04	27.04	0	27.61	27.61	0	27.88	27.88	0	28.06	28.06	0	28.92	28.92	0	
214070	27.09	27.09	0	27.67	27.67	0	27.94	27.94	0	28.12	28.12	0	29.53	29.53	0	
214080	27.1	27.1	0	27.66	27.66	0	27.94	27.94	0	28.12	28.12	0	29.57	29.57	0	
214090	27.97	27.97	0	28.65	28.65	0	29.02	29.02	0	29.19	29.19	0	29.7	29.7	0	
214100	23.8	23.8	0	25.12	25.12	0	25.73	25.73	0	26	26	0	27.15	27.15	0	
214110	25.38	25.38	0	26.47	26.47	0	26.85	26.85	0	27	27	0	27.74	27.74	0	
214120	26.15	26.15	0	27.46	27.46	0	27.84	27.84	0	28	28	0	28.63	28.63	0	
214130	27.47	27.47	0	27.53	27.53	0	27.84	27.84	0	28	28	0	28.63	28.63	0	
214140	26.7	26.7	0	28.15	28.15	0	28.32	28.32	0	28.38	28.38	0	28.63	28.63	0	
214150	28.06	28.06	0	28.27	28.27	0	28.35	28.35	0	28.39	28.39	0	28.63	28.63	0	
214160	25.33	25.33	0	26.23	26.23	0	26.58	26.58	0	26.74	26.74	0	27.54	27.54	0	
214170	25.77	25.77	0	26.5	26.5	0	26.86	26.86	0	27.03	27.03	0	27.65	27.65	0	
214180	25.84	25.84	0	26.62	26.62	0	27.04	27.04	0	27.27	27.27	0	28.61	28.61	0	
214190	25.85	25.85	0	26.69	26.69	0	27.18	27.18	0	27.43	27.43	0	28.66	28.66	0	
214200	25.85	25.85	0	26.7	26.7	0	27.33	27.33	0	27.76	27.76	0	29.25	29.25	0	
214210	25.71	25.71	0	27.17	27.17	0	27.67	27.67	0	27.9	27.9	0	28.8	28.8	0	
214220	25.73	25.73	0	27.19	27.19	0	27.68	27.68	0	27.9	27.9	0	28.8	28.8	0	
214230	27.76	27.76	0	28.31	28.31	0	28.53	28.53	0	28.62	28.62	0	28.95	28.95	0	
214240	27.78	27.78	0	28.37	28.37	0	28.6	28.6	0	28.71	28.71	0	29.13	29.13	0	
214250	27.84	27.84	0	28.18	28.18	0	28.33	28.33	0	28.39	28.39	0	28.72	28.72	0	
214260	27.78	27.78	0	28.47	28.47	0	28.79	28.79	0	28.91	28.91	0	29.33	29.33	0	
214270	27.16	27.16	0	27.85	27.85	0	28.09	28.09	0	28.19	28.19	0	28.58	28.58	0	
214280	27.44	27.44	0	28.1	28.1	0	28.26	28.26	0	28.32	28.32	0	28.6	28.6	0	
214290	27.47	27.47	0	28.49	28.49	0	28.85	28.85	0	29	29	0	29.5	29.5	0	
214300	27.71	27.71	0	28.55	28.55	0	28.92	28.92	0	29.02	29.02	0	29.42	29.42	0	
214310	28.94	28.94	0	29.09	29.09	0	29.17	29.17	0	29.22	29.22	0	29.49	29.49	0	
214320	25.73	25.73	0	27.19	27.19	0	27.68	27.68	0	27.91	27.91	0	28.8	28.8	0	
214330	26.98	26.98	0	28.06	28.06	0	28.61	28.61	0	28.8	28.8	0	29.37	29.37	0	
214340	28.39	28.39	0	28.82	28.82	0	28.96	28.96	0	29.03	29.03	0	29.43	29.43	0	
214350	27.76	27.76	0	28.32	28.32	0	28.55	28.55	0	28.66	28.66	0	29.16	29.16	0	
214360	27.76	27.76	0	28.32	28.32	0	28.56	28.56	0	28.67	28.67	0	29.18	29.18	0	
214370	27.81	27.81	0	28.43	28.43	0	28.65	28.65	0	28.75	28.75	0	29.15	29.15	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
214380	27.97	27.97	0	28.44	28.44	0	28.66	28.66	0	28.75	28.75	0	29.15	29.15	0	
214390	27.99	27.99	0	28.48	28.48	0	28.66	28.66	0	28.74	28.74	0	29.14	29.14	0	
214400	28.02	28.02	0	28.49	28.49	0	28.66	28.66	0	28.74	28.74	0	29.14	29.14	0	
214410	27.57	27.57	0	28.24	28.24	0	28.53	28.53	0	28.65	28.65	0	29.17	29.17	0	
214420	27.65	27.65	0	28.25	28.25	0	28.53	28.53	0	28.66	28.66	0	29.18	29.18	0	
214430	27.66	27.66	0	28.28	28.28	0	28.56	28.56	0	28.7	28.7	0	29.38	29.38	0	
214440	30.83	30.83	0	32.22	32.22	0	32.92	32.92	0	33.08	33.08	0	33.49	33.49	0	
214450	32.67	32.67	0	33.09	33.09	0	33.24	33.24	0	33.3	33.3	0	33.6	33.6	0	
214455	24.95	24.95	0	25.67	25.67	0	26.02	26.02	0	26.18	26.18	0	27.15	27.15	0	
214460	24.96	24.96	0	25.68	25.68	0	26.04	26.04	0	26.2	26.2	0	27.15	27.15	0	
214500	24.3	24.3	0	25.39	25.39	0	25.94	25.94	0	26.19	26.19	0	27.27	27.27	0	
214510	24.3	24.3	0	25.39	25.39	0	25.95	25.95	0	26.2	26.2	0	27.28	27.28	0	
214520	25.4	25.4	0	26.2	26.2	0	26.62	26.62	0	26.78	26.78	0	27.6	27.6	0	
214530	29.37	29.37	0	29.83	29.83	0	30.07	30.07	0	30.14	30.14	0	30.49	30.49	0	
214540	29.41	29.41	0	29.9	29.9	0	30.16	30.16	0	30.25	30.25	0	30.63	30.63	0	
214550	29.6	29.6	0	30.41	30.41	0	30.88	30.88	0	31.01	31.01	0	31.49	31.49	0	
214560	29.61	29.61	0	30.47	30.47	0	31	31	0	31.15	31.15	0	31.72	31.72	0	
214570	29.64	29.64	0	30.6	30.6	0	31.25	31.25	0	31.45	31.45	0	32.2	32.2	0	
214580	29.64	29.64	0	30.63	30.63	0	31.3	31.3	0	31.53	31.53	0	32.43	32.43	0	
214590	29.65	29.65	0	31.04	31.04	0	31.52	31.52	0	31.74	31.74	0	32.65	32.65	0	
214600	29.66	29.66	0	31.06	31.06	0	31.58	31.58	0	31.82	31.82	0	32.77	32.77	0	
214610	31.7	31.7	0	32.39	32.39	0	32.72	32.72	0	32.87	32.87	0	33.61	33.61	0	
214620	31.24	31.24	0	32.25	32.25	0	32.67	32.67	0	32.84	32.84	0	33.59	33.59	0	
214630	34.79	34.79	0	35.18	35.18	0	35.38	35.38	0	35.47	35.47	0	35.89	35.89	0	
214640	34.87	34.87	0	35.53	35.53	0	35.97	35.97	0	36.21	36.21	0	37.59	37.59	0	
214650	34.9	34.9	0	35.9	35.9	0	36.55	36.55	0	36.94	36.94	0	38.99	38.99	0	
214660	38.61	38.61	0	39.81	39.81	0	40.32	40.32	0	40.6	40.6	0	42.06	42.06	0	
214670	38.93	38.93	0	41.1	41.1	0	42.44	42.44	0	43.41	43.41	0	46.36	46.36	0	
214680	44.27	44.27	0	45.12	45.12	0	45.54	45.54	0	45.74	45.74	0	46.73	46.73	0	
214690	45.33	45.33	0	46.37	46.37	0	46.64	46.64	0	46.77	46.77	0	47.28	47.28	0	
214700	45.33	45.33	0	46.37	46.37	0	46.64	46.64	0	46.77	46.77	0	47.28	47.28	0	
214710	45.39	45.39	0	46.51	46.51	0	47.23	47.23	0	47.8	47.8	0	51.05	51.05	0	
214720	29.68	29.68	0	30.61	30.61	0	31.26	31.26	0	31.46	31.46	0	32.21	32.21	0	
214730	31.04	31.04	0	32.01	32.01	0	32.5	32.5	0	32.68	32.68	0	33.42	33.42	0	
214740	31.05	31.05	0	31.84	31.84	0	32.62	32.62	0	32.97	32.97	0	34.47	34.47	0	
214750	30.9	30.9	0	31.59	31.59	0	32.04	32.04	0	32.22	32.22	0	32.97	32.97	0	
214760	30.88	30.88	0	31.57	31.57	0	32.03	32.03	0	32.21	32.21	0	32.97	32.97	0	
214770	30.88	30.88	0	31.56	31.56	0	32.02	32.02	0	32.19	32.19	0	32.93	32.93	0	
214780	30.88	30.88	0	31.55	31.55	0	31.96	31.96	0	32.12	32.12	0	32.78	32.78	0	
214790	29.65	29.65	0	31.16	31.16	0	31.56	31.56	0	31.77	31.77	0	32.65	32.65	0	
214800	29.65	29.65	0	31.17	31.17	0	31.56	31.56	0	31.77	31.77	0	32.65	32.65	0	
214810	29.89	29.89	0	31.65	31.65	0	31.96	31.96	0	32.07	32.07	0	32.67	32.67	0	
214820	34.97	34.97	0	35.16	35.16	0	35.26	35.26	0	35.32	35.32	0	35.62	35.62	0	
214830	38.28	38.28	0	38.44	38.44	0	38.51	38.51	0	38.55	38.55	0	38.81	38.81	0	
214840	39.06	39.06	0	39.24	39.24	0	39.3	39.3	0	39.33	39.33	0	39.44	39.44	0	
214850	37.55	37.55	0	38.15	38.15	0	39	39	0	39.37	39.37	0	40.88	40.88	0	
214860	40.74	40.74	0	41.41	41.41	0	41.58	41.58	0	41.64	41.64	0	41.86	41.86	0	
214870	38.62	38.62	0	39.78	39.78	0	39.99	39.99	0	40.06	40.06	0	40.32	40.32	0	
214880	38.62	38.62	0	39.78	39.78	0	39.98	39.98	0	40.05	40.05	0	40.31	40.31	0	
214890	43.89	43.89	0	44.53	44.53	0	44.76	44.76	0	44.85	44.85	0	45.3	45.3	0	
214900	43.97	43.97	0	44.54	44.54	0	44.76	44.76	0	44.85	44.85	0	45.3	45.3	0	
214910	44.42	44.42	0	45.12	45.12	0	45.54	45.54	0	45.74	45.74	0	46.73	46.73	0	
214920	49.36	49.36	0	49.97	49.97	0	50.24	50.24	0	50.35	50.35	0	50.78	50.78	0	
214930	34.03	34.03	0	35.16	35.16	0	35.88	35.88	0	36.28	36.28	0	39.98	39.98	0	
214940	44.44	44.44	0	45.17	45.17	0	46.94	46.94	0	48.21	48.21	0	50.01	50.01	0	
214950	46.63	46.63	0	48.63	48.63	0	48.91	48.91	0	49.04	49.04	0	50.02	50.02	0	
214960	46.64	46.64	0	48.75	48.75	0	49.51	49.51	0	49.91	49.91	0	51.08	51.08	0	
214970	48.49	48.49	0	49.92	49.92	0	50.3	50.3	0	50.41	50.41	0	51.09	51.09	0	
214980	46.64	46.64	0	48.56	48.56	0	48.75	48.75	0	48.81	48.81	0	49.17	49.17	0	
214990	46.67	46.67	0	48.41	48.41	0	48.6	48.6	0	48.66	48.66	0	49.02	49.02	0	
215000	44.27	44.27	0	45.12	45.12	0	45.54	45.54	0	45.74	45.74	0	46.73	46.73	0	
215010	44.27	44.27	0	45.12	45.12	0	45.54	45.54	0	45.74	45.74	0	46.73	46.73	0	
215020	45.79	45.79	0	46.53	46.53	0	47.08	47.08	0	47.4	47.4	0	48.8	48.8	0	
215030	47.82	47.82	0	49.26	49.26	0	49.7	49.7	0	49.85	49.85	0	50.52	50.52	0	
215040	47.84	47.84	0	49.34	49.34	0	49.82	49.82	0	50.01	50.01	0	50.9	50.9	0	
215050	49.36	49.36	0	49.49	49.49	0	49.83	49.83	0	50.02	50.02	0	50.91	50.91	0	
215060	49.64	49.64	0	49.81	49.81	0	49.9	49.9	0	49.97	49.97	0	50.54	50.54	0	
215100	24.89	24.89	0	26.25	26.25	0	26.81	26.81	0	27.09	27.09	0	28.27	28.27	0	
215110	24.89	24.89	0	26.25	26.25	0	26.81	26.81	0	27.09	27.09	0	28.28	28.28	0	
215120	24.89	24.89	0	26.25	26.25	0	26.81	26.81	0	27.09	27.09	0	28.28	28.28	0	
215130	24.89	24.89	0	26.25	26.25	0	26.81	26.81	0	27.09	27.09	0	28.28	28.28	0	
215140	24.89	24.89	0	26.25	26.25	0	26.81	26.81	0	27.09	27.09	0	28.29	28.29	0	
215150	27.58	27.58	0	28.12	28.12	0	28.33	28.33	0	28.42	28.42	0	28.8	28.8	0	
215160	26.08	26.08	0	26.66	26.66	0	26.91	26.91	0	27.1	27.1	0	28.4	28.4	0	
215190	24.89	24.89	0	26.28	26.28	0	26.87	26.87	0	27.16	27.16	0	28.28	28.28	0	
215200	24.89	24.89	0	26.28	26.28	0	26.87	26.87	0	27.16	27.16	0	28.28	28.28	0	
215210	24.89	24.89	0	26.28	26.28	0	26.87	26.87	0	27.16	27.16	0	28.28	28.28	0	
215220	25.02	25.02	0	26.36	26.36	0	26.9	26.9	0	27.17	27.17	0	28.29	28.29	0	
215230	28.97	28.97	0	29.64	29.64	0	30	30	0	30.18	30.18	0	31.02	31.02	0	
215240	28.97	28.97	0	29.64	29.64	0	30	30	0	30.18	30.18	0	31.02	31.02	0	
215250	28.96	28.96	0	29.64	29.64	0	30	30	0	30.18	30.18	0	31.02	31.02	0	
215260	26.39	26.39	0	26.66	26.66	0	26.91	26.91	0	27.1	27.1	0	28.4	28.4	0	
215270	28.37	28.37	0	28.53	28.53	0	28.65	28.65	0	28.71	28.71	0	29.01	29.01	0	
215280	25.12	25.12	0	26.45	26.45	0	27.03	27.03	0	27.32	27.32	0	28.51	28.51	0	
215290	25.12	25.12	0	26.44	26.44	0	27.03	27.03	0	27.32	27.32	0	28.51	28.51	0	
215300	25.12	25.12	0	26.45	26.45	0	27.03	27.03	0	27.32	27.32	0	28.51	28.51	0	
215310	25.12	25.12	0	26.51	26.51	0	27.03	27.03	0	27.32	27.32	0	28.51	28.51	0	
215320	25.18	25.18	0	26.51	26.51	0	27.03	27.03	0	27.32	27.32	0	28.51	28.51	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
215330	25.39	25.39	0	26.54	26.54	0	27.03	27.03	0	27.32	27.32	0	28.51	28.51	0	
215400	28.33	28.33	0	28.83	28.83	0	29.09	29.09	0	29.19	29.19	0	29.6	29.6	0	
215410	28.33	28.33	0	28.83	28.83	0	29.09	29.09	0	29.19	29.19	0	29.6	29.6	0	
215420	28.39	28.39	0	29.12	29.12	0	29.52	29.52	0	29.72	29.72	0	30.79	30.79	0	
215430	28.88	28.88	0	29.52	29.52	0	29.87	29.87	0	30.05	30.05	0	30.89	30.89	0	
215440	26.45	26.45	0	27.9	27.9	0	28.48	28.48	0	28.74	28.74	0	29.82	29.82	0	
215450	27.19	27.19	0	28.37	28.37	0	28.92	28.92	0	29.08	29.08	0	29.98	29.98	0	
215460	27.79	27.79	0	28.64	28.64	0	29.1	29.1	0	29.32	29.32	0	30.37	30.37	0	
215500	26.61	26.61	0	27.9	27.9	0	28.47	28.47	0	28.73	28.73	0	29.7	29.7	0	
215510	27.67	27.67	0	28.6	28.6	0	29.01	29.01	0	29.18	29.18	0	29.96	29.96	0	
215520	28.27	28.27	0	30.65	30.65	0	31.78	31.78	0	32.28	32.28	0	34.01	34.01	0	
215530	28.28	28.28	0	30.74	30.74	0	31.89	31.89	0	32.39	32.39	0	34.14	34.14	0	
215540	28.83	28.83	0	31.65	31.65	0	32.29	32.29	0	32.54	32.54	0	34.15	34.15	0	
215550	28.86	28.86	0	31.77	31.77	0	32.61	32.61	0	32.96	32.96	0	34.47	34.47	0	
215560	32.82	32.82	0	33.13	33.13	0	33.61	33.61	0	34.02	34.02	0	36.84	36.84	0	
215570	39.31	39.31	0	39.98	39.98	0	39.94	39.94	0	39.74	39.74	0	39.84	39.84	0	
215580	49.21	49.21	0	51.54	51.54	0	52.35	52.35	0	52.64	52.64	0	53.67	53.67	0	
215590	50.81	50.81	0	51.83	51.83	0	52.41	52.41	0	52.68	52.68	0	53.68	53.68	0	
215600	50.87	50.87	0	52.14	52.14	0	52.81	52.81	0	53.14	53.14	0	54.6	54.6	0	
215610	38.14	38.14	0	39.25	39.25	0	39.35	39.35	0	39.4	39.4	0	39.52	39.52	0	
215620	39.2	39.2	0	39.25	39.25	0	39.41	39.41	0	39.53	39.53	0	39.89	39.89	0	
215630	39.9	39.9	0	40.62	40.62	0	40.96	40.96	0	41.12	41.12	0	41.86	41.86	0	
215640	38.33	38.33	0	38.62	38.62	0	38.74	38.74	0	38.79	38.79	0	39	39	0	
215650	39.74	39.74	0	40.48	40.48	0	40.87	40.87	0	41.06	41.06	0	41.87	41.87	0	
215660	43.45	43.45	0	44.68	44.68	0	45.08	45.08	0	45.24	45.24	0	45.99	45.99	0	
215670	44.24	44.24	0	44.84	44.84	0	45.18	45.18	0	45.33	45.33	0	46.03	46.03	0	
215680	26.25	26.25	0	27.9	27.9	0	28.5	28.5	0	28.76	28.76	0	29.74	29.74	0	
215690	26.25	26.25	0	27.9	27.9	0	28.5	28.5	0	28.76	28.76	0	29.74	29.74	0	
215700	26.39	26.39	0	27.9	27.9	0	28.5	28.5	0	28.76	28.76	0	29.74	29.74	0	
215710	26.45	26.45	0	28.38	28.38	0	29.11	29.11	0	29.46	29.46	0	30.76	30.76	0	
215720	26.45	26.45	0	28.39	28.39	0	29.45	29.45	0	29.83	29.83	0	30.76	30.76	0	
215730	27.95	27.95	0	29.6	29.6	0	30.08	30.08	0	30.24	30.24	0	30.86	30.86	0	
215740	28.28	28.28	0	28.74	28.74	0	29.42	29.42	0	29.74	29.74	0	30.95	30.95	0	
215750	28.86	28.86	0	29.17	29.17	0	29.42	29.42	0	29.73	29.73	0	30.93	30.93	0	
215800	27.42	27.42	0	29.25	29.25	0	29.9	29.9	0	30.18	30.18	0	31.32	31.32	0	
215810	28.45	28.45	0	29.49	29.49	0	30.07	30.07	0	30.32	30.32	0	31.39	31.39	0	
215820	28.63	28.63	0	29.53	29.53	0	30.09	30.09	0	30.34	30.34	0	31.4	31.4	0	
215830	29.01	29.01	0	29.9	29.9	0	30.32	30.32	0	30.55	30.55	0	31.51	31.51	0	
215840	29.18	29.18	0	30.33	30.33	0	30.88	30.88	0	31.13	31.13	0	32.2	32.2	0	
215850	29.23	29.23	0	30.37	30.37	0	30.91	30.91	0	31.16	31.16	0	32.21	32.21	0	
215860	29.25	29.25	0	30.41	30.41	0	30.96	30.96	0	31.21	31.21	0	32.28	32.28	0	
215870	29.25	29.25	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.28	32.28	0	
215880	29.25	29.25	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.29	32.29	0	
215890	29.26	29.26	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.29	32.29	0	
215900	29.27	29.27	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.31	32.31	0	
215910	29.27	29.27	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.31	32.31	0	
215920	29.28	29.28	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.32	32.32	0	
215930	29.28	29.28	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.32	32.32	0	
215940	29.28	29.28	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.32	32.32	0	
215950	29.29	29.29	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.32	32.32	0	
215960	29.29	29.29	0	30.41	30.41	0	30.95	30.95	0	31.22	31.22	0	32.32	32.32	0	
215970	29.31	29.31	0	30.48	30.48	0	31	31	0	31.26	31.26	0	32.35	32.35	0	
215980	29.31	29.31	0	30.5	30.5	0	31.04	31.04	0	31.29	31.29	0	32.44	32.44	0	
215990	29.36	29.36	0	30.62	30.62	0	31.16	31.16	0	31.4	31.4	0	32.56	32.56	0	
216000	29.36	29.36	0	30.65	30.65	0	31.2	31.2	0	31.44	31.44	0	32.6	32.6	0	
216010	29.38	29.38	0	30.8	30.8	0	31.38	31.38	0	31.62	31.62	0	32.74	32.74	0	
216020	29.39	29.39	0	30.95	30.95	0	31.61	31.61	0	31.85	31.85	0	32.89	32.89	0	
216030	29.41	29.41	0	30.99	30.99	0	31.66	31.66	0	31.89	31.89	0	32.92	32.92	0	
216040	29.5	29.5	0	31.7	31.7	0	32.19	32.19	0	32.37	32.37	0	33.2	33.2	0	
216050	30.06	30.06	0	32.04	32.04	0	32.58	32.58	0	32.78	32.78	0	33.61	33.61	0	
216060	30.21	30.21	0	32.12	32.12	0	32.66	32.66	0	32.87	32.87	0	33.7	33.7	0	
216070	31.44	31.44	0	32.96	32.96	0	33.58	33.58	0	33.83	33.83	0	34.84	34.84	0	
216080	31.51	31.51	0	33.48	33.48	0	34.67	34.67	0	34.95	34.95	0	35.93	35.93	0	
216090	31.64	31.64	0	32.94	32.94	0	33.43	33.43	0	33.51	33.51	0	35.42	35.42	0	
216100	30.33	30.33	0	32.25	32.25	0	33.1	33.1	0	33.49	33.49	0	35.48	35.48	0	
216110	31.82	31.82	0	32.77	32.77	0	33.39	33.39	0	33.68	33.68	0	35.48	35.48	0	
216120	31.93	31.93	0	32.77	32.77	0	33.6	33.6	0	33.99	33.99	0	36.61	36.61	0	
216130	29.72	29.72	0	33.05	33.05	0	34.24	34.24	0	35.07	35.07	0	36.73	36.73	0	
216140	29.72	29.72	0	33.05	33.05	0	35.15	35.15	0	36.2	36.2	0	38.27	38.27	0	
216150	29.71	29.71	0	32.98	32.98	0	35.79	35.79	0	36.68	36.68	0	38.48	38.48	0	
216160	30.07	30.07	0	30.49	30.49	0	30.67	30.67	0	30.75	30.75	0	31.39	31.39	0	
216170	28.8	28.8	0	29.9	29.9	0	30.33	30.33	0	30.52	30.52	0	31.4	31.4	0	
216180	29.08	29.08	0	29.93	29.93	0	30.34	30.34	0	30.53	30.53	0	31.4	31.4	0	
216190	29.08	29.08	0	29.94	29.94	0	30.35	30.35	0	30.53	30.53	0	31.4	31.4	0	
216200	28.81	28.81	0	29.77	29.77	0	30.26	30.26	0	30.48	30.48	0	31.5	31.5	0	
216210	28.82	28.82	0	29.79	29.79	0	30.28	30.28	0	30.5	30.5	0	31.51	31.51	0	
216220	29.05	29.05	0	29.85	29.85	0	30.3	30.3	0	30.51	30.51	0	31.51	31.51	0	
216230	28.81	28.81	0	29.77	29.77	0	30.26	30.26	0	30.48	30.48	0	31.5	31.5	0	
216240	29.34	29.34	0	30.09	30.09	0	30.51	30.51	0	30.68	30.68	0	31.51	31.51	0	
216250	29.82	29.82	0	30.4	30.4	0	30.68	30.68	0	30.82	30.82	0	31.51	31.51	0	
216260	29.38	29.38	0	30.37	30.37	0	30.91	30.91	0	31.16	31.16	0	32.21	32.21	0	
216270	29.23	29.23	0	30.37	30.37	0	30.91	30.91	0	31.16	31.16	0	32.21	32.21	0	
216280	29.25	29.25	0	30.41	30.41	0	30.96	30.96	0	31.21	31.21	0	32.18	32.18	0	
216290	29.3	29.3	0	30.68	30.68	0	31.37	31.37	0	31.69	31.69	0	32.92	32.92	0	
216300	30.32	30.32	0	31.27	31.27	0	31.83	31.83	0	32.09	32.09	0	33.04	33.04	0	
216310	30.32	30.32	0	31.49	31.49	0	32.26	32.26	0	32.54	32.54	0	33.55	33.55	0	
216320	31.98	31.98	0	32.39	32.39	0	32.6	32.6	0	32.73	32.73	0	33.55	33.55	0	
216330	32.49	32.49	0	32.92	32.92	0	33.02	33.02	0	33.08	33.08	0	33.59	33.59	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
216340	29.26	29.26	0	30.41	30.41	0	30.96	30.96	0	31.22	31.22	0	32.3	32.3	0	
216350	29.27	29.27	0	30.42	30.42	0	30.97	30.97	0	31.23	31.23	0	32.31	32.31	0	
216360	29.32	29.32	0	30.62	30.62	0	31.31	31.31	0	31.65	31.65	0	32.42	32.42	0	
216370	30.76	30.76	0	31.43	31.43	0	31.71	31.71	0	31.83	31.83	0	32.42	32.42	0	
216380	29.39	29.39	0	30.22	30.22	0	30.62	30.62	0	30.79	30.79	0	31.55	31.55	0	
216390	29.39	29.39	0	30.22	30.22	0	30.59	30.59	0	30.73	30.73	0	31.37	31.37	0	
216400	44.2	44.2	0	46.17	46.17	0	46.72	46.72	0	46.93	46.93	0	47.92	47.92	0	
216410	29.45	29.45	0	30.93	30.93	0	31.47	31.47	0	31.72	31.72	0	33.75	33.75	0	
216420	31.39	31.39	0	32.47	32.47	0	33	33	0	33.24	33.24	0	33.83	33.83	0	
216430	31.17	31.17	0	32.32	32.32	0	32.79	32.79	0	32.93	32.93	0	33.54	33.54	0	
216440	33.29	33.29	0	35.13	35.13	0	36.21	36.21	0	36.41	36.41	0	36.97	36.97	0	
216450	35.81	35.81	0	36.44	36.44	0	36.64	36.64	0	36.73	36.73	0	37.11	37.11	0	
216460	27.85	27.85	0	30.22	30.22	0	30.59	30.59	0	30.73	30.73	0	31.37	31.37	0	
216470	29.71	29.71	0	30.99	30.99	0	31.63	31.63	0	31.87	31.87	0	32.89	32.89	0	
216480	30.68	30.68	0	31.43	31.43	0	31.74	31.74	0	31.9	31.9	0	32.89	32.89	0	
216490	29.5	29.5	0	31.7	31.7	0	32.19	32.19	0	32.37	32.37	0	33.2	33.2	0	
216500	31.83	31.83	0	32.37	32.37	0	32.6	32.6	0	32.68	32.68	0	33.2	33.2	0	
216510	31.14	31.14	0	32.95	32.95	0	33.58	33.58	0	33.83	33.83	0	34.84	34.84	0	
216520	31.45	31.45	0	32.96	32.96	0	33.58	33.58	0	33.83	33.83	0	34.84	34.84	0	
216530	34.04	34.04	0	34.76	34.76	0	35.07	35.07	0	35.24	35.24	0	36.09	36.09	0	
216540	34.13	34.13	0	36.85	36.85	0	37.32	37.32	0	37.41	37.41	0	37.82	37.82	0	
216550	34.19	34.19	0	36.85	36.85	0	37.32	37.32	0	37.41	37.41	0	37.82	37.82	0	
216560	34.19	34.19	0	37.86	37.86	0	38.51	38.51	0	38.77	38.77	0	39.81	39.81	0	
216570	44.25	44.25	0	44.64	44.64	0	44.76	44.76	0	44.82	44.82	0	45.06	45.06	0	
216580	44.34	44.34	0	44.87	44.87	0	45.07	45.07	0	45.15	45.15	0	45.56	45.56	0	
216590	31.5	31.5	0	33.8	33.8	0	34.17	34.17	0	34.41	34.41	0	35.69	35.69	0	
216600	29.32	29.32	0	32.31	32.31	0	33.1	33.1	0	33.49	33.49	0	35.48	35.48	0	
216610	29.2	29.2	0	30.71	30.71	0	31.54	31.54	0	31.93	31.93	0	35.48	35.48	0	
216620	32.23	32.23	0	32.99	32.99	0	34.35	34.35	0	34.59	34.59	0	35.48	35.48	0	
216630	33.62	33.62	0	34.26	34.26	0	34.49	34.49	0	34.66	34.66	0	35.48	35.48	0	
216640	29.11	29.11	0	32.38	32.38	0	33.1	33.1	0	33.49	33.49	0	35.48	35.48	0	
216650	37.51	37.51	0	41.56	41.56	0	42.08	42.08	0	42.11	42.11	0	42.53	42.53	0	
216660	34.2	34.2	0	37.77	37.77	0	39.72	39.72	0	40.62	40.62	0	41.9	41.9	0	
216670	27.23	27.23	0	33.03	33.03	0	34.46	34.46	0	34.53	34.53	0	35.48	35.48	0	
216680	39.55	39.55	0	40.03	40.03	0	40.27	40.27	0	40.38	40.38	0	40.85	40.85	0	
216690	32.37	32.37	0	32.5	32.5	0	33.1	33.1	0	33.49	33.49	0	35.48	35.48	0	
216700	33.04	33.04	0	33.41	33.41	0	34.31	34.31	0	34.86	34.86	0	38.17	38.17	0	
216710	37.35	37.35	0	39.67	39.67	0	40.01	40.01	0	40.16	40.16	0	40.58	40.58	0	
216720	33.48	33.48	0	34.06	34.06	0	34.3	34.3	0	34.42	34.42	0	35.48	35.48	0	
216730	34.12	34.12	0	34.56	34.56	0	34.79	34.79	0	34.9	34.9	0	35.48	35.48	0	
216740	31.96	31.96	0	33.44	33.44	0	33.79	33.79	0	34.01	34.01	0	35.52	35.52	0	
216750	32.82	32.82	0	33.6	33.6	0	33.85	33.85	0	34.03	34.03	0	35.52	35.52	0	
216760	31.82	31.82	0	32.98	32.98	0	33.72	33.72	0	33.99	33.99	0	35.53	35.53	0	
216770	42.7	42.7	0	43.52	43.52	0	44.03	44.03	0	44.24	44.24	0	45.1	45.1	0	
216780	39.65	39.65	0	45.27	45.27	0	45.59	45.59	0	45.72	45.72	0	46.27	46.27	0	
216790	18.22	18.22	0	21.37	21.37	0	27.35	27.35	0	29.74	29.74	0	39.31	39.31	0	
216800	42.6	42.6	0	45.02	45.02	0	45.29	45.29	0	45.4	45.4	0	45.86	45.86	0	
216810	31.87	31.87	0	35.49	35.49	0	36.18	36.18	0	36.39	36.39	0	37.37	37.37	0	
216820	31.93	31.93	0	32.78	32.78	0	33.59	33.59	0	34.05	34.05	0	35.85	35.85	0	
216830	33.86	33.86	0	34.33	34.33	0	34.49	34.49	0	34.56	34.56	0	35.85	35.85	0	
216840	41.32	41.32	0	42.46	42.46	0	43.16	43.16	0	43.42	43.42	0	44.43	44.43	0	
216900	48.03	48.03	0	48.44	48.44	0	48.64	48.64	0	48.74	48.74	0	49.22	49.22	0	
216910	67.06	67.06	0	67.41	67.41	0	67.59	67.59	0	67.68	67.68	0	68.13	68.13	0	
216920	66.75	66.75	0	67.56	67.56	0	68.57	68.57	0	69.09	69.09	0	70.74	70.74	0	
217000	27.59	27.59	0	29.46	29.46	0	30.11	30.11	0	30.34	30.34	0	31.4	31.4	0	
217010	28	28	0	29.47	29.47	0	30.11	30.11	0	30.33	30.33	0	31.35	31.35	0	
217020	28.75	28.75	0	30.02	30.02	0	30.21	30.21	0	30.3	30.3	0	31.24	31.24	0	
217030	29.05	29.05	0	30.29	30.29	0	30.58	30.58	0	30.7	30.7	0	31.21	31.21	0	
217040	27.58	27.58	0	29.45	29.45	0	30.11	30.11	0	30.34	30.34	0	31.47	31.47	0	
217050	27.59	27.59	0	29.46	29.46	0	30.11	30.11	0	30.35	30.35	0	31.47	31.47	0	
217060	27.59	27.59	0	29.46	29.46	0	30.13	30.13	0	30.38	30.38	0	31.56	31.56	0	
217070	27.59	27.59	0	29.62	29.62	0	30.52	30.52	0	30.96	30.96	0	33.34	33.34	0	
217080	27.92	27.92	0	29.62	29.62	0	30.52	30.52	0	30.97	30.97	0	33.34	33.34	0	
217090	32.41	32.41	0	33.25	33.25	0	33.74	33.74	0	34.02	34.02	0	37.19	37.19	0	
217100	39.14	39.14	0	40.8	40.8	0	41	41	0	41.1	41.1	0	41.47	41.47	0	
217110	43.39	43.39	0	43.65	43.65	0	43.75	43.75	0	43.78	43.78	0	44.08	44.08	0	
217120	44.07	44.07	0	44.94	44.94	0	45.33	45.33	0	45.51	45.51	0	46.32	46.32	0	
217122	44.07	44.07	0	45.06	45.06	0	45.6	45.6	0	45.85	45.85	0	47.05	47.05	0	
217125	44.07	44.07	0	45.08	45.08	0	45.62	45.62	0	45.87	45.87	0	47.08	47.08	0	
217130	48.87	48.87	0	50.63	50.63	0	51.54	51.54	0	51.95	51.95	0	52.84	52.84	0	
217140	48.88	48.88	0	50.7	50.7	0	51.64	51.64	0	52.06	52.06	0	52.97	52.97	0	
217150	40.15	40.15	0	40.34	40.34	0	40.43	40.43	0	40.48	40.48	0	40.69	40.69	0	
217160	27.58	27.58	0	29.45	29.45	0	30.11	30.11	0	30.34	30.34	0	31.47	31.47	0	
217170	27.58	27.58	0	29.46	29.46	0	30.11	30.11	0	30.34	30.34	0	31.46	31.46	0	
217180	27.44	27.44	0	29.54	29.54	0	30.11	30.11	0	30.34	30.34	0	31.46	31.46	0	
217190	29.39	29.39	0	29.62	29.62	0	30.11	30.11	0	30.34	30.34	0	31.46	31.46	0	
217200	29.53	29.53	0	29.86	29.86	0	30.09	30.09	0	30.27	30.27	0	31.12	31.12	0	
217210	29.46	29.46	0	31.11	31.11	0	31.75	31.75	0	32.04	32.04	0	33.52	33.52	0	
217220	27.58	27.58	0	29.45	29.45	0	30.11	30.11	0	30.34	30.34	0	31.47	31.47	0	
217230	28.06	28.06	0	29.52	29.52	0	30.22	30.22	0	30.53	30.53	0	32.08	32.08	0	
217240	32.92	32.92	0	33.04	33.04	0	33.13	33.13	0	33.17	33.17	0	33.32	33.32	0	
217250	35.68	35.68	0	36.14	36.14	0	36.36	36.36	0	36.47	36.47	0	36.99	36.99	0	
217260	35.42	35.42	0	37.31	37.31	0	38.47	38.47	0	38.99	38.99	0	40.94	40.94	0	
217270	37.71	37.71	0	38.64	38.64	0	39.1	39.1	0	39.4	39.4	0	41.04	41.04	0	
217280	46.25	46.25	0	46.55	46.55	0	46.68	46.68	0	46.75	46.75	0	47.05	47.05	0	
217290	48.97	48.97	0	49.16	49.16	0	49.25	49.25	0	49.29	49.29	0	49.49	49.49	0	
217300	49.05	49.05	0	49.35	49.35	0	49.48	49.48	0	49.54	49.54	0	49.82	49.82	0	
217310	48.42	48.42	0	49.6	49.6	0	49.99	49.99	0	50.16	50.16	0	50.93	50.93	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
217320	39.11	39.11	0	40.15	40.15	0	40.22	40.22	0	40.25	40.25	0	40.36	40.36	0	
217330	35.41	35.41	0	36.58	36.58	0	37.21	37.21	0	37.53	37.53	0	39.16	39.16	0	
217340	36.42	36.42	0	36.89	36.89	0	37.24	37.24	0	37.54	37.54	0	39.16	39.16	0	
217350	35.41	35.41	0	36.61	36.61	0	37.38	37.38	0	37.74	37.74	0	39.36	39.36	0	
217360	37.36	37.36	0	37.86	37.86	0	38.09	38.09	0	38.22	38.22	0	39.37	39.37	0	
217370	55.09	55.09	0	55.48	55.48	0	55.71	55.71	0	55.82	55.82	0	56.24	56.24	0	
217380	36.1	36.1	0	37.94	37.94	0	38.86	38.86	0	39.18	39.18	0	40.37	40.37	0	
217390	38.65	38.65	0	39.11	39.11	0	39.34	39.34	0	39.45	39.45	0	40.38	40.38	0	
217400	36.47	36.47	0	40.91	40.91	0	42.01	42.01	0	42.39	42.39	0	43.74	43.74	0	
217410	35.83	35.83	0	36.89	36.89	0	38.19	38.19	0	40.27	40.27	0	45.42	45.42	0	
217420	41.66	41.66	0	43.77	43.77	0	43.98	43.98	0	44.17	44.17	0	45.45	45.45	0	
217430	40.13	40.13	0	40.85	40.85	0	41.18	41.18	0	41.32	41.32	0	41.97	41.97	0	
217440	49.71	49.71	0	50.01	50.01	0	50.16	50.16	0	50.23	50.23	0	50.51	50.51	0	
217450	49.98	49.98	0	50.37	50.37	0	50.59	50.59	0	50.69	50.69	0	51.16	51.16	0	
217460	53.16	53.16	0	53.61	53.61	0	53.8	53.8	0	53.88	53.88	0	54.29	54.29	0	
217470	56.11	56.11	0	56.37	56.37	0	56.45	56.45	0	56.49	56.49	0	56.67	56.67	0	
217480	48.1	48.1	0	48.25	48.25	0	48.33	48.33	0	48.36	48.36	0	48.55	48.55	0	
217490	40.19	40.19	0	40.19	40.19	0	40.19	40.19	0	40.19	40.19	0	41.62	41.62	0	
217500	41.34	41.34	0	43.08	43.08	0	43.94	43.94	0	44.31	44.31	0	45.9	45.9	0	
217510	38.87	38.87	0	42.55	42.55	0	43.23	43.23	0	43.55	43.55	0	46.45	46.45	0	
217520	47.51	47.51	0	48.02	48.02	0	48.13	48.13	0	48.19	48.19	0	49.32	49.32	0	
217530	49.5	49.5	0	51.85	51.85	0	52.74	52.74	0	53.19	53.19	0	54.56	54.56	0	
217540	52.13	52.13	0	52.97	52.97	0	53.24	53.24	0	53.34	53.34	0	54.04	54.04	0	
217550	52.69	52.69	0	53.26	53.26	0	53.61	53.61	0	53.76	53.76	0	54.87	54.87	0	
217560	53.28	53.28	0	54.72	54.72	0	55.35	55.35	0	55.53	55.53	0	56.04	56.04	0	
217570	58.94	58.94	0	59.35	59.35	0	59.47	59.47	0	59.52	59.52	0	59.78	59.78	0	
217580	52.5	52.5	0	52.98	52.98	0	53.29	53.29	0	53.45	53.45	0	54.62	54.62	0	
217590	53.04	53.04	0	54.12	54.12	0	54.75	54.75	0	55.06	55.06	0	55.88	55.88	0	
217600	28.13	28.13	0	29.03	29.03	0	29.63	29.63	0	29.86	29.86	0	30.96	30.96	0	
217610	28.8	28.8	0	29.36	29.36	0	30.03	30.03	0	30.29	30.29	0	31.44	31.44	0	
217620	29.68	29.68	0	31.07	31.07	0	31.32	31.32	0	31.42	31.42	0	31.87	31.87	0	
217630	30.91	30.91	0	31.2	31.2	0	31.38	31.38	0	31.47	31.47	0	31.88	31.88	0	
217640	28.82	28.82	0	29.5	29.5	0	30.03	30.03	0	30.29	30.29	0	31.44	31.44	0	
220000	28.35	28.35	0	29.79	29.79	0	30.43	30.43	0	30.69	30.69	0	31.78	31.78	0	
220010	28.36	28.36	0	29.83	29.83	0	30.49	30.49	0	30.76	30.76	0	31.89	31.89	0	
220020	28.48	28.48	0	29.9	29.9	0	30.57	30.57	0	30.84	30.84	0	31.96	31.96	0	
220030	28.52	28.52	0	29.94	29.94	0	30.61	30.61	0	30.89	30.89	0	32	32	0	
220040	28.53	28.53	0	29.97	29.97	0	30.66	30.66	0	30.95	30.95	0	32.1	32.1	0	
220050	28.81	28.81	0	30.28	30.28	0	30.9	30.9	0	31.17	31.17	0	32.28	32.28	0	
220060	28.81	28.81	0	30.29	30.29	0	30.91	30.91	0	31.19	31.19	0	32.31	32.31	0	
220070	28.85	28.85	0	30.38	30.38	0	31.04	31.04	0	31.33	31.33	0	32.58	32.58	0	
220080	29.91	29.91	0	31.07	31.07	0	31.56	31.56	0	31.78	31.78	0	32.77	32.77	0	
220090	31.5	31.5	0	32.79	32.79	0	33.37	33.37	0	33.65	33.65	0	34.8	34.8	0	
220100	31.8	31.8	0	33.12	33.12	0	33.65	33.65	0	33.9	33.9	0	34.92	34.92	0	
220110	32	32	0	33.34	33.34	0	34.08	34.08	0	34.42	34.42	0	35.71	35.71	0	
220120	32.65	32.65	0	33.79	33.79	0	34.3	34.3	0	34.55	34.55	0	35.74	35.74	0	
220130	32.71	32.71	0	34.2	34.2	0	35.09	35.09	0	35.38	35.38	0	36.41	36.41	0	
220140	33.85	33.85	0	35.72	35.72	0	36.03	36.03	0	36.18	36.18	0	36.98	36.98	0	
220150	33.8	33.8	0	35.64	35.64	0	35.98	35.98	0	36.14	36.14	0	37.03	37.03	0	
220160	33.32	33.32	0	36.26	36.26	0	38.37	38.37	0	39.56	39.56	0	42.12	42.12	0	
220165	33.73	33.73	0	36.26	36.26	0	37.3	37.3	0	37.7	37.7	0	39.67	39.67	0	
220170	34.57	34.57	0	37.75	37.75	0	39.12	39.12	0	39.62	39.62	0	41.29	41.29	0	
220180	34.6	34.6	0	37.75	37.75	0	39.12	39.12	0	39.62	39.62	0	41.29	41.29	0	
220190	34.07	34.07	0	36.61	36.61	0	37.69	37.69	0	37.97	37.97	0	39.84	39.84	0	
220195	34.06	34.06	0	36.73	36.73	0	38.05	38.05	0	38.51	38.51	0	40.21	40.21	0	
220200	34.09	34.09	0	36.48	36.48	0	37.47	37.47	0	37.87	37.87	0	39.84	39.84	0	
220210	35.95	35.95	0	36.81	36.81	0	37.47	37.47	0	37.87	37.87	0	39.84	39.84	0	
220220	36.41	36.41	0	37.8	37.8	0	38.46	38.46	0	38.75	38.75	0	40.09	40.09	0	
220230	37	37	0	40.89	40.89	0	43.27	43.27	0	43.88	43.88	0	45.27	45.27	0	
220300	27.69	27.69	0	29.73	29.73	0	30.35	30.35	0	30.61	30.61	0	31.72	31.72	0	
220310	28.11	28.11	0	29.75	29.75	0	30.36	30.36	0	30.62	30.62	0	31.72	31.72	0	
220320	28.35	28.35	0	29.93	29.93	0	30.55	30.55	0	30.81	30.81	0	31.9	31.9	0	
220330	28.41	28.41	0	29.93	29.93	0	30.55	30.55	0	30.81	30.81	0	31.9	31.9	0	
220340	28.52	28.52	0	30.15	30.15	0	30.77	30.77	0	31.04	31.04	0	32.14	32.14	0	
220350	28.6	28.6	0	30.29	30.29	0	30.91	30.91	0	31.19	31.19	0	32.31	32.31	0	
220360	28.11	28.11	0	29.75	29.75	0	30.35	30.35	0	30.61	30.61	0	31.72	31.72	0	
220370	30.13	30.13	0	30.45	30.45	0	30.57	30.57	0	30.62	30.62	0	31.72	31.72	0	
220380	30.13	30.13	0	30.45	30.45	0	30.59	30.59	0	30.64	30.64	0	31.72	31.72	0	
220390	28.66	28.66	0	29.92	29.92	0	30.48	30.48	0	30.69	30.69	0	31.78	31.78	0	
220400	30.54	30.54	0	30.88	30.88	0	31.05	31.05	0	31.14	31.14	0	31.78	31.78	0	
220500	29.26	29.26	0	29.94	29.94	0	30.58	30.58	0	30.85	30.85	0	31.96	31.96	0	
220510	29.66	29.66	0	30.57	30.57	0	30.95	30.95	0	31.12	31.12	0	32.03	32.03	0	
220530	29.79	29.79	0	31.3	31.3	0	32.02	32.02	0	32.46	32.46	0	34.33	34.33	0	
220540	30.01	30.01	0	31.75	31.75	0	32.74	32.74	0	33.16	33.16	0	34.5	34.5	0	
220550	30.03	30.03	0	31.76	31.76	0	32.76	32.76	0	33.18	33.18	0	35.41	35.41	0	
220560	29.97	29.97	0	31.77	31.77	0	32.72	32.72	0	33.13	33.13	0	34.48	34.48	0	
220570	29.94	29.94	0	31.98	31.98	0	33.18	33.18	0	33.72	33.72	0	35.73	35.73	0	
220580	30.04	30.04	0	32.17	32.17	0	33.54	33.54	0	34.12	34.12	0	36.25	36.25	0	
220590	30.04	30.04	0	32.37	32.37	0	33.58	33.58	0	34.12	34.12	0	36.25	36.25	0	
220600	30.04	30.04	0	32.85	32.85	0	34.53	34.53	0	34.94	34.94	0	36.29	36.29	0	
220610	30.04	30.04	0	33.72	33.72	0	35.01	35.01	0	35.32	35.32	0	36.38	36.38	0	
220620	31.55	31.55	0	35.95	35.95	0	36.43	36.43	0	36.56	36.56	0	37.07	37.07	0	
220630	34.65	34.65	0	37.23	37.23	0	37.65	37.65	0	37.76	37.76	0	38.28	38.28	0	
220640	40.08	40.08	0	40.54	40.54	0	40.83	40.83	0	40.94	40.94	0	41.44	41.44	0	
220650	40.15	40.15	0	40.82	40.82	0	41.24	41.24	0	41.44	41.44	0	42.68	42.68	0	
220660	41.1	41.1	0	41.82	41.82	0	42.2	42.2	0	42.38	42.38	0	43.14	43.14	0	
220670	29.27	29.27	0	29.94	29.94	0	30.58	30.58	0	30.85	30.85	0	31.89	31.89	0	
220680	29.27	29.27	0	29.95	29.95	0	30.58	30.58	0	30.85	30.85	0	31.89	31.89	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
220690	29.29	29.29	0	30.82	30.82	0	31.09	31.09	0	31.19	31.19	0	32	32	0	
220700	30.31	30.31	0	30.92	30.92	0	31.15	31.15	0	31.24	31.24	0	32	32	0	
220710	30.31	30.31	0	30.96	30.96	0	31.3	31.3	0	31.45	31.45	0	32.08	32.08	0	
220720	30.31	30.31	0	31.01	31.01	0	31.31	31.31	0	31.44	31.44	0	32	32	0	
220730	30.31	30.31	0	31.05	31.05	0	31.38	31.38	0	31.53	31.53	0	32.15	32.15	0	
220740	30.31	30.31	0	31.4	31.4	0	31.85	31.85	0	32.03	32.03	0	32.77	32.77	0	
220750	30.31	30.31	0	31.21	31.21	0	31.63	31.63	0	31.81	31.81	0	32.59	32.59	0	
220760	30.31	30.31	0	31.63	31.63	0	32.27	32.27	0	32.55	32.55	0	33.63	33.63	0	
220770	30.32	30.32	0	32.24	32.24	0	32.66	32.66	0	32.84	32.84	0	33.69	33.69	0	
220780	40.45	40.45	0	41.78	41.78	0	43.22	43.22	0	44.08	44.08	0	45.51	45.51	0	
220790	43.27	43.27	0	44.53	44.53	0	44.78	44.78	0	44.89	44.89	0	45.57	45.57	0	
220800	30.31	30.31	0	31.59	31.59	0	32.2	32.2	0	32.48	32.48	0	33.41	33.41	0	
220810	30.31	30.31	0	31.58	31.58	0	32.1	32.1	0	32.35	32.35	0	32.8	32.8	0	
220820	31.46	31.46	0	31.65	31.65	0	31.86	31.86	0	32.04	32.04	0	32.77	32.77	0	
220830	30.31	30.31	0	31.21	31.21	0	31.65	31.65	0	31.84	31.84	0	33.62	33.62	0	
220840	31.81	31.81	0	32.07	32.07	0	32.29	32.29	0	32.55	32.55	0	33.63	33.63	0	
220850	29.67	29.67	0	30.74	30.74	0	31.73	31.73	0	32.01	32.01	0	32.67	32.67	0	
220860	31.82	31.82	0	32.15	32.15	0	32.27	32.27	0	32.33	32.33	0	32.74	32.74	0	
220870	29.67	29.67	0	30.9	30.9	0	31.29	31.29	0	31.44	31.44	0	32.08	32.08	0	
220880	29.67	29.67	0	30.9	30.9	0	31.29	31.29	0	31.44	31.44	0	32.08	32.08	0	
220890	31.74	31.74	0	32.84	32.84	0	36.86	36.86	0	38.23	38.23	0	38.72	38.72	0	
220900	36.83	36.83	0	39.59	39.59	0	39.87	39.87	0	40	40	0	40.57	40.57	0	
220910	41.45	41.45	0	43.09	43.09	0	43.25	43.25	0	43.32	43.32	0	43.59	43.59	0	
220920	29.76	29.76	0	31.3	31.3	0	32.22	32.22	0	32.54	32.54	0	33.63	33.63	0	
220930	31.55	31.55	0	31.64	31.64	0	32.27	32.27	0	32.55	32.55	0	33.63	33.63	0	
220940	27.45	27.45	0	28.02	28.02	0	28.38	28.38	0	28.59	28.59	0	32.87	32.87	0	
220950	37.16	37.16	0	38.35	38.35	0	39.04	39.04	0	39.18	39.18	0	39.93	39.93	0	
220960	36.12	36.12	0	38.19	38.19	0	39.24	39.24	0	39.73	39.73	0	41.07	41.07	0	
220970	30.1	30.1	0	31.76	31.76	0	32.76	32.76	0	33.18	33.18	0	35.12	35.12	0	
220980	32.24	32.24	0	33.51	33.51	0	34.22	34.22	0	34.63	34.63	0	37.74	37.74	0	
220990	33.36	33.36	0	36.48	36.48	0	39.04	39.04	0	40.14	40.14	0	42.91	42.91	0	
221000	34.85	34.85	0	35.47	35.47	0	35.76	35.76	0	35.87	35.87	0	36.18	36.18	0	
221020	35.77	35.77	0	35.97	35.97	0	36.43	36.43	0	36.76	36.76	0	37.81	37.81	0	
221030	34.85	34.85	0	35.64	35.64	0	36.3	36.3	0	36.62	36.62	0	37.71	37.71	0	
221040	34.85	34.85	0	35.72	35.72	0	36.54	36.54	0	36.95	36.95	0	38.53	38.53	0	
221050	34.85	34.85	0	35.69	35.69	0	36.42	36.42	0	36.76	36.76	0	37.8	37.8	0	
221060	30.04	30.04	0	32.65	32.65	0	34.13	34.13	0	34.44	34.44	0	36.25	36.25	0	
221070	30.05	30.05	0	33.38	33.38	0	34.55	34.55	0	34.95	34.95	0	36.3	36.3	0	
221080	30.59	30.59	0	33.36	33.36	0	34.55	34.55	0	34.95	34.95	0	36.3	36.3	0	
221090	38.35	38.35	0	38.91	38.91	0	39.15	39.15	0	39.23	39.23	0	39.93	39.93	0	
221100	33.51	33.51	0	35.96	35.96	0	36.04	36.04	0	36.11	36.11	0	36.72	36.72	0	
221110	30.05	30.05	0	35.99	35.99	0	36.3	36.3	0	36.42	36.42	0	36.91	36.91	0	
221120	39.73	39.73	0	40.32	40.32	0	40.58	40.58	0	40.71	40.71	0	41.3	41.3	0	
221130	31.69	31.69	0	35.11	35.11	0	36.56	36.56	0	36.86	36.86	0	37.69	37.69	0	
221140	35.08	35.08	0	37.41	37.41	0	40.41	40.41	0	41.45	41.45	0	44.76	44.76	0	
221150	37.35	37.35	0	40.72	40.72	0	44.49	44.49	0	44.81	44.81	0	45.75	45.75	0	
221160	45.4	45.4	0	45.64	45.64	0	45.76	45.76	0	45.81	45.81	0	46.07	46.07	0	
221200	28.81	28.81	0	30.28	30.28	0	30.9	30.9	0	31.17	31.17	0	32.28	32.28	0	
221210	29.05	29.05	0	30.28	30.28	0	30.9	30.9	0	31.17	31.17	0	32.28	32.28	0	
221220	27.7	27.7	0	29.97	29.97	0	30.66	30.66	0	30.95	30.95	0	32.1	32.1	0	
221230	37.18	37.18	0	37.56	37.56	0	37.76	37.76	0	37.84	37.84	0	38.19	38.19	0	
221240	37.32	37.32	0	37.88	37.88	0	38.07	38.07	0	38.15	38.15	0	38.58	38.58	0	
221250	43.11	43.11	0	44.69	44.69	0	45.43	45.43	0	45.45	45.45	0	45.73	45.73	0	
221260	42.63	42.63	0	44.58	44.58	0	45.4	45.4	0	45.72	45.72	0	46.85	46.85	0	
221270	29.37	29.37	0	29.97	29.97	0	30.66	30.66	0	30.95	30.95	0	32.1	32.1	0	
221280	36.41	36.41	0	36.64	36.64	0	36.74	36.74	0	36.79	36.79	0	37.01	37.01	0	
221290	29.93	29.93	0	32.17	32.17	0	33.54	33.54	0	34.12	34.12	0	36.25	36.25	0	
221300	30.94	30.94	0	32.17	32.17	0	33.54	33.54	0	34.12	34.12	0	36.25	36.25	0	
221310	37.57	37.57	0	39.49	39.49	0	40.16	40.16	0	40.54	40.54	0	41.58	41.58	0	
221320	36	36	0	38.21	38.21	0	39.98	39.98	0	40.44	40.44	0	41.55	41.55	0	
221330	37.65	37.65	0	39.71	39.71	0	39.97	39.97	0	40.08	40.08	0	41.1	41.1	0	
221340	34.1	34.1	0	36.46	36.46	0	38.35	38.35	0	39.22	39.22	0	40.97	40.97	0	
221350	28.97	28.97	0	32.17	32.17	0	33.54	33.54	0	34.12	34.12	0	36.25	36.25	0	
221400	28.81	28.81	0	30.29	30.29	0	30.91	30.91	0	31.19	31.19	0	32.31	32.31	0	
221410	28.6	28.6	0	30.29	30.29	0	30.91	30.91	0	31.19	31.19	0	32.31	32.31	0	
221420	28.6	28.6	0	30.29	30.29	0	30.91	30.91	0	31.19	31.19	0	32.31	32.31	0	
221430	28.6	28.6	0	30.29	30.29	0	30.91	30.91	0	31.19	31.19	0	32.32	32.32	0	
221440	28.6	28.6	0	30.33	30.33	0	30.96	30.96	0	31.26	31.26	0	32.41	32.41	0	
221450	28.6	28.6	0	30.33	30.33	0	30.96	30.96	0	31.26	31.26	0	32.41	32.41	0	
221460	28.6	28.6	0	30.33	30.33	0	30.96	30.96	0	31.26	31.26	0	32.4	32.4	0	
221470	28.61	28.61	0	30.35	30.35	0	31.05	31.05	0	31.41	31.41	0	32.71	32.71	0	
221480	28.64	28.64	0	30.28	30.28	0	30.86	30.86	0	31.11	31.11	0	32.04	32.04	0	
221490	29.08	29.08	0	30.74	30.74	0	31.19	31.19	0	31.37	31.37	0	32.08	32.08	0	
221500	28.61	28.61	0	32.02	32.02	0	32.49	32.49	0	32.68	32.68	0	33.45	33.45	0	
221510	28.6	28.6	0	30.33	30.33	0	30.98	30.98	0	31.28	31.28	0	32.41	32.41	0	
221520	28.6	28.6	0	30.3	30.3	0	30.92	30.92	0	31.19	31.19	0	32.31	32.31	0	
221530	28.6	28.6	0	30.31	30.31	0	30.94	30.94	0	31.22	31.22	0	32.33	32.33	0	
221540	28.6	28.6	0	30.32	30.32	0	30.95	30.95	0	31.23	31.23	0	32.35	32.35	0	
221550	28.6	28.6	0	30.32	30.32	0	30.95	30.95	0	31.24	31.24	0	32.36	32.36	0	
221560	28.6	28.6	0	30.34	30.34	0	30.98	30.98	0	31.28	31.28	0	32.42	32.42	0	
221570	28.6	28.6	0	30.34	30.34	0	30.98	30.98	0	31.28	31.28	0	32.42	32.42	0	
221580	28.61	28.61	0	30.42	30.42	0	31.1	31.1	0	31.4	31.4	0	32.53	32.53	0	
221590	28.62	28.62	0	30.5	30.5	0	31.22	31.22	0	31.53	31.53	0	32.65	32.65	0	
221600	28.65	28.65	0	30.58	30.58	0	31.34	31.34	0	31.65	31.65	0	32.76	32.76	0	
221610	28.69	28.69	0	30.66	30.66	0	31.47	31.47	0	31.78	31.78	0	32.87	32.87	0	
221620	28.79	28.79	0	30.29	30.29	0	30.92	30.92	0	31.19	31.19	0	32.31	32.31	0	
221630	30.61	30.61	0	31.28	31.28	0	31.53	31.53	0	31.64	31.64	0	32.31	32.31	0	
221635	30.62	30.62	0	31.33	31.33	0	31.6	31.6	0	31.71	31.71	0	32.31	32.31	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
221680	28.79	28.79	0	30.29	30.29	0	30.92	30.92	0	31.19	31.19	0	32.31	32.31	0	
221690	28.74	28.74	0	30.29	30.29	0	30.92	30.92	0	31.19	31.19	0	32.31	32.31	0	
221700	28.74	28.74	0	30.29	30.29	0	30.92	30.92	0	31.21	31.21	0	32.32	32.32	0	
221710	28.75	28.75	0	30.3	30.3	0	30.97	30.97	0	31.27	31.27	0	33.18	33.18	0	
221720	30.58	30.58	0	32.18	32.18	0	32.68	32.68	0	32.88	32.88	0	33.69	33.69	0	
221730	30.6	30.6	0	32.18	32.18	0	32.68	32.68	0	32.88	32.88	0	33.7	33.7	0	
221740	30.61	30.61	0	32.32	32.32	0	32.82	32.82	0	33.03	33.03	0	33.83	33.83	0	
221750	30.61	30.61	0	32.68	32.68	0	33.36	33.36	0	33.67	33.67	0	35.13	35.13	0	
221760	30.61	30.61	0	32.88	32.88	0	33.49	33.49	0	33.79	33.79	0	35.21	35.21	0	
221770	32.93	32.93	0	33.65	33.65	0	34.01	34.01	0	34.32	34.32	0	35.52	35.52	0	
221780	30.57	30.57	0	32.25	32.25	0	33.07	33.07	0	33.43	33.43	0	35.09	35.09	0	
221790	31.9	31.9	0	32.25	32.25	0	33.1	33.1	0	33.49	33.49	0	35.48	35.48	0	
221800	33.11	33.11	0	33.54	33.54	0	33.74	33.74	0	33.82	33.82	0	34.14	34.14	0	
221810	33.11	33.11	0	33.56	33.56	0	33.75	33.75	0	33.82	33.82	0	34.14	34.14	0	
221820	42.77	42.77	0	45.59	45.59	0	46.8	46.8	0	47.33	47.33	0	49.54	49.54	0	
221830	33.9	33.9	0	34.61	34.61	0	34.72	34.72	0	34.83	34.83	0	35.61	35.61	0	
221840	34.19	34.19	0	36.13	36.13	0	36.31	36.31	0	36.39	36.39	0	36.76	36.76	0	
221900	30.96	30.96	0	31.57	31.57	0	31.81	31.81	0	31.9	31.9	0	32.58	32.58	0	
221910	31.26	31.26	0	32	32	0	32.28	32.28	0	32.38	32.38	0	32.75	32.75	0	
221920	28.86	28.86	0	30.38	30.38	0	31.04	31.04	0	31.33	31.33	0	32.58	32.58	0	
221930	30.17	30.17	0	30.41	30.41	0	31.04	31.04	0	31.33	31.33	0	32.58	32.58	0	
221940	30.66	30.66	0	30.95	30.95	0	31.06	31.06	0	31.33	31.33	0	32.58	32.58	0	
221950	28.85	28.85	0	30.38	30.38	0	31.04	31.04	0	31.33	31.33	0	32.58	32.58	0	
221960	29.92	29.92	0	31	31	0	31.24	31.24	0	31.38	31.38	0	32.58	32.58	0	
221970	30.89	30.89	0	31.12	31.12	0	31.36	31.36	0	31.49	31.49	0	32.58	32.58	0	
221980	30.89	30.89	0	31.09	31.09	0	31.53	31.53	0	31.77	31.77	0	32.77	32.77	0	
221990	30.64	30.64	0	31.07	31.07	0	31.56	31.56	0	31.78	31.78	0	32.77	32.77	0	
222000	32.82	32.82	0	32.82	32.82	0	32.82	32.82	0	32.82	32.82	0	33.22	33.22	0	
222010	33.92	33.92	0	34.92	34.92	0	35.58	35.58	0	35.92	35.92	0	36.72	36.72	0	
222020	33.71	33.71	0	34.38	34.38	0	34.65	34.65	0	34.76	34.76	0	35.31	35.31	0	
222030	31.56	31.56	0	33.25	33.25	0	33.78	33.78	0	34.01	34.01	0	35.06	35.06	0	
222040	31.56	31.56	0	33.25	33.25	0	33.78	33.78	0	34.01	34.01	0	35.06	35.06	0	
222050	34.99	34.99	0	35.73	35.73	0	36.16	36.16	0	36.37	36.37	0	37.43	37.43	0	
222060	32	32	0	33.7	33.7	0	34.37	34.37	0	34.63	34.63	0	35.61	35.61	0	
222070	32.49	32.49	0	35.2	35.2	0	36.17	36.17	0	36.51	36.51	0	37.46	37.46	0	
222080	34.09	34.09	0	35.4	35.4	0	36.84	36.84	0	37.54	37.54	0	39.09	39.09	0	
222090	39.2	39.2	0	39.5	39.5	0	39.64	39.64	0	39.71	39.71	0	40.07	40.07	0	
222100	35.31	35.31	0	36.09	36.09	0	37.81	37.81	0	38.38	38.38	0	39.88	39.88	0	
222110	37.2	37.2	0	37.89	37.89	0	38.19	38.19	0	38.42	38.42	0	39.89	39.89	0	
222130	34.91	34.91	0	35.69	35.69	0	36.99	36.99	0	38.13	38.13	0	39.33	39.33	0	
222140	36.6	36.6	0	38.38	38.38	0	38.45	38.45	0	38.53	38.53	0	39.33	39.33	0	
222150	33.34	33.34	0	35.51	35.51	0	36.36	36.36	0	36.59	36.59	0	37.59	37.59	0	
222160	33.99	33.99	0	35.59	35.59	0	36.4	36.4	0	36.63	36.63	0	37.6	37.6	0	
222170	32.68	32.68	0	34.09	34.09	0	35.02	35.02	0	36.05	36.05	0	37.59	37.59	0	
222180	32.7	32.7	0	34.52	34.52	0	35.91	35.91	0	36.17	36.17	0	36.75	36.75	0	
222190	37.07	37.07	0	37.61	37.61	0	37.71	37.71	0	37.77	37.77	0	37.94	37.94	0	
222200	33.26	33.26	0	35.19	35.19	0	36.02	36.02	0	36.24	36.24	0	36.77	36.77	0	
222300	39.02	39.02	0	39.36	39.36	0	40.03	40.03	0	40.45	40.45	0	42.08	42.08	0	
222310	39.97	39.97	0	41.35	41.35	0	41.69	41.69	0	41.78	41.78	0	42.19	42.19	0	
222320	36.25	36.25	0	38.89	38.89	0	39.55	39.55	0	39.88	39.88	0	41.41	41.41	0	
222330	38	38	0	38.91	38.91	0	39.55	39.55	0	39.88	39.88	0	41.41	41.41	0	
222340	35.39	35.39	0	37.75	37.75	0	39.12	39.12	0	39.62	39.62	0	41.17	41.17	0	
222350	37.46	37.46	0	38.07	38.07	0	39.12	39.12	0	39.62	39.62	0	41.17	41.17	0	
222360	35.55	35.55	0	36.02	36.02	0	36.29	36.29	0	36.51	36.51	0	37.86	37.86	0	
222370	37.79	37.79	0	40.57	40.57	0	41.13	41.13	0	41.36	41.36	0	43.16	43.16	0	
222380	40.84	40.84	0	41.92	41.92	0	42.25	42.25	0	42.38	42.38	0	43.2	43.2	0	
222390	40.5	40.5	0	43.17	43.17	0	43.26	43.26	0	43.35	43.35	0	43.84	43.84	0	
222400	41.4	41.4	0	43.56	43.56	0	44.26	44.26	0	44.36	44.36	0	44.63	44.63	0	
222410	41.75	41.75	0	43.64	43.64	0	44.38	44.38	0	44.53	44.53	0	45.09	45.09	0	
222420	44.13	44.13	0	44.62	44.62	0	44.91	44.91	0	45.08	45.08	0	45.83	45.83	0	
222430	34.78	34.78	0	37.76	37.76	0	39.13	39.13	0	39.63	39.63	0	41.29	41.29	0	
222440	36	36	0	38.18	38.18	0	40.64	40.64	0	41.71	41.71	0	44.12	44.12	0	
222450	35.63	35.63	0	37.76	37.76	0	39.65	39.65	0	40.66	40.66	0	43.06	43.06	0	
222460	35.27	35.27	0	38.84	38.84	0	41.68	41.68	0	42.39	42.39	0	43.52	43.52	0	
222470	35.34	35.34	0	38.88	38.88	0	41.71	41.71	0	42.4	42.4	0	43.16	43.16	0	
222480	35.53	35.53	0	37.28	37.28	0	39.09	39.09	0	39.78	39.78	0	41.6	41.6	0	
222485	36.61	36.61	0	37.02	37.02	0	37.22	37.22	0	37.31	37.31	0	37.76	37.76	0	
222490	34.12	34.12	0	36.61	36.61	0	37.7	37.7	0	37.97	37.97	0	39.84	39.84	0	
222495	38.45	38.45	0	38.74	38.74	0	38.88	38.88	0	38.94	38.94	0	39.26	39.26	0	
222500	37.61	37.61	0	37.84	37.84	0	38	38	0	38.07	38.07	0	39.84	39.84	0	
222505	42.83	42.83	0	44.04	44.04	0	44.46	44.46	0	44.65	44.65	0	45.5	45.5	0	
222510	38.03	38.03	0	39.06	39.06	0	39.71	39.71	0	40.06	40.06	0	41.28	41.28	0	
222520	40.71	40.71	0	40.89	40.89	0	40.96	40.96	0	40.99	40.99	0	41.31	41.31	0	
222530	34.09	34.09	0	36.47	36.47	0	37.46	37.46	0	37.87	37.87	0	39.84	39.84	0	
222540	34.09	34.09	0	36.47	36.47	0	37.46	37.46	0	37.87	37.87	0	39.84	39.84	0	
222550	34.09	34.09	0	36.47	36.47	0	37.46	37.46	0	37.87	37.87	0	39.84	39.84	0	
222560	34.15	34.15	0	36.47	36.47	0	37.46	37.46	0	37.87	37.87	0	39.84	39.84	0	
222570	34.09	34.09	0	36.48	36.48	0	37.47	37.47	0	37.87	37.87	0	39.84	39.84	0	
222580	34.09	34.09	0	36.48	36.48	0	37.47	37.47	0	37.87	37.87	0	39.84	39.84	0	
222590	35.95	35.95	0	36.81	36.81	0	37.46	37.46	0	37.86	37.86	0	39.84	39.84	0	
222600	35.93	35.93	0	36.78	36.78	0	37.44	37.44	0	37.86	37.86	0	39.84	39.84	0	
222610	35.38	35.38	0	36.56	36.56	0	37.47	37.47	0	37.87	37.87	0	39.84	39.84	0	
222620	37.25	37.25	0	38.84	38.84	0	38.9	38.9	0	38.98	38.98	0	39.84	39.84	0	
222630	41.04	41.04	0	41.94	41.94	0	42.3	42.3	0	42.49	42.49	0	43.25	43.25	0	
222640	42.38	42.38	0	43.09	43.09	0	43.33	43.33	0	43.43	43.43	0	43.85	43.85	0	
222650	40.36	40.36	0	42.58	42.58	0	43.44	43.44	0	43.7	43.7	0	44.75	44.75	0	
222660	35.43	35.43	0	36.21	36.21	0	36.79	36.79	0	37.1	37.1	0	38.81	38.81	0	
222700	31.7	31.7	0	37.67	37.67	0	39.26	39.26	0	39.89	39.89	0	41.45	41.45	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
222710	35.86	35.86	0	37.67	37.67	0	39.26	39.26	0	39.89	39.89	0	41.45	41.45	0	
222720	43.38	43.38	0	47.19	47.19	0	48.31	48.31	0	48.8	48.8	0	50.82	50.82	0	
222730	43.42	43.42	0	47.19	47.19	0	48.31	48.31	0	48.8	48.8	0	50.82	50.82	0	
222740	33.98	33.98	0	37.67	37.67	0	39.26	39.26	0	39.89	39.89	0	41.45	41.45	0	
222750	31.7	31.7	0	37.67	37.67	0	39.26	39.26	0	39.89	39.89	0	41.45	41.45	0	
222760	31.7	31.7	0	37.67	37.67	0	39.26	39.26	0	39.89	39.89	0	41.45	41.45	0	
222770	36.25	36.25	0	38.07	38.07	0	39.46	39.46	0	40.08	40.08	0	41.72	41.72	0	
222780	36.28	36.28	0	37.67	37.67	0	39.26	39.26	0	39.89	39.89	0	41.45	41.45	0	
222800	25.85	25.85	0	35.72	35.72	0	39.83	39.83	0	41.37	41.37	0	44.6	44.6	0	
222810	40.2	40.2	0	46.11	46.11	0	46.61	46.61	0	46.73	46.73	0	47.05	47.05	0	
222820	43.02	43.02	0	46.77	46.77	0	48.18	48.18	0	48.5	48.5	0	49.4	49.4	0	
222830	48.07	48.07	0	49.11	49.11	0	50.54	50.54	0	51.49	51.49	0	53.36	53.36	0	
222840	49.16	49.16	0	49.96	49.96	0	53.09	53.09	0	53.85	53.85	0	56.55	56.55	0	
222850	51.36	51.36	0	52.06	52.06	0	53.66	53.66	0	54.48	54.48	0	57.01	57.01	0	
222860	51.75	51.75	0	52.49	52.49	0	53.81	53.81	0	54.59	54.59	0	56.68	56.68	0	
222870	76.29	76.29	0	80.53	80.53	0	81.68	81.68	0	82.03	82.03	0	83	83	0	
222880	76.3	76.3	0	78.71	78.71	0	79.88	79.88	0	80.37	80.37	0	81.63	81.63	0	
222890	73.94	73.94	0	78.21	78.21	0	79.88	79.88	0	80.37	80.37	0	81.63	81.63	0	
222900	78.54	78.54	0	80.2	80.2	0	81.42	81.42	0	81.69	81.69	0	82.49	82.49	0	
222910	67.42	67.42	0	69.02	69.02	0	69.71	69.71	0	70.02	70.02	0	71.44	71.44	0	
222920	68.49	68.49	0	71.69	71.69	0	72.1	72.1	0	72.2	72.2	0	72.67	72.67	0	
222930	71.97	71.97	0	72.36	72.36	0	72.64	72.64	0	72.83	72.83	0	73.79	73.79	0	
222940	73.81	73.81	0	76.43	76.43	0	77.99	77.99	0	78.6	78.6	0	79.36	79.36	0	
222950	81.64	81.64	0	83.55	83.55	0	84.67	84.67	0	84.79	84.79	0	85.17	85.17	0	
222960	105.22	105.22	0	106.1	106.1	0	106.68	106.68	0	106.99	106.99	0	108.67	108.67	0	
222970	78.19	78.19	0	79.68	79.68	0	80.39	80.39	0	80.71	80.71	0	82.11	82.11	0	
222980	87.95	87.95	0	88.42	88.42	0	88.69	88.69	0	88.82	88.82	0	89.45	89.45	0	
222990	88.3	88.3	0	90.79	90.79	0	91.25	91.25	0	91.45	91.45	0	92.42	92.42	0	
223000	69.72	69.72	0	71.36	71.36	0	72.2	72.2	0	72.58	72.58	0	73.93	73.93	0	
223010	43.03	43.03	0	46.86	46.86	0	47.46	47.46	0	47.7	47.7	0	48.71	48.71	0	
223020	72.05	72.05	0	72.76	72.76	0	73.05	73.05	0	73.18	73.18	0	73.76	73.76	0	
223030	47.09	47.09	0	50.63	50.63	0	50.93	50.93	0	51.05	51.05	0	51.5	51.5	0	
223040	45.09	45.09	0	45.09	45.09	0	45.44	45.44	0	45.84	45.84	0	47.47	47.47	0	
223100	50.87	50.87	0	54.93	54.93	0	55.16	55.16	0	55.27	55.27	0	55.71	55.71	0	
223110	54.22	54.22	0	54.92	54.92	0	55.19	55.19	0	55.53	55.53	0	57.85	57.85	0	
223120	55.56	55.56	0	57.27	57.27	0	57.65	57.65	0	57.8	57.8	0	58.51	58.51	0	
223130	54.83	54.83	0	54.88	54.88	0	55.08	55.08	0	55.17	55.17	0	55.67	55.67	0	
223140	54.17	54.17	0	55.75	55.75	0	56.5	56.5	0	56.85	56.85	0	57.93	57.93	0	
223150	55.07	55.07	0	55.75	55.75	0	56.5	56.5	0	56.85	56.85	0	57.82	57.82	0	
223160	55.95	55.95	0	56.45	56.45	0	56.65	56.65	0	56.75	56.75	0	57.23	57.23	0	
223170	47.94	47.94	0	49.12	49.12	0	50.55	50.55	0	51.5	51.5	0	53.36	53.36	0	
223180	48.32	48.32	0	50	50	0	50.89	50.89	0	51.32	51.32	0	53.38	53.38	0	
223200	48.59	48.59	0	50.77	50.77	0	51.72	51.72	0	52.46	52.46	0	54.51	54.51	0	
223210	50.56	50.56	0	52.42	52.42	0	53.7	53.7	0	54.41	54.41	0	56.57	56.57	0	
223220	54.83	54.83	0	55.38	55.38	0	56.92	56.92	0	57.53	57.53	0	58.72	58.72	0	
223230	55.65	55.65	0	57.32	57.32	0	57.62	57.62	0	57.74	57.74	0	58.73	58.73	0	
223240	51.15	51.15	0	54.35	54.35	0	55.57	55.57	0	55.97	55.97	0	57.17	57.17	0	
223250	51.27	51.27	0	55.08	55.08	0	56.33	56.33	0	56.65	56.65	0	58.1	58.1	0	
223260	53.8	53.8	0	56	56	0	56.41	56.41	0	56.59	56.59	0	57.53	57.53	0	
223270	81.49	81.49	0	82.45	82.45	0	82.62	82.62	0	82.7	82.7	0	83.25	83.25	0	
223280	82.9	82.9	0	84.26	84.26	0	85.05	85.05	0	85.46	85.46	0	87.01	87.01	0	
223290	77.82	77.82	0	81.02	81.02	0	82.56	82.56	0	83.22	83.22	0	84.63	84.63	0	
223300	67.9	67.9	0	73.99	73.99	0	74.63	74.63	0	74.75	74.75	0	75.21	75.21	0	
223310	69.26	69.26	0	69.84	69.84	0	70.11	70.11	0	70.24	70.24	0	70.86	70.86	0	
223320	51.95	51.95	0	53.81	53.81	0	54.63	54.63	0	55.02	55.02	0	57.17	57.17	0	
223330	72.24	72.24	0	74.99	74.99	0	75.98	75.98	0	76.17	76.17	0	76.81	76.81	0	
223340	73.11	73.11	0	78.82	78.82	0	80.89	80.89	0	81.2	81.2	0	82.14	82.14	0	
223350	77.24	77.24	0	77.99	77.99	0	78.42	78.42	0	78.62	78.62	0	79.5	79.5	0	
223358	85.37	85.37	0	86.3	86.3	0	87.04	87.04	0	87.38	87.38	0	88.86	88.86	0	
223360	84.9	84.9	0	86.31	86.31	0	87.06	87.06	0	87.4	87.4	0	88.87	88.87	0	
223400	44.03	44.03	0	46.27	46.27	0	47.34	47.34	0	47.83	47.83	0	50.12	50.12	0	
223410	44.02	44.02	0	44.78	44.78	0	45.1	45.1	0	45.24	45.24	0	45.94	45.94	0	
223420	41.62	41.62	0	44.05	44.05	0	44.31	44.31	0	44.41	44.41	0	45.09	45.09	0	
223430	46.93	46.93	0	49.93	49.93	0	50.39	50.39	0	50.54	50.54	0	51.05	51.05	0	
223440	46.94	46.94	0	47.94	47.94	0	48.53	48.53	0	48.83	48.83	0	50.42	50.42	0	
223450	46.94	46.94	0	47.94	47.94	0	48.53	48.53	0	48.83	48.83	0	50.42	50.42	0	
223460	42.59	42.59	0	47.27	47.27	0	48.34	48.34	0	48.76	48.76	0	50.35	50.35	0	
223470	56.91	56.91	0	57.71	57.71	0	58.12	58.12	0	58.32	58.32	0	59.62	59.62	0	
223480	59.36	59.36	0	59.92	59.92	0	60.19	60.19	0	60.31	60.31	0	60.99	60.99	0	
223490	61.52	61.52	0	65.11	65.11	0	66.85	66.85	0	67.64	67.64	0	71.12	71.12	0	
223500	67.37	67.37	0	67.37	67.37	0	67.37	67.37	0	67.37	67.37	0	67.37	67.37	0	
223510	71.05	71.05	0	71.46	71.46	0	71.68	71.68	0	71.76	71.76	0	72.05	72.05	0	
223520	50.17	50.17	0	51.72	51.72	0	51.89	51.89	0	51.92	51.92	0	52.26	52.26	0	
223530	42.43	42.43	0	47.79	47.79	0	50.14	50.14	0	50.5	50.5	0	51.38	51.38	0	
223540	70.43	70.43	0	71.35	71.35	0	71.56	71.56	0	71.66	71.66	0	72.1	72.1	0	
223550	75.88	75.88	0	77.11	77.11	0	77.81	77.81	0	78	78	0	78.6	78.6	0	
223560	74.2	74.2	0	75.1	75.1	0	75.79	75.79	0	76.15	76.15	0	77.73	77.73	0	
230005	1.7	1.69	-0.01	2.26	2.22	-0.04	2.6	2.58	-0.02	2.76	2.74	-0.02	3.49	3.44	-0.05	
230010	2.5	2.48	-0.02	3.11	3.09	-0.02	3.33	3.32	-0.01	3.44	3.42	-0.02	3.98	3.94	-0.04	
230020	2.51	2.49	-0.02	3.16	3.14	-0.02	3.4	3.38	-0.02	3.51	3.5	-0.01	4.07	4.03	-0.04	
230030	3.05	3.04	-0.01	3.89	3.87	-0.02	4.17	4.18	0.01	4.29	4.31	0.02	4.85	4.87	0.02	
230040	3.39	3.23	-0.16	5.21	4.78	-0.43	5.85	5.43	-0.42	6.11	5.7	-0.41	7.15	6.77	-0.38	
230050	7.3	7.3	0	8.24	8.24	0	8.86	8.86	0	9.2	9.2	0	10.7	10.7	0	
230060	10.2	10.2	0	10.49	10.49	0	10.63	10.63	0	10.7	10.7	0	11.02	11.02	0	
230100	3.85	3.56	-0.29	4.79	4.64	-0.15	4.97	4.85	-0.12	5.04	4.94	-0.1	5.36	5.31	-0.05	
230110	3.99	3.73	-0.26	5.06	4.86	-0.2	5.27	5.17	-0.1	5.37	5.31	-0.06	5.72	5.87	0.15	
230160	5.16	4.36	-0.8	5.98	5.55	-0.43	6.41	6.19	-0.22	6.6	6.5	-0.1	7.34	7.72	0.38	
230170	5.19	4.39	-0.8	6.12	5.62	-0.5	6.58	6.3	-0.28	6.78	6.63	-0.15	7.57	7.89	0.32	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
230180	3.05	3.04	-0.01	3.89	3.87	-0.02	4.17	4.18	0.01	4.3	4.31	0.01	4.87	4.88	0.01	
230190	6.15	6.15	0	7.48	7.48	0	7.84	7.83	-0.01	8	7.98	-0.02	8.67	8.66	-0.01	
230200	5.33	5.3	-0.03	6.15	6.1	-0.05	6.59	6.62	0.03	6.78	6.81	0.03	7.34	7.42	0.08	
230210	7.82	7.82	0	8.14	8.14	0	8.28	8.28	0	8.34	8.34	0	8.6	8.6	0	
230220	7.87	7.87	0	8.18	8.18	0	8.31	8.31	0	8.37	8.37	0	8.64	8.64	0	
230400	10.29	10.29	0	11.18	11.18	0	11.53	11.53	0	11.67	11.67	0	12.33	12.33	0	
230410	9.51	9.51	0	10.72	10.72	0	11.16	11.16	0	11.36	11.36	0	12.29	12.29	0	
230420	9.51	9.51	0	10.72	10.72	0	11.16	11.16	0	11.36	11.36	0	12.29	12.29	0	
230430	9.5	9.5	0	10.73	10.73	0	11.16	11.16	0	11.37	11.37	0	12.34	12.34	0	
230440	9.5	9.5	0	10.73	10.73	0	11.16	11.16	0	11.37	11.37	0	12.34	12.34	0	
230450	11.02	11.02	0	12.16	12.16	0	12.95	12.95	0	13.08	13.08	0	13.72	13.72	0	
230460	10.9	10.9	0	12.14	12.14	0	12.55	12.55	0	12.69	12.69	0	13.35	13.35	0	
230470	13.63	13.63	0	13.84	13.84	0	13.92	13.92	0	13.95	13.95	0	14.06	14.06	0	
230480	14.1	14.1	0	14.5	14.5	0	14.67	14.67	0	14.74	14.74	0	15.03	15.03	0	
230490	14.65	14.65	0	15.02	15.02	0	15.15	15.15	0	15.21	15.21	0	15.53	15.53	0	
240010	1.71	1.71	0	1.92	1.92	0	2.08	2.08	0	2.14	2.14	0	2.49	2.49	0	
240020	1.77	1.77	0	2.27	2.27	0	2.56	2.56	0	2.66	2.66	0	3.03	3.03	0	
240030	1.88	1.88	0	2.67	2.67	0	3.08	3.08	0	3.21	3.21	0	3.69	3.69	0	
240040	1.98	1.98	0	3.11	3.11	0	3.72	3.72	0	3.92	3.92	0	4.77	4.77	0	
240050	2.61	2.61	0	3.97	3.97	0	4.53	4.53	0	4.71	4.71	0	5.4	5.4	0	
240060	2.82	2.82	0	4.67	4.67	0	5.64	5.64	0	5.94	5.94	0	7.14	7.14	0	
240070	2.91	2.91	0	4.87	4.87	0	5.97	5.97	0	6.32	6.32	0	7.69	7.69	0	
240080	3.12	3.12	0	5.12	5.12	0	6.18	6.18	0	6.52	6.52	0	7.84	7.84	0	
240090	3.31	3.31	0	5.37	5.37	0	6.39	6.39	0	6.72	6.72	0	7.99	7.99	0	
240100	4.37	4.37	0	6.24	6.24	0	7.08	7.08	0	7.45	7.45	0	8.63	8.63	0	
240110	4.5	4.5	0	6.36	6.36	0	7.17	7.17	0	7.52	7.52	0	8.71	8.71	0	
240120	4.57	4.57	0	6.55	6.55	0	7.4	7.4	0	7.72	7.72	0	8.98	8.98	0	
240130	4.83	4.83	0	6.72	6.72	0	7.51	7.51	0	7.82	7.82	0	9.06	9.06	0	
240140	4.94	4.94	0	6.81	6.81	0	7.59	7.59	0	7.9	7.9	0	9.12	9.12	0	
240150	5.97	5.97	0	7.29	7.29	0	7.97	7.97	0	8.25	8.25	0	9.35	9.35	0	
240160	6.24	6.24	0	7.61	7.61	0	8.28	8.28	0	8.55	8.55	0	9.7	9.7	0	
240170	7.77	7.77	0	8.55	8.55	0	8.95	8.95	0	9.14	9.14	0	10.04	10.04	0	
240180	8.26	8.26	0	9.16	9.16	0	9.51	9.51	0	9.67	9.67	0	10.4	10.4	0	
240190	11.32	11.32	0	12.47	12.47	0	12.85	12.85	0	12.99	12.99	0	13.45	13.45	0	
240200	12.53	12.53	0	13.8	13.8	0	13.99	13.99	0	14.06	14.06	0	14.38	14.38	0	
240210	14.81	14.81	0	16.14	16.14	0	16.46	16.46	0	16.58	16.58	0	17.18	17.18	0	
240220	14.94	14.94	0	16.28	16.28	0	16.6	16.6	0	16.72	16.72	0	17.33	17.33	0	
240230	15.05	15.05	0	16.44	16.44	0	16.76	16.76	0	16.89	16.89	0	17.52	17.52	0	
240240	15.15	15.15	0	16.78	16.78	0	17.2	17.2	0	17.36	17.36	0	18.04	18.04	0	
240250	15.48	15.48	0	17.12	17.12	0	17.52	17.52	0	17.68	17.68	0	18.39	18.39	0	
240260	15.75	15.75	0	17.4	17.4	0	17.8	17.8	0	17.96	17.96	0	18.68	18.68	0	
240270	16.05	16.05	0	17.7	17.7	0	18.09	18.09	0	18.25	18.25	0	18.98	18.98	0	
240280	16.13	16.13	0	17.79	17.79	0	18.18	18.18	0	18.34	18.34	0	19.09	19.09	0	
240290	18.4	18.4	0	19.32	19.32	0	19.52	19.52	0	19.61	19.61	0	20.4	20.4	0	
240300	18.41	18.41	0	19.33	19.33	0	19.53	19.53	0	19.63	19.63	0	20.42	20.42	0	
240310	19.87	19.87	0	20.59	20.59	0	20.84	20.84	0	20.98	20.98	0	21.67	21.67	0	
240320	19.93	19.93	0	20.83	20.83	0	21.19	21.19	0	21.4	21.4	0	22.69	22.69	0	
240330	21.14	21.14	0	21.88	21.88	0	22.15	22.15	0	22.26	22.26	0	22.96	22.96	0	
240340	21.27	21.27	0	22.62	22.62	0	23.13	23.13	0	23.35	23.35	0	24.4	24.4	0	
240350	21.35	21.35	0	22.68	22.68	0	23.17	23.17	0	23.39	23.39	0	24.42	24.42	0	
240360	22.15	22.15	0	22.88	22.88	0	23.19	23.19	0	23.31	23.31	0	23.97	23.97	0	
240370	23.74	23.74	0	24.57	24.57	0	24.8	24.8	0	24.88	24.88	0	25.11	25.11	0	
240380	23.89	23.89	0	24.58	24.58	0	24.82	24.82	0	24.9	24.9	0	25.38	25.38	0	
240390	27.27	27.27	0	27.58	27.58	0	27.7	27.7	0	27.77	27.77	0	28.15	28.15	0	
240400	4.1	4.1	0	4.47	4.47	0	4.65	4.65	0	4.73	4.73	0	5.08	5.08	0	
240410	5.62	5.62	0	5.77	5.77	0	5.83	5.83	0	5.86	5.86	0	5.97	5.97	0	
240430	5.71	5.71	0	5.93	5.93	0	6.01	6.01	0	6.05	6.05	0	7.14	7.14	0	
240440	3.97	3.97	0	4.87	4.87	0	5.97	5.97	0	6.32	6.32	0	7.62	7.62	0	
240450	6.14	6.14	0	6.42	6.42	0	6.55	6.55	0	6.61	6.61	0	7.62	7.62	0	
240460	3.12	3.12	0	5.12	5.12	0	6.18	6.18	0	6.52	6.52	0	7.84	7.84	0	
240470	3.01	3.01	0	4.71	4.71	0	6.18	6.18	0	6.52	6.52	0	7.84	7.84	0	
240480	6.27	6.27	0	7.13	7.13	0	7.42	7.42	0	7.55	7.55	0	8.03	8.03	0	
240490	7.35	7.35	0	7.59	7.59	0	7.73	7.73	0	7.8	7.8	0	8.17	8.17	0	
240500	5.13	5.13	0	7.26	7.26	0	7.55	7.55	0	7.76	7.76	0	8.84	8.84	0	
240510	10.05	10.05	0	10.56	10.56	0	10.78	10.78	0	10.87	10.87	0	11.29	11.29	0	
240520	11.98	11.98	0	12.1	12.1	0	12.15	12.15	0	12.18	12.18	0	12.3	12.3	0	
240530	9.08	9.08	0	9.51	9.51	0	9.74	9.74	0	9.84	9.84	0	10.28	10.28	0	
240540	8.01	8.01	0	8.49	8.49	0	9.97	9.97	0	10.41	10.41	0	11.47	11.47	0	
240550	9.6	9.6	0	10.28	10.28	0	10.56	10.56	0	10.7	10.7	0	11.51	11.51	0	
240560	10.44	10.44	0	10.68	10.68	0	10.78	10.78	0	10.83	10.83	0	11.02	11.02	0	
240570	6.3	6.3	0	7.35	7.35	0	7.9	7.9	0	8.16	8.16	0	9.42	9.42	0	
240580	8.61	8.61	0	9.58	9.58	0	10.81	10.81	0	11.52	11.52	0	12.83	12.83	0	
240590	12.12	12.12	0	12.42	12.42	0	12.55	12.55	0	12.61	12.61	0	12.95	12.95	0	
240600	12.82	12.82	0	13	13	0	13.06	13.06	0	13.09	13.09	0	13.22	13.22	0	
240610	12.16	12.16	0	12.68	12.68	0	12.9	12.9	0	12.99	12.99	0	13.61	13.61	0	
240620	13.79	13.79	0	14.46	14.46	0	14.64	14.64	0	14.75	14.75	0	15.21	15.21	0	
240630	14.09	14.09	0	14.46	14.46	0	14.65	14.65	0	14.75	14.75	0	15.21	15.21	0	
240640	12.88	12.88	0	13.29	13.29	0	13.62	13.62	0	13.95	13.95	0	15.01	15.01	0	
240650	13.99	13.99	0	14.51	14.51	0	14.76	14.76	0	14.85	14.85	0	15.14	15.14	0	
240660	8.4	8.4	0	10.62	10.62	0	11.25	11.25	0	11.42	11.42	0	12.04	12.04	0	
240670	8.41	8.41	0	10.63	10.63	0	11.26	11.26	0	11.43	11.43	0	12.04	12.04	0	
240680	11.56	11.56	0	12.5	12.5	0	12.82	12.82	0	12.95	12.95	0	13.52	13.52	0	
240690	11.59	11.59	0	12.53	12.53	0	12.85	12.85	0	12.99	12.99	0	13.57	13.57	0	
240695	12.43	12.43	0	12.87	12.87	0	13.11	13.11	0	13.23	13.23	0	13.74	13.74	0	
240700	12.39	12.39	0	12.72	12.72	0	12.94	12.94	0	13.04	13.04	0	13.44	13.44	0	
240710	12.54	12.54	0	12.83	12.83	0	12.99	12.99	0	13.07	13.07	0	13.43	13.43	0	
240720	13.77	13.77	0	14.29	14.29	0	14.46	14.46	0	14.54	14.54	0	14.9	14.9	0	
240730	14.2	14.2	0	14.69	14.69	0	14.9	14.9	0	15.02	15.02	0	15.54	15.54	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
240740	14.34	14.34	0	14.76	14.76	0	14.98	14.98	0	15.09	15.09	0	15.65	15.65	0	
240750	14.36	14.36	0	14.74	14.74	0	14.91	14.91	0	15	15	0	15.41	15.41	0	
240760	14.71	14.71	0	15.3	15.3	0	15.42	15.42	0	15.46	15.46	0	15.7	15.7	0	
240770	16.18	16.18	0	16.7	16.7	0	16.95	16.95	0	17.07	17.07	0	17.55	17.55	0	
240780	16.21	16.21	0	16.68	16.68	0	16.92	16.92	0	17.04	17.04	0	17.51	17.51	0	
240790	16.22	16.22	0	16.48	16.48	0	16.63	16.63	0	16.7	16.7	0	16.98	16.98	0	
240800	16.44	16.44	0	16.77	16.77	0	16.94	16.94	0	17.01	17.01	0	17.32	17.32	0	
240810	17.17	17.17	0	17.44	17.44	0	17.54	17.54	0	17.59	17.59	0	17.77	17.77	0	
240820	17.2	17.2	0	17.47	17.47	0	17.6	17.6	0	17.65	17.65	0	17.91	17.91	0	
240830	17.92	17.92	0	18.41	18.41	0	18.54	18.54	0	18.6	18.6	0	18.84	18.84	0	
240840	18.21	18.21	0	18.88	18.88	0	19.12	19.12	0	19.23	19.23	0	19.65	19.65	0	
240850	18.39	18.39	0	18.92	18.92	0	19.15	19.15	0	19.25	19.25	0	19.68	19.68	0	
240860	19.28	19.28	0	19.62	19.62	0	19.76	19.76	0	19.83	19.83	0	20.13	20.13	0	
240900	13.79	13.79	0	14.29	14.29	0	14.47	14.47	0	14.55	14.55	0	14.91	14.91	0	
240910	14.34	14.34	0	14.9	14.9	0	15.21	15.21	0	15.32	15.32	0	15.86	15.86	0	
240920	16.04	16.04	0	16.35	16.35	0	16.48	16.48	0	16.54	16.54	0	16.8	16.8	0	
240930	13.05	13.05	0	14.89	14.89	0	15.2	15.2	0	15.31	15.31	0	15.78	15.78	0	
240940	14.34	14.34	0	14.76	14.76	0	14.98	14.98	0	15.09	15.09	0	15.67	15.67	0	
240950	14.34	14.34	0	14.77	14.77	0	14.98	14.98	0	15.1	15.1	0	15.67	15.67	0	
241000	16.28	16.28	0	16.73	16.73	0	16.96	16.96	0	17.08	17.08	0	17.82	17.82	0	
241010	15.15	15.15	0	15.28	15.28	0	15.35	15.35	0	15.38	15.38	0	15.54	15.54	0	
241100	16.13	16.13	0	18.41	18.41	0	19.35	19.35	0	19.68	19.68	0	20.82	20.82	0	
241110	16.13	16.13	0	18.41	18.41	0	19.35	19.35	0	19.69	19.69	0	20.82	20.82	0	
241120	16.58	16.58	0	18.41	18.41	0	19.36	19.36	0	19.7	19.7	0	20.84	20.84	0	
241130	18.02	18.02	0	18.41	18.41	0	19.36	19.36	0	19.7	19.7	0	20.84	20.84	0	
241140	20.23	20.23	0	20.69	20.69	0	20.92	20.92	0	21.05	21.05	0	21.52	21.52	0	
241150	20.21	20.21	0	20.59	20.59	0	20.93	20.93	0	21.09	21.09	0	21.8	21.8	0	
241160	20.29	20.29	0	20.56	20.56	0	20.94	20.94	0	21.09	21.09	0	21.8	21.8	0	
241170	16.13	16.13	0	18.41	18.41	0	19.28	19.28	0	19.5	19.5	0	20.11	20.11	0	
241180	16.13	16.13	0	18.41	18.41	0	19.27	19.27	0	19.5	19.5	0	20.09	20.09	0	
241190	16.13	16.13	0	18.41	18.41	0	19.27	19.27	0	19.5	19.5	0	20.09	20.09	0	
241200	16.56	16.56	0	18.41	18.41	0	19.27	19.27	0	19.5	19.5	0	20.09	20.09	0	
241210	17.53	17.53	0	18.41	18.41	0	19.24	19.24	0	19.42	19.42	0	19.81	19.81	0	
241220	16.13	16.13	0	18.41	18.41	0	19.36	19.36	0	19.81	19.81	0	21.56	21.56	0	
241230	16.47	16.47	0	18.56	18.56	0	19.36	19.36	0	19.82	19.82	0	21.56	21.56	0	
241240	19.34	19.34	0	19.97	19.97	0	20.14	20.14	0	20.21	20.21	0	21.58	21.58	0	
241250	19.32	19.32	0	20.06	20.06	0	20.59	20.59	0	20.79	20.79	0	21.5	21.5	0	
241260	19.24	19.24	0	20.56	20.56	0	20.93	20.93	0	21.09	21.09	0	21.8	21.8	0	
241270	19.56	19.56	0	20.56	20.56	0	20.94	20.94	0	21.09	21.09	0	21.8	21.8	0	
241300	18.57	18.57	0	19.58	19.58	0	19.76	19.76	0	19.85	19.85	0	20.82	20.82	0	
241310	18.94	18.94	0	20.24	20.24	0	20.45	20.45	0	20.56	20.56	0	21.11	21.11	0	
241320	19.31	19.31	0	20.8	20.8	0	21.09	21.09	0	21.23	21.23	0	21.73	21.73	0	
241330	19.55	19.55	0	20.92	20.92	0	21.19	21.19	0	21.3	21.3	0	21.74	21.74	0	
241340	19.84	19.84	0	21.23	21.23	0	21.58	21.58	0	21.72	21.72	0	22.28	22.28	0	
241350	19.87	19.87	0	21.35	21.35	0	21.74	21.74	0	21.9	21.9	0	22.54	22.54	0	
241360	20.88	20.88	0	22.12	22.12	0	22.44	22.44	0	22.58	22.58	0	23.13	23.13	0	
241370	20.91	20.91	0	22.16	22.16	0	22.49	22.49	0	22.62	22.62	0	23.18	23.18	0	
241380	21.12	21.12	0	22.21	22.21	0	22.53	22.53	0	22.66	22.66	0	23.2	23.2	0	
241390	21.13	21.13	0	22.26	22.26	0	22.65	22.65	0	22.8	22.8	0	23.39	23.39	0	
241400	21.14	21.14	0	22.37	22.37	0	22.8	22.8	0	22.97	22.97	0	23.66	23.66	0	
241410	21.16	21.16	0	22.99	22.99	0	23.5	23.5	0	23.7	23.7	0	24.62	24.62	0	
241420	21.18	21.18	0	23.15	23.15	0	23.57	23.57	0	23.76	23.76	0	24.64	24.64	0	
241430	21.2	21.2	0	23.58	23.58	0	24.14	24.14	0	24.35	24.35	0	25.06	25.06	0	
241440	21.4	21.4	0	25.04	25.04	0	25.99	25.99	0	26.22	26.22	0	26.55	26.55	0	
241450	25.11	25.11	0	25.27	25.27	0	26.44	26.44	0	26.95	26.95	0	28.31	28.31	0	
241460	26.78	26.78	0	26.91	26.91	0	27.15	27.15	0	27.38	27.38	0	29.12	29.12	0	
241470	28.02	28.02	0	28.66	28.66	0	28.88	28.88	0	28.96	28.96	0	29.28	29.28	0	
241500	18.57	18.57	0	19.58	19.58	0	19.76	19.76	0	19.85	19.85	0	20.82	20.82	0	
241510	18.57	18.57	0	19.58	19.58	0	19.78	19.78	0	19.89	19.89	0	21.41	21.41	0	
241520	20.13	20.13	0	20.8	20.8	0	21.04	21.04	0	21.14	21.14	0	21.74	21.74	0	
241530	18.57	18.57	0	19.58	19.58	0	19.76	19.76	0	19.85	19.85	0	21	21	0	
241540	20.16	20.16	0	20.52	20.52	0	20.66	20.66	0	20.71	20.71	0	21.13	21.13	0	
241550	18.94	18.94	0	20.24	20.24	0	20.46	20.46	0	20.57	20.58	0.01	21.6	21.6	0	
241560	18.94	18.94	0	20.24	20.24	0	20.47	20.47	0	20.81	20.81	0	21.95	21.95	0	
241570	20.99	20.99	0	21.44	21.44	0	21.66	21.66	0	21.76	21.76	0	22.39	22.39	0	
241580	21.05	21.05	0	21.49	21.49	0	21.7	21.7	0	21.8	21.8	0	22.39	22.39	0	
241590	20.74	20.74	0	21.28	21.28	0	21.42	21.42	0	21.49	21.49	0	21.82	21.82	0	
241600	26.37	26.37	0	27.25	27.25	0	28.5	28.5	0	28.84	28.84	0	29.96	29.96	0	
241610	28.18	28.18	0	28.79	28.79	0	28.93	28.93	0	29.08	29.08	0	29.99	29.99	0	
241620	28.19	28.19	0	29.02	29.02	0	29.33	29.33	0	29.51	29.51	0	30.31	30.31	0	
241630	28.19	28.19	0	29.02	29.02	0	29.33	29.33	0	29.51	29.51	0	30.28	30.28	0	
241640	28.78	28.78	0	29.29	29.29	0	29.52	29.52	0	29.63	29.63	0	30.25	30.25	0	
241650	28.78	28.78	0	29.29	29.29	0	29.52	29.52	0	29.63	29.63	0	30.25	30.25	0	
241660	29.13	29.13	0	29.33	29.33	0	29.45	29.45	0	29.51	29.51	0	30.31	30.31	0	
241670	27.73	27.73	0	28.06	28.06	0	28.52	28.52	0	28.87	28.87	0	29.98	29.98	0	
241680	29.64	29.64	0	30.27	30.27	0	30.51	30.51	0	30.61	30.61	0	30.89	30.89	0	
241690	28.24	28.24	0	29.13	29.13	0	29.43	29.43	0	29.59	29.59	0	30.34	30.34	0	
241695	28.24	28.24	0	29.15	29.15	0	29.45	29.45	0	29.62	29.62	0	30.38	30.38	0	
241700	19.43	19.43	0	20.96	20.96	0	21.29	21.29	0	21.44	21.44	0	22.01	22.01	0	
241710	20.64	20.64	0	22.15	22.15	0	22.51	22.51	0	22.67	22.67	0	23.23	23.23	0	
241720	20.76	20.76	0	22.59	22.59	0	23.06	23.06	0	23.27	23.27	0	24.11	24.11	0	
241730	20.86	20.86	0	22.99	22.99	0	23.54	23.54	0	23.77	23.77	0	24.64	24.64	0	
241740	20.96	20.96	0	23.36	23.36	0	23.97	23.97	0	24.22	24.22	0	25.19	25.19	0	
241750	21.1	21.1	0	23.9	23.9	0	24.59	24.59	0	24.87	24.87	0	25.98	25.98	0	
241760	21.22	21.22	0	24.4	24.4	0	25.17	25.17	0	25.47	25.47	0	26.71	26.71	0	
241770	21.34	21.34	0	24.91	24.91	0	25.75	25.75	0	26.08	26.08	0	27.45	27.45	0	
241780	21.51	21.51	0	25.42	25.42	0	26.34	26.34	0	26.69	26.69	0	28.19	28.19	0	
241790	21.87	21.87	0	26.09	26.09	0	27.1	27.1	0	27.49	27.49	0	29.16	29.16	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
241800	22.44	22.44	0	26.54	26.54	0	27.59	27.59	0	27.98	27.98	0	29.48	29.48	0	
241810	24.3	24.3	0	26.98	26.98	0	27.98	27.98	0	28.34	28.34	0	29.7	29.7	0	
242100	20.71	20.71	0	22.27	22.27	0	23.1	23.1	0	23.44	23.44	0	24.64	24.64	0	
242110	22.15	22.15	0	22.92	22.92	0	23.4	23.4	0	23.64	23.64	0	24.7	24.7	0	
242120	24.45	24.45	0	26.15	26.15	0	26.46	26.46	0	26.58	26.58	0	27.06	27.06	0	
242130	25.13	25.13	0	26.18	26.18	0	26.48	26.48	0	26.59	26.59	0	27.06	27.06	0	
242140	25.18	25.18	0	26.27	26.27	0	26.7	26.7	0	26.89	26.89	0	27.61	27.61	0	
242150	25.5	25.5	0	26.27	26.27	0	26.7	26.7	0	26.89	26.89	0	27.61	27.61	0	
242160	20.64	20.64	0	22.31	22.31	0	22.88	22.88	0	23.13	23.13	0	24.12	24.12	0	
242170	21.54	21.54	0	22.38	22.38	0	22.9	22.9	0	23.14	23.14	0	24.13	24.13	0	
242180	21.98	21.98	0	26.19	26.19	0	27.26	27.26	0	27.7	27.7	0	30.17	30.17	0	
242190	28.81	28.81	0	29.55	29.55	0	29.83	29.83	0	29.95	29.95	0	30.49	30.49	0	
242200	28.82	28.82	0	29.58	29.58	0	29.91	29.91	0	30.11	30.11	0	30.92	30.92	0	
242210	28.83	28.83	0	29.25	29.25	0	29.44	29.44	0	29.53	29.53	0	29.94	29.94	0	
242220	28.77	28.77	0	29.52	29.52	0	29.81	29.81	0	29.94	29.94	0	30.49	30.49	0	
242230	28.77	28.77	0	29.23	29.23	0	29.55	29.55	0	29.67	29.67	0	30.26	30.26	0	
242300	27.83	27.83	0	29.23	29.23	0	29.54	29.54	0	29.66	29.66	0	30.26	30.26	0	
242310	28.03	28.03	0	29.23	29.23	0	29.55	29.55	0	29.66	29.66	0	30.26	30.26	0	
242320	28.62	28.62	0	29.3	29.3	0	29.55	29.55	0	29.66	29.66	0	30.26	30.26	0	
242330	28.99	28.99	0	29.51	29.51	0	29.78	29.78	0	29.9	29.9	0	30.41	30.41	0	
242400	19.58	19.58	0	20.99	20.99	0	21.37	21.37	0	21.56	21.56	0	22.37	22.37	0	
242410	19.6	19.6	0	21	21	0	21.38	21.38	0	21.56	21.56	0	22.38	22.38	0	
242420	23.88	23.88	0	24.44	24.44	0	24.68	24.68	0	24.79	24.79	0	25.25	25.25	0	
242430	24.47	24.47	0	25.59	25.59	0	25.89	25.89	0	26.01	26.01	0	26.56	26.56	0	
242440	25.51	25.51	0	26.09	26.09	0	26.41	26.41	0	26.65	26.65	0	27.83	27.83	0	
242450	26.48	26.48	0	27.02	27.02	0	27.29	27.29	0	27.51	27.51	0	28.42	28.42	0	
242460	28.14	28.14	0	28.39	28.39	0	28.51	28.51	0	28.57	28.57	0	28.9	28.9	0	
242470	28.6	28.6	0	29.45	29.45	0	29.75	29.75	0	29.88	29.88	0	30.44	30.44	0	
242480	26.24	26.24	0	26.31	26.31	0	26.34	26.34	0	26.35	26.35	0	26.56	26.56	0	
242490	24.78	24.78	0	27.68	27.68	0	28.03	28.03	0	28.14	28.14	0	28.53	28.53	0	
242500	26.45	26.45	0	27.87	27.87	0	28.12	28.12	0	28.2	28.2	0	28.55	28.55	0	
242510	25.51	25.51	0	26.1	26.1	0	26.42	26.42	0	26.71	26.71	0	29.01	29.01	0	
242520	26.84	26.84	0	27.95	27.95	0	28.42	28.42	0	28.51	28.51	0	29.12	29.12	0	
242530	20.89	20.89	0	22.12	22.12	0	22.49	22.49	0	22.63	22.63	0	23.21	23.21	0	
242540	20.87	20.87	0	22.13	22.13	0	22.5	22.5	0	22.64	22.64	0	23.22	23.22	0	
242550	20.87	20.87	0	22.13	22.13	0	22.5	22.5	0	22.64	22.64	0	23.23	23.23	0	
242560	21.14	21.14	0	22.21	22.21	0	22.53	22.53	0	22.65	22.65	0	23.16	23.16	0	
242570	21.2	21.2	0	22.06	22.06	0	22.21	22.21	0	22.27	22.27	0	22.58	22.58	0	
242600	21.18	21.18	0	22.26	22.26	0	22.54	22.54	0	22.65	22.65	0	23.16	23.16	0	
242610	21.23	21.23	0	22.31	22.31	0	22.54	22.54	0	22.65	22.65	0	23.16	23.16	0	
242615	21.37	21.37	0	22.38	22.38	0	22.5	22.5	0	22.56	22.56	0	22.8	22.8	0	
242620	18.59	18.59	0	19.7	19.7	0	20.26	20.26	0	21.24	21.25	0.01	23.4	23.4	0	
242630	20.4	20.4	0	21.66	21.66	0	22.21	22.21	0	22.38	22.38	0	23.41	23.41	0	
242640	19.87	19.87	0	20.61	20.61	0	20.88	20.88	0	21.02	21.02	0	21.78	21.78	0	
242650	21.93	21.93	0	22.48	22.48	0	22.87	22.87	0	23.06	23.06	0	23.86	23.86	0	
242660	19.98	19.98	0	20.87	20.87	0	21.23	21.23	0	21.44	21.44	0	22.97	22.97	0	
242670	20.64	20.64	0	22.14	22.14	0	22.64	22.64	0	22.82	22.82	0	23.38	23.38	0	
242680	21.15	21.15	0	21.9	21.9	0	22.17	22.17	0	22.26	22.26	0	22.74	22.74	0	
242690	21.15	21.15	0	21.9	21.9	0	22.17	22.17	0	22.26	22.26	0	22.74	22.74	0	
242700	22.08	22.08	0	23.01	23.01	0	23.45	23.45	0	23.65	23.65	0	24.58	24.58	0	
242710	22.18	22.18	0	23.13	23.13	0	23.56	23.56	0	23.75	23.75	0	24.61	24.61	0	
242720	22.53	22.53	0	23.15	23.15	0	23.56	23.56	0	23.76	23.76	0	24.67	24.67	0	
242730	22.68	22.68	0	23.18	23.18	0	23.61	23.61	0	23.81	23.81	0	26.01	26.01	0	
242740	25.94	25.94	0	26.69	26.69	0	27.09	27.09	0	27.28	27.28	0	27.84	27.84	0	
242800	9.81	9.81	0	10.4	10.4	0	10.5	10.5	0	10.58	10.58	0	11.12	11.12	0	
242810	11.19	11.19	0	11.84	11.84	0	11.99	11.99	0	12.06	12.06	0	12.36	12.36	0	
242820	12.8	12.8	0	13.28	13.28	0	13.43	13.43	0	13.49	13.49	0	13.78	13.78	0	
242830	12.63	12.63	0	13.29	13.29	0	13.43	13.43	0	13.49	13.49	0	13.78	13.78	0	
242840	12.84	12.84	0	13.52	13.52	0	13.99	13.99	0	14.3	14.3	0	15.31	15.31	0	
242850	13.85	13.85	0	14.47	14.47	0	14.75	14.75	0	14.86	14.86	0	15.4	15.4	0	
242860	18.94	18.94	0	20.25	20.25	0	21.18	21.18	0	21.47	21.47	0	22.35	22.35	0	
242870	20.63	20.63	0	21.12	21.12	0	21.38	21.38	0	21.56	21.56	0	22.36	22.36	0	
250005	1.71	1.71	0	2.06	2.06	0	2.34	2.34	0	2.48	2.48	0	3.17	3.17	0	
250010	1.79	1.79	0	2.22	2.22	0	2.51	2.51	0	2.66	2.66	0	3.33	3.33	0	
250020	3.21	3.21	0	3.79	3.79	0	4.03	4.03	0	4.13	4.13	0	4.49	4.49	0	
250030	3.58	3.58	0	4.49	4.49	0	4.73	4.73	0	4.83	4.83	0	5.2	5.2	0	
250040	4.43	4.43	0	4.8	4.8	0	5	5	0	5.09	5.09	0	5.44	5.44	0	
250050	5.58	5.58	0	5.9	5.9	0	6.04	6.04	0	6.1	6.1	0	6.36	6.36	0	
250060	6.62	6.62	0	6.87	6.87	0	7.03	7.02	-0.01	7.09	7.09	0	7.34	7.33	-0.01	
250070	7.01	7.01	0	7.5	7.5	0	7.85	7.83	-0.02	8	7.99	-0.01	8.67	8.66	-0.01	
250080	7.17	7.17	0	7.58	7.58	0	7.9	7.89	-0.01	8.04	8.03	-0.01	8.7	8.68	-0.02	
250090	8.52	8.52	0	8.78	8.78	0	8.9	8.9	0	8.95	8.95	0	9.15	9.15	0	
250100	8.74	8.74	0	9.05	9.05	0	9.14	9.14	0	9.18	9.18	0	9.36	9.36	0	
250110	9.51	9.51	0	10.72	10.72	0	11.16	11.16	0	11.37	11.37	0	12.34	12.34	0	
250120	11.18	11.18	0	11.72	11.72	0	11.87	11.87	0	11.95	11.95	0	12.38	12.38	0	
250130	12.14	12.14	0	12.72	12.72	0	12.96	12.96	0	13.08	13.08	0	13.59	13.59	0	
250140	12.38	12.38	0	12.9	12.9	0	13.12	13.12	0	13.23	13.23	0	13.71	13.71	0	
250150	12.44	12.44	0	13.02	13.02	0	13.28	13.28	0	13.4	13.4	0	13.95	13.95	0	
250160	12.96	12.96	0	13.28	13.28	0	13.47	13.47	0	13.57	13.57	0	14.01	14.01	0	
250170	12.98	12.98	0	13.29	13.29	0	13.49	13.49	0	13.58	13.58	0	14.02	14.02	0	
250180	14.27	14.27	0	15.03	15.03	0	15.43	15.43	0	15.65	15.65	0	16.45	16.45	0	
250190	14.86	14.86	0	15.87	15.87	0	16.14	16.14	0	16.23	16.23	0	16.64	16.64	0	
250200	15.49	15.49	0	16.01	16.01	0	16.24	16.24	0	16.32	16.32	0	16.69	16.69	0	
250210	15.61	15.61	0	16.34	16.34	0	16.55	16.55	0	16.6	16.6	0	16.79	16.79	0	
250220	16.1	16.1	0	16.98	16.98	0	17.13	17.13	0	17.18	17.18	0	17.39	17.39	0	
250300	5.58	5.58	0	6.17	6.17	0	6.5	6.5	0	6.64	6.64	0	7.22	7.22	0	
250310	5.65	5.65	0	6.26	6.26	0	6.53	6.53	0	6.67	6.67	0	7.23	7.23	0	
250320	8.72	8.72	0	9	9	0	9.07	9.07	0	9.11	9.11	0	9.27	9.27	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
250330	8.71	8.71	0	8.94	8.94	0	9.03	9.03	0	9.06	9.06	0	9.2	9.2	0	
250340	8.7	8.7	0	8.87	8.87	0	8.95	8.95	0	8.98	8.98	0	9.14	9.14	0	
250400	9.81	9.81	0	11.6	11.6	0	11.77	11.77	0	11.85	11.85	0	12.41	12.41	0	
250410	11.79	11.79	0	12.53	12.53	0	12.86	12.86	0	13	13	0	13.64	13.64	0	
250420	11.71	11.71	0	12.32	12.32	0	12.53	12.53	0	12.61	12.61	0	12.95	12.95	0	
250430	11.71	11.71	0	12.31	12.31	0	12.51	12.51	0	12.59	12.59	0	12.92	12.92	0	
250440	11.42	11.42	0	11.73	11.73	0	11.9	11.9	0	11.98	11.98	0	12.33	12.33	0	
250450	12.18	12.18	0	12.91	12.91	0	13.21	13.21	0	13.33	13.33	0	13.88	13.88	0	
250460	11.81	11.81	0	12.55	12.55	0	12.87	12.87	0	13.01	13.01	0	13.65	13.65	0	
250470	11.82	11.82	0	12.55	12.55	0	12.87	12.87	0	13.02	13.02	0	13.65	13.65	0	
250480	11.73	11.73	0	12.34	12.34	0	12.56	12.56	0	12.69	12.69	0	13.77	13.77	0	
250490	12.43	12.43	0	12.96	12.96	0	13.23	13.23	0	13.34	13.34	0	13.81	13.81	0	
260010	2.05	2.05	0	2.56	2.56	0	2.77	2.77	0	2.87	2.87	0	3.43	3.43	0	
260020	3.39	3.39	0	4.33	4.33	0	4.65	4.65	0	4.81	4.81	0	5.55	5.55	0	
260030	3.55	3.55	0	4.52	4.52	0	4.85	4.85	0	5.02	5.02	0	5.78	5.78	0	
260040	3.6	3.6	0	4.66	4.66	0	5.03	5.03	0	5.22	5.22	0	6.14	6.14	0	
260050	3.85	3.85	0	5	5	0	5.39	5.39	0	5.59	5.59	0	6.53	6.53	0	
260060	4.02	4.02	0	5.58	5.58	0	6.2	6.2	0	6.49	6.49	0	7.62	7.62	0	
260070	4.45	4.45	0	5.84	5.84	0	6.4	6.4	0	6.67	6.67	0	7.78	7.78	0	
260080	4.56	4.56	0	5.91	5.91	0	6.46	6.46	0	6.73	6.73	0	7.83	7.83	0	
260090	4.63	4.63	0	6.01	6.01	0	6.55	6.55	0	6.83	6.83	0	7.94	7.94	0	
260100	6.06	6.06	0	7.57	7.57	0	8.03	8.03	0	8.23	8.23	0	9.05	9.05	0	
260110	6.5	6.5	0	8.2	8.2	0	8.77	8.77	0	9	9	0	9.81	9.81	0	
260120	6.55	6.55	0	8.31	8.31	0	8.93	8.93	0	9.17	9.17	0	10	10	0	
260130	6.57	6.57	0	8.36	8.36	0	8.99	8.99	0	9.24	9.24	0	10.08	10.08	0	
260140	6.69	6.69	0	8.6	8.6	0	9.28	9.28	0	9.55	9.55	0	10.39	10.39	0	
260150	6.7	6.7	0	8.62	8.62	0	9.3	9.3	0	9.56	9.56	0	10.41	10.41	0	
260160	6.74	6.74	0	8.78	8.78	0	9.58	9.58	0	9.91	9.91	0	10.96	10.96	0	
260170	6.77	6.77	0	8.81	8.81	0	9.61	9.61	0	9.93	9.93	0	10.99	10.99	0	
260180	9.87	9.87	0	10.62	10.62	0	11.06	11.06	0	11.3	11.3	0	12.07	12.07	0	
260190	10.02	10.02	0	10.98	10.98	0	11.54	11.54	0	11.79	11.79	0	12.55	12.55	0	
260200	10.07	10.07	0	11.19	11.19	0	11.89	11.89	0	12.22	12.22	0	13.3	13.3	0	
260210	10.08	10.08	0	11.21	11.21	0	11.94	11.94	0	12.27	12.27	0	13.34	13.34	0	
260220	10.15	10.15	0	11.47	11.47	0	12.29	12.29	0	12.65	12.65	0	13.9	13.9	0	
260230	10.5	10.5	0	12.38	12.38	0	13.2	13.2	0	13.53	13.53	0	14.66	14.66	0	
260240	10.53	10.53	0	12.58	12.58	0	13.46	13.46	0	13.81	13.81	0	14.99	14.99	0	
260250	11.16	11.16	0	12.93	12.93	0	13.76	13.76	0	14.1	14.1	0	15.24	15.24	0	
260260	14.47	14.47	0	15.29	15.29	0	15.55	15.55	0	15.66	15.66	0	16.16	16.16	0	
260270	14.73	14.73	0	15.66	15.66	0	16.01	16.01	0	16.15	16.15	0	16.7	16.7	0	
260280	14.8	14.8	0	15.79	15.79	0	16.15	16.15	0	16.29	16.29	0	16.85	16.85	0	
260290	14.82	14.82	0	15.84	15.84	0	16.22	16.22	0	16.37	16.37	0	16.97	16.97	0	
260300	14.83	14.83	0	15.86	15.86	0	16.24	16.24	0	16.4	16.4	0	17	17	0	
260310	16.71	16.71	0	17.85	17.85	0	18.27	18.27	0	18.44	18.44	0	19.01	19.01	0	
260320	16.76	16.76	0	17.97	17.97	0	18.44	18.44	0	18.63	18.63	0	19.3	19.3	0	
260330	18.2	18.2	0	19.4	19.4	0	19.85	19.85	0	20.04	20.04	0	20.74	20.74	0	
260340	18.34	18.34	0	19.78	19.78	0	20.33	20.33	0	20.57	20.57	0	21.51	21.51	0	
260350	18.89	18.89	0	20.33	20.33	0	20.83	20.83	0	21.05	21.05	0	21.94	21.94	0	
260360	19.33	19.33	0	20.81	20.81	0	21.31	21.31	0	21.51	21.51	0	22.28	22.28	0	
260370	19.4	19.4	0	20.98	20.98	0	21.55	21.55	0	21.79	21.79	0	22.76	22.76	0	
260380	20.22	20.22	0	21.75	21.75	0	22.33	22.33	0	22.56	22.56	0	23.57	23.57	0	
260390	22.86	22.86	0	24.22	24.22	0	24.86	24.86	0	25.13	25.13	0	26.24	26.24	0	
260400	22.95	22.95	0	24.32	24.32	0	24.97	24.97	0	25.25	25.25	0	26.49	26.49	0	
260410	24.61	24.61	0	25.47	25.47	0	26.09	26.09	0	26.32	26.32	0	27.11	27.11	0	
260420	24.73	24.73	0	25.71	25.71	0	26.44	26.44	0	26.72	26.72	0	27.72	27.72	0	
260430	25.01	25.01	0	25.97	25.97	0	26.68	26.68	0	26.95	26.95	0	27.91	27.91	0	
260440	25.36	25.36	0	26.73	26.73	0	27.34	27.34	0	27.7	27.7	0	28.76	28.76	0	
260450	25.41	25.41	0	26.77	26.77	0	27.37	27.37	0	27.72	27.72	0	28.77	28.77	0	
260460	25.62	25.62	0	27.2	27.2	0	27.82	27.82	0	28.14	28.14	0	29.21	29.21	0	
260470	25.78	25.78	0	27.29	27.29	0	27.9	27.9	0	28.19	28.19	0	29.24	29.24	0	
260480	25.97	25.97	0	27.73	27.73	0	28.44	28.44	0	28.74	28.74	0	29.76	29.76	0	
260490	26.12	26.12	0	27.81	27.81	0	28.5	28.5	0	28.79	28.79	0	29.79	29.79	0	
260500	26.13	26.13	0	27.83	27.83	0	28.53	28.53	0	28.82	28.82	0	29.81	29.81	0	
260510	26.15	26.15	0	27.84	27.84	0	28.54	28.54	0	28.82	28.82	0	29.84	29.84	0	
260520	26.17	26.17	0	27.85	27.85	0	28.54	28.54	0	28.82	28.82	0	29.84	29.84	0	
260530	26.17	26.17	0	27.86	27.86	0	28.54	28.54	0	28.83	28.83	0	29.84	29.84	0	
260540	26.19	26.19	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.84	29.84	0	
260545	26.2	26.2	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.84	29.84	0	
260550	26.26	26.26	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.84	29.84	0	
260560	26.27	26.27	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.83	29.83	0	
260570	26.33	26.33	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.82	29.82	0	
260580	26.36	26.36	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.81	29.81	0	
260590	26.41	26.41	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.8	29.8	0	
260600	26.44	26.44	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
260610	26.46	26.46	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
260620	26.47	26.47	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
260630	26.5	26.5	0	27.95	27.95	0	28.55	28.55	0	28.82	28.82	0	29.78	29.78	0	
260640	26.53	26.53	0	27.98	27.98	0	28.55	28.55	0	28.82	28.82	0	29.77	29.77	0	
260650	26.55	26.55	0	28.06	28.06	0	28.58	28.58	0	28.82	28.82	0	29.78	29.78	0	
260660	26.58	26.58	0	28.15	28.15	0	28.66	28.66	0	28.84	28.84	0	29.78	29.78	0	
260670	26.59	26.59	0	28.2	28.2	0	28.72	28.72	0	28.9	28.9	0	29.79	29.79	0	
260680	26.62	26.62	0	28.33	28.33	0	28.83	28.83	0	29.03	29.03	0	29.79	29.79	0	
260690	27.47	27.47	0	28.71	28.71	0	29.22	29.22	0	29.42	29.42	0	30.19	30.19	0	
260700	27.57	27.57	0	28.88	28.88	0	29.42	29.42	0	29.6	29.6	0	30.22	30.22	0	
260710	29.11	29.11	0	29.43	29.43	0	29.58	29.58	0	29.67	29.67	0	30.23	30.23	0	
260720	28.61	28.61	0	29.35	29.35	0	29.62	29.62	0	29.73	29.73	0	30.21	30.21	0	
260800	4.02	4.02	0	5.66	5.66	0	6.29	6.29	0	6.59	6.59	0	7.76	7.76	0	
260810	4.44	4.44	0	5.58	5.58	0	6.22	6.22	0	6.49	6.49	0	7.62	7.62	0	
260820	4.85	4.85	0	5.58	5.58	0	6.22	6.22	0	6.49	6.49	0	7.62	7.62	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
260830	5.15	5.15	0	5.94	5.94	0	6.27	6.27	0	6.49	6.49	0	7.62	7.62	0	
260840	5.16	5.16	0	5.94	5.94	0	6.27	6.27	0	6.49	6.49	0	7.62	7.62	0	
260850	4.59	4.59	0	6.36	6.36	0	7.07	7.07	0	7.38	7.38	0	8.58	8.58	0	
260860	11.97	11.97	0	12.63	12.63	0	13.03	13.03	0	13.24	13.24	0	14.28	14.28	0	
260870	197.04	197.04	0	197.37	197.37	0	197.56	197.56	0	197.66	197.66	0	198.16	198.16	0	
260900	6.73	6.73	0	8.65	8.65	0	9.34	9.34	0	9.6	9.6	0	10.43	10.43	0	
260910	6.8	6.8	0	9	9	0	9.93	9.93	0	10.23	10.23	0	11.16	11.16	0	
260920	7.77	7.77	0	9.33	9.33	0	10.15	10.15	0	10.43	10.43	0	11.3	11.3	0	
260930	9.65	9.65	0	10.52	10.52	0	11.04	11.04	0	11.26	11.26	0	11.97	11.97	0	
260940	9.77	9.77	0	10.88	10.88	0	11.57	11.57	0	11.9	11.9	0	12.99	12.99	0	
260950	9.83	9.83	0	10.95	10.95	0	11.64	11.64	0	11.96	11.96	0	13.05	13.05	0	
260960	10.38	10.38	0	11.28	11.28	0	11.79	11.79	0	12.06	12.06	0	13.08	13.08	0	
260970	10.94	10.94	0	12.71	12.71	0	13.34	13.34	0	13.53	13.53	0	14.28	14.28	0	
260975	13.49	13.49	0	13.69	13.69	0	13.86	13.86	0	13.94	13.94	0	14.99	14.99	0	
260980	11.53	11.53	0	12.14	12.14	0	12.31	12.31	0	12.39	12.39	0	12.83	12.83	0	
260990	11.71	11.71	0	12.12	12.12	0	12.28	12.28	0	12.35	12.35	0	12.85	12.85	0	
261000	10.37	10.37	0	11.95	11.95	0	12.46	12.46	0	12.8	12.8	0	14.06	14.06	0	
261010	10.54	10.54	0	12.38	12.38	0	12.93	12.93	0	13.14	13.14	0	14.21	14.21	0	
261020	10.73	10.73	0	12.76	12.76	0	13.29	13.29	0	13.48	13.48	0	14.55	14.55	0	
261030	11.31	11.31	0	13.58	13.58	0	14.08	14.08	0	14.41	14.41	0	15.54	15.54	0	
261040	11.43	11.43	0	13.61	13.61	0	14.12	14.12	0	14.44	14.44	0	15.55	15.55	0	
261050	11.68	11.68	0	13.86	13.86	0	14.24	14.24	0	14.53	14.53	0	15.58	15.58	0	
261060	12.06	12.06	0	13.73	13.73	0	14.36	14.36	0	14.61	14.61	0	15.61	15.61	0	
261070	13.02	13.02	0	13.75	13.75	0	14.36	14.36	0	14.61	14.61	0	15.61	15.61	0	
261080	13.3	13.3	0	14.93	14.93	0	15.69	15.69	0	16.04	16.04	0	16.86	16.86	0	
261090	14.39	14.39	0	15.22	15.22	0	15.82	15.82	0	16.13	16.13	0	16.92	16.92	0	
261100	13.34	13.34	0	14.34	14.34	0	14.64	14.64	0	14.75	14.75	0	15.21	15.21	0	
261110	14.56	14.56	0	15.15	15.15	0	15.3	15.3	0	15.36	15.36	0	15.61	15.61	0	
261120	10.39	10.39	0	11.47	11.47	0	12.29	12.29	0	12.65	12.65	0	13.91	13.91	0	
261130	13	13	0	13.36	13.36	0	13.48	13.48	0	13.53	13.53	0	13.91	13.91	0	
261200	10.29	10.29	0	11.86	11.86	0	12.53	12.53	0	12.82	12.82	0	13.92	13.92	0	
261210	12.72	12.72	0	13.2	13.2	0	13.34	13.34	0	13.41	13.41	0	13.92	13.92	0	
261220	12.77	12.77	0	13.33	13.33	0	13.51	13.51	0	13.59	13.59	0	13.98	13.98	0	
261230	10.5	10.5	0	12.38	12.38	0	13.2	13.2	0	13.53	13.53	0	14.66	14.66	0	
261300	11.53	11.53	0	12.92	12.92	0	13.73	13.73	0	14.06	14.06	0	15.18	15.18	0	
261310	12.23	12.23	0	13.41	13.41	0	13.92	13.92	0	14.11	14.11	0	15.19	15.19	0	
261320	12.67	12.67	0	13.83	13.83	0	14.35	14.35	0	14.55	14.55	0	15.27	15.27	0	
261330	14.08	14.08	0	14.83	14.83	0	15.08	15.08	0	15.18	15.18	0	15.59	15.59	0	
261400	14.73	14.73	0	15.66	15.66	0	16.01	16.01	0	16.15	16.15	0	16.7	16.7	0	
261410	14.73	14.73	0	15.66	15.66	0	16.01	16.01	0	16.15	16.15	0	16.72	16.72	0	
261420	14.73	14.73	0	15.68	15.68	0	16.06	16.06	0	16.21	16.21	0	16.82	16.82	0	
261430	16.11	16.11	0	17.56	17.56	0	18.07	18.07	0	18.26	18.26	0	19.12	19.12	0	
261440	16.13	16.13	0	17.71	17.71	0	18.31	18.31	0	18.54	18.54	0	19.73	19.73	0	
261450	19.54	19.54	0	20.23	20.23	0	20.52	20.52	0	20.63	20.63	0	21.05	21.05	0	
261460	19.54	19.54	0	20.25	20.25	0	20.57	20.57	0	20.72	20.72	0	21.35	21.35	0	
261470	19.54	19.54	0	20.25	20.25	0	20.58	20.58	0	20.72	20.72	0	21.35	21.35	0	
261480	21.08	21.08	0	21.79	21.79	0	22.14	22.14	0	22.28	22.28	0	22.9	22.9	0	
261490	21.08	21.08	0	21.79	21.79	0	22.14	22.14	0	22.28	22.28	0	22.9	22.9	0	
261500	14.73	14.73	0	15.66	15.66	0	16.01	16.01	0	16.15	16.15	0	16.72	16.72	0	
261510	16.26	16.26	0	16.82	16.82	0	17.07	17.07	0	17.22	17.22	0	17.86	17.86	0	
261520	16.6	16.6	0	16.87	16.87	0	17.09	17.09	0	17.23	17.23	0	17.86	17.86	0	
261530	17.2	17.2	0	17.89	17.89	0	18.11	18.11	0	18.17	18.17	0	18.45	18.45	0	
261540	16.11	16.11	0	17.53	17.53	0	18.06	18.06	0	18.3	18.3	0	19.18	19.18	0	
261550	16.55	16.55	0	17.53	17.53	0	18.07	18.07	0	18.3	18.3	0	19.18	19.18	0	
261560	19.96	19.96	0	20.31	20.31	0	20.46	20.46	0	20.54	20.54	0	20.95	20.95	0	
261570	19.8	19.8	0	20.11	20.11	0	20.24	20.24	0	20.3	20.3	0	20.63	20.63	0	
261600	14.74	14.74	0	15.73	15.73	0	16.11	16.11	0	16.26	16.26	0	16.87	16.87	0	
261610	14.74	14.74	0	15.81	15.81	0	16.14	16.14	0	16.29	16.29	0	16.89	16.89	0	
261620	14.74	14.74	0	15.88	15.88	0	16.26	16.26	0	16.42	16.42	0	17.08	17.08	0	
261630	14.74	14.74	0	16.17	16.17	0	16.6	16.6	0	16.75	16.75	0	17.36	17.36	0	
261640	14.75	14.75	0	16.59	16.59	0	17.01	17.01	0	17.16	17.16	0	17.72	17.72	0	
261650	14.75	14.75	0	16.68	16.68	0	17.08	17.08	0	17.23	17.23	0	17.78	17.78	0	
261660	18.91	18.91	0	19.18	19.18	0	19.32	19.32	0	19.38	19.38	0	19.67	19.67	0	
261670	16.76	16.76	0	17.3	17.3	0	17.87	17.87	0	18.06	18.06	0	18.79	18.79	0	
261680	17.18	17.18	0	17.8	17.8	0	18.05	18.05	0	18.18	18.18	0	18.82	18.82	0	
261700	14.73	14.73	0	15.81	15.81	0	16.4	16.4	0	16.66	16.66	0	17.79	17.79	0	
261710	14.74	14.74	0	15.97	15.97	0	16.41	16.41	0	16.67	16.67	0	17.79	17.79	0	
261720	16.02	16.02	0	16.14	16.14	0	16.41	16.41	0	16.67	16.67	0	17.79	17.79	0	
261730	16.02	16.02	0	16.52	16.52	0	17.08	17.08	0	17.94	17.94	0	19.56	19.56	0	
261740	17	17	0	18.05	18.05	0	18.55	18.55	0	18.74	18.74	0	19.58	19.58	0	
261750	16.35	16.35	0	16.84	16.84	0	17.28	17.28	0	17.52	17.52	0	18.71	18.71	0	
261760	16.02	16.02	0	16.14	16.14	0	16.41	16.41	0	16.67	16.67	0	17.81	17.81	0	
261796	14.82	14.82	0	15.84	15.84	0	16.22	16.22	0	16.37	16.37	0	17.15	17.15	0	
261798	16.57	16.57	0	16.88	16.88	0	17.07	17.07	0	17.16	17.16	0	17.54	17.54	0	
261800	16.57	16.57	0	16.91	16.91	0	17.29	17.29	0	17.49	17.49	0	18.32	18.32	0	
261806	14.82	14.82	0	15.84	15.84	0	16.22	16.22	0	16.38	16.38	0	17.29	17.29	0	
261808	16.24	16.24	0	16.74	16.74	0	16.98	16.98	0	17.09	17.09	0	17.52	17.52	0	
261810	16.24	16.24	0	16.76	16.76	0	17.2	17.2	0	17.41	17.41	0	18.14	18.14	0	
261820	14.84	14.84	0	15.91	15.91	0	16.32	16.32	0	16.5	16.5	0	17.28	17.28	0	
261830	17.6	17.6	0	17.92	17.92	0	18.08	18.08	0	18.16	18.16	0	18.55	18.55	0	
261840	16.83	16.83	0	17.98	17.98	0	18.47	18.47	0	18.68	18.68	0	19.65	19.65	0	
261850	17.02	17.02	0	18.04	18.04	0	18.53	18.53	0	18.75	18.75	0	19.66	19.66	0	
261860	17.03	17.03	0	18.04	18.04	0	18.53	18.53	0	18.75	18.75	0	19.86	19.86	0	
261870	17.21	17.21	0	18.12	18.12	0	18.6	18.6	0	18.84	18.84	0	19.88	19.88	0	
261880	17.25	17.25	0	19.19	19.19	0	20.22	20.22	0	20.58	20.58	0	21.97	21.97	0	
261890	20.21	20.21	0	20.88	20.88	0	21.21	21.21	0	21.36	21.36	0	22.07	22.07	0	
261900	16.6	16.6	0	17.86	17.86	0	18.29	18.29	0	18.46	18.46	0	19.06	19.06	0	
261910	16.6	16.6	0	17.91	17.91	0	18.37	18.37	0	18.56	18.56	0	19.2	19.2	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
261920	16.61	16.61	0	17.89	17.89	0	18.17	18.17	0	18.26	18.26	0	18.75	18.75	0	
261930	16.95	16.95	0	17.89	17.89	0	18.16	18.16	0	18.24	18.24	0	18.74	18.74	0	
261940	16.98	16.98	0	17.89	17.89	0	18.13	18.13	0	18.2	18.2	0	18.56	18.56	0	
261950	16.6	16.6	0	17.55	17.55	0	17.84	17.84	0	17.98	17.98	0	18.65	18.65	0	
261960	16.55	16.55	0	17.48	17.48	0	17.84	17.84	0	17.98	17.98	0	18.65	18.65	0	
261970	16.63	16.63	0	17.48	17.48	0	17.84	17.84	0	17.98	17.98	0	18.65	18.65	0	
261980	16.6	16.6	0	17.94	17.94	0	18.4	18.4	0	18.59	18.59	0	19.25	19.25	0	
261990	19.21	19.21	0	19.34	19.34	0	19.42	19.42	0	19.45	19.45	0	19.62	19.62	0	
262000	19.53	19.53	0	20.33	20.33	0	20.83	20.83	0	21.04	21.04	0	21.92	21.92	0	
262010	20.74	20.74	0	21.13	21.13	0	21.31	21.31	0	21.39	21.39	0	21.86	21.86	0	
262020	21.81	21.81	0	22.66	22.66	0	22.97	22.97	0	23.08	23.08	0	23.58	23.58	0	
262030	18.97	18.97	0	20.75	20.75	0	21.7	21.7	0	22.16	22.16	0	23.57	23.57	0	
262040	22.78	22.78	0	24.45	24.45	0	25.19	25.19	0	25.5	25.5	0	26.81	26.81	0	
262050	26.04	26.04	0	26.85	26.85	0	27.22	27.22	0	27.37	27.37	0	28.06	28.06	0	
262070	26.95	26.95	0	27.51	27.51	0	27.78	27.78	0	27.91	27.91	0	28.51	28.51	0	
262080	28.71	28.71	0	28.92	28.92	0	29.02	29.02	0	29.07	29.07	0	29.3	29.3	0	
262100	20.91	20.91	0	21.25	21.25	0	21.41	21.41	0	21.49	21.49	0	21.9	21.9	0	
262110	22.48	22.48	0	25.32	25.32	0	26.33	26.33	0	26.71	26.71	0	28.28	28.28	0	
262120	22.88	22.88	0	23.46	23.46	0	23.68	23.68	0	23.77	23.77	0	24.18	24.18	0	
262130	20.27	20.27	0	21.89	21.89	0	22.56	22.56	0	23.04	23.04	0	25.11	25.11	0	
262140	23.53	23.53	0	24.4	24.4	0	24.83	24.83	0	24.97	24.97	0	25.44	25.44	0	
262150	20.22	20.22	0	21.78	21.78	0	22.39	22.39	0	22.64	22.64	0	24.23	24.23	0	
262160	20.26	20.26	0	22.11	22.11	0	23.05	23.05	0	23.46	23.46	0	24.27	24.27	0	
262170	23.38	23.38	0	23.67	23.67	0	23.8	23.8	0	23.86	23.86	0	24.28	24.28	0	
262180	23.4	23.4	0	23.67	23.67	0	23.81	23.81	0	23.86	23.86	0	24.28	24.28	0	
262190	25.27	25.27	0	25.88	25.88	0	29.1	29.1	0	29.5	29.5	0	30.83	30.83	0	
262200	27.07	27.07	0	28.65	28.65	0	29.24	29.24	0	29.56	29.56	0	30.83	30.83	0	
262300	26.24	26.24	0	26.76	26.76	0	27.02	27.02	0	27.14	27.14	0	27.76	27.76	0	
262310	26.24	26.24	0	26.76	26.76	0	27.08	27.08	0	27.25	27.25	0	28.09	28.09	0	
262320	25.62	25.62	0	27.2	27.2	0	27.78	27.78	0	28.04	28.04	0	28.81	28.81	0	
262330	26.13	26.13	0	26.8	26.8	0	27.22	27.22	0	27.45	27.45	0	28.54	28.54	0	
262340	26.13	26.13	0	26.83	26.83	0	27.25	27.25	0	27.47	27.47	0	28.55	28.55	0	
262350	21.11	21.11	0	25.97	25.97	0	26.68	26.68	0	26.95	26.95	0	27.91	27.91	0	
262400	29.14	29.14	0	30.8	30.8	0	31.27	31.27	0	31.46	31.46	0	32.23	32.23	0	
262410	29.14	29.14	0	30.79	30.79	0	31.26	31.26	0	31.45	31.45	0	32.23	32.23	0	
262420	29.39	29.39	0	31.07	31.07	0	31.68	31.68	0	31.94	31.94	0	32.91	32.91	0	
262430	30.43	30.43	0	31.73	31.73	0	32.23	32.23	0	32.42	32.42	0	33.43	33.43	0	
262440	30.45	30.45	0	31.79	31.79	0	32.32	32.32	0	32.54	32.54	0	33.6	33.6	0	
262450	30.6	30.6	0	31.92	31.92	0	32.46	32.46	0	32.68	32.68	0	33.71	33.71	0	
262460	30.62	30.62	0	32	32	0	32.59	32.59	0	32.83	32.83	0	33.95	33.95	0	
262470	31.9	31.9	0	32.98	32.98	0	33.26	33.26	0	33.4	33.4	0	34.26	34.26	0	
262480	32.98	32.98	0	33.72	33.72	0	34.01	34.01	0	34.16	34.16	0	34.82	34.82	0	
262490	33.03	33.03	0	33.96	33.96	0	34.31	34.31	0	34.44	34.44	0	35.09	35.09	0	
262500	37.5	37.5	0	38.69	38.69	0	39.18	39.18	0	39.4	39.4	0	40.52	40.52	0	
262510	38.9	38.9	0	39.6	39.6	0	39.96	39.96	0	40.12	40.12	0	40.84	40.84	0	
262520	39.2	39.2	0	40.28	40.28	0	40.55	40.55	0	40.66	40.66	0	41.08	41.08	0	
262530	39.64	39.64	0	40.43	40.43	0	40.63	40.63	0	40.72	40.72	0	41.08	41.08	0	
262540	41.01	41.01	0	41.41	41.41	0	41.58	41.58	0	41.66	41.66	0	41.93	41.93	0	
262550	41.12	41.12	0	41.65	41.65	0	41.89	41.89	0	42	42	0	42.45	42.45	0	
262560	41.39	41.39	0	41.9	41.9	0	42.12	42.12	0	42.18	42.18	0	42.45	42.45	0	
262570	41.48	41.48	0	42.18	42.18	0	42.46	42.46	0	42.59	42.59	0	43.05	43.05	0	
262580	42.06	42.06	0	42.33	42.33	0	42.52	42.52	0	42.63	42.63	0	43.07	43.07	0	
262590	41.63	41.63	0	42.14	42.14	0	42.5	42.5	0	42.67	42.67	0	43.27	43.27	0	
262600	29.38	29.38	0	31.07	31.07	0	31.68	31.68	0	31.94	31.94	0	32.91	32.91	0	
262610	29.38	29.38	0	31.07	31.07	0	31.68	31.68	0	31.94	31.94	0	32.91	32.91	0	
262620	29.38	29.38	0	31.07	31.07	0	31.68	31.68	0	31.94	31.94	0	32.91	32.91	0	
262695	43.1	43.1	0	43.34	43.34	0	43.45	43.45	0	43.51	43.51	0	43.77	43.77	0	
262700	31	31	0	32.09	32.09	0	32.6	32.6	0	32.84	32.84	0	33.95	33.95	0	
262710	31.01	31.01	0	32.09	32.09	0	32.6	32.6	0	32.84	32.84	0	33.95	33.95	0	
262720	31.61	31.61	0	32.54	32.54	0	32.76	32.76	0	32.85	32.85	0	33.31	33.31	0	
262730	31.01	31.01	0	32.09	32.09	0	32.6	32.6	0	32.84	32.84	0	33.95	33.95	0	
262740	31.02	31.02	0	32.09	32.09	0	32.6	32.6	0	32.84	32.84	0	33.95	33.95	0	
262750	30.73	30.73	0	32	32	0	32.6	32.6	0	32.85	32.85	0	33.95	33.95	0	
262800	30.64	30.64	0	32	32	0	32.6	32.6	0	32.87	32.87	0	34.06	34.06	0	
262810	30.65	30.65	0	32	32	0	32.6	32.6	0	32.87	32.87	0	34.03	34.03	0	
262820	30.98	30.98	0	31.71	31.71	0	32.09	32.09	0	32.27	32.27	0	33.01	33.01	0	
262830	31.06	31.06	0	31.56	31.56	0	31.72	31.72	0	31.79	31.79	0	32.08	32.08	0	
262840	31.29	31.29	0	31.57	31.57	0	31.71	31.71	0	31.78	31.78	0	32.07	32.07	0	
262850	30.65	30.65	0	32	32	0	32.6	32.6	0	32.85	32.85	0	33.95	33.95	0	
262860	30.81	30.81	0	32	32	0	32.6	32.6	0	32.85	32.85	0	33.95	33.95	0	
262900	30.66	30.66	0	32	32	0	32.59	32.59	0	32.84	32.84	0	33.95	33.95	0	
262910	31.6	31.6	0	32.27	32.27	0	32.74	32.74	0	32.96	32.96	0	34.03	34.03	0	
262920	33.33	33.33	0	34.82	34.82	0	35.54	35.54	0	35.84	35.84	0	37.08	37.08	0	
262930	34.35	34.35	0	35.39	35.39	0	35.95	35.95	0	36.2	36.2	0	37.23	37.23	0	
262940	34.49	34.49	0	35.66	35.66	0	36.32	36.32	0	36.64	36.64	0	37.88	37.88	0	
262950	36.29	36.29	0	37.33	37.33	0	37.79	37.79	0	37.99	37.99	0	38.74	38.74	0	
262960	34.26	34.26	0	34.75	34.75	0	34.98	34.98	0	35.09	35.09	0	35.54	35.54	0	
262970	32.37	32.37	0	32.37	32.37	0	32.74	32.74	0	32.96	32.96	0	34.03	34.03	0	
262980	34.12	34.12	0	34.12	34.12	0	34.12	34.12	0	34.12	34.12	0	34.13	34.13	0	
263000	31.91	31.91	0	33.14	33.14	0	33.57	33.57	0	33.78	33.78	0	34.54	34.54	0	
263010	32.05	32.05	0	33.3	33.3	0	33.7	33.7	0	33.85	33.85	0	34.55	34.55	0	
263020	33.03	33.03	0	33.96	33.96	0	34.31	34.31	0	34.45	34.45	0	35.1	35.1	0	
263030	32.85	32.85	0	33.96	33.96	0	34.31	34.31	0	34.45	34.45	0	35.1	35.1	0	
263040	41.12	41.12	0	41.65	41.65	0	41.89	41.89	0	42	42	0	42.46	42.46	0	
263050	41.87	41.87	0	42.26	42.26	0	42.43	42.43	0	42.51	42.51	0	42.88	42.88	0	
263060	41.84	41.84	0	43.06	43.06	0	43.56	43.56	0	43.79	43.79	0	44.57	44.57	0	
263070	43.16	43.16	0	43.45	43.45	0	43.7	43.7	0	43.84	43.84	0	44.58	44.58	0	
263100	24.15	24.15	0	24.84	24.84	0	25.44	25.44	0	25.78	25.78	0	29.42	29.42	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
263110	25.77	25.77	0	25.77	25.77	0	26.41	26.41	0	26.74	26.74	0	29.42	29.42	0	
263120	25.7	25.7	0	26.21	26.21	0	26.68	26.68	0	26.94	26.94	0	29.42	29.42	0	
263130	26.33	26.33	0	28.53	28.53	0	29.44	29.44	0	29.81	29.81	0	31.01	31.01	0	
263140	26.51	26.51	0	29.13	29.13	0	30.14	30.14	0	30.5	30.5	0	31.8	31.8	0	
263150	25.78	25.78	0	27.17	27.17	0	28.01	28.01	0	28.38	28.38	0	29.79	29.79	0	
263160	27.65	27.65	0	28.5	28.5	0	28.88	28.88	0	29.06	29.06	0	29.82	29.82	0	
263170	28.42	28.42	0	28.84	28.84	0	29.08	29.08	0	29.2	29.2	0	29.84	29.84	0	
263180	26.22	26.22	0	27.89	27.89	0	28.58	28.58	0	28.89	28.89	0	30.03	30.03	0	
263190	26.22	26.22	0	27.89	27.89	0	28.58	28.58	0	28.89	28.89	0	30.04	30.04	0	
263200	29.35	29.35	0	31.01	31.01	0	31.52	31.52	0	31.74	31.74	0	32.52	32.52	0	
263210	29.35	29.35	0	31.02	31.02	0	31.53	31.53	0	31.75	31.75	0	32.58	32.58	0	
263220	29.36	29.36	0	31.05	31.05	0	31.61	31.61	0	31.86	31.86	0	32.94	32.94	0	
263230	32.31	32.31	0	33.03	33.03	0	33.3	33.3	0	33.42	33.42	0	33.96	33.96	0	
263240	32.9	32.9	0	34.04	34.04	0	34.45	34.45	0	34.61	34.61	0	35.22	35.22	0	
263250	33.03	33.03	0	34.24	34.24	0	34.7	34.7	0	34.88	34.88	0	35.61	35.61	0	
263260	33.77	33.77	0	34.78	34.78	0	35.23	35.23	0	35.4	35.4	0	36.04	36.04	0	
263270	34.6	34.6	0	35.53	35.53	0	35.95	35.95	0	36.13	36.13	0	36.87	36.87	0	
263280	35.75	35.75	0	37.29	37.29	0	37.87	37.87	0	38.15	38.15	0	39.05	39.05	0	
263290	38.22	38.22	0	38.81	38.81	0	39.15	39.15	0	39.31	39.31	0	39.92	39.92	0	
263300	41.23	41.23	0	42.13	42.13	0	42.49	42.49	0	42.67	42.67	0	43.27	43.27	0	
263310	41.27	41.27	0	42.14	42.14	0	42.5	42.5	0	42.67	42.67	0	43.27	43.27	0	
263320	42.23	42.23	0	43.01	43.01	0	43.23	43.23	0	43.31	43.31	0	43.66	43.66	0	
263330	42.25	42.25	0	43.02	43.02	0	43.23	43.23	0	43.31	43.31	0	43.67	43.67	0	
263400	29.35	29.35	0	31.02	31.02	0	31.53	31.53	0	31.75	31.75	0	32.52	32.52	0	
263410	29.35	29.35	0	31.03	31.03	0	31.55	31.55	0	31.77	31.77	0	32.52	32.52	0	
263420	29.37	29.37	0	31.04	31.04	0	31.56	31.56	0	31.78	31.78	0	32.53	32.53	0	
263430	29.37	29.37	0	31.04	31.04	0	31.56	31.56	0	31.78	31.78	0	32.54	32.54	0	
263440	29.37	29.37	0	31.04	31.04	0	31.56	31.56	0	31.78	31.78	0	32.55	32.55	0	
263450	29.36	29.36	0	31.04	31.04	0	31.56	31.56	0	31.79	31.79	0	32.59	32.59	0	
263460	30.35	30.35	0	31.13	31.13	0	31.62	31.62	0	31.83	31.83	0	32.64	32.64	0	
263470	30.35	30.35	0	31.16	31.16	0	31.67	31.67	0	31.9	31.9	0	32.82	32.82	0	
263480	30.86	30.86	0	31.69	31.69	0	32.06	32.06	0	32.23	32.23	0	33.05	33.05	0	
263490	32.68	32.68	0	33.68	33.68	0	34.03	34.03	0	34.19	34.19	0	34.62	34.62	0	
263500	32.68	32.68	0	33.74	33.74	0	34.17	34.17	0	34.36	34.36	0	35.01	35.01	0	
263510	32.7	32.7	0	33.79	33.79	0	34.25	34.25	0	34.46	34.46	0	35.15	35.15	0	
263520	32.71	32.71	0	33.85	33.85	0	34.43	34.43	0	34.72	34.72	0	35.8	35.8	0	
263530	32.71	32.71	0	33.86	33.86	0	34.45	34.45	0	34.75	34.75	0	35.85	35.85	0	
263540	32.85	32.85	0	33.96	33.96	0	34.61	34.61	0	34.91	34.91	0	36.04	36.04	0	
263550	32.89	32.89	0	33.96	33.96	0	34.61	34.61	0	34.91	34.91	0	36.04	36.04	0	
263560	29.35	29.35	0	31.02	31.02	0	31.53	31.53	0	31.76	31.76	0	32.55	32.55	0	
263570	29.35	29.35	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.55	32.55	0	
263580	29.35	29.35	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
263590	29.37	29.37	0	31.04	31.04	0	31.56	31.56	0	31.78	31.78	0	32.55	32.55	0	
263600	30.72	30.72	0	31.04	31.04	0	31.56	31.56	0	31.78	31.78	0	32.55	32.55	0	
263610	29.36	29.36	0	31.04	31.04	0	31.56	31.56	0	31.78	31.78	0	32.59	32.59	0	
263620	29.36	29.36	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
263630	29.31	29.31	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
263640	29.35	29.35	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
263650	29.29	29.29	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
263660	29.22	29.22	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
263670	29.22	29.22	0	31.02	31.02	0	31.53	31.53	0	31.75	31.75	0	32.67	32.67	0	
263680	29.22	29.22	0	31.01	31.01	0	31.52	31.52	0	31.75	31.75	0	32.67	32.67	0	
263690	29.22	29.22	0	31	31	0	31.49	31.49	0	31.72	31.72	0	32.71	32.71	0	
263700	29.85	29.85	0	30.97	30.97	0	31.47	31.47	0	31.71	31.71	0	32.71	32.71	0	
263710	29.85	29.85	0	30.94	30.94	0	31.39	31.39	0	31.64	31.64	0	32.77	32.77	0	
263720	28.69	28.69	0	30.39	30.39	0	31.3	31.3	0	31.63	31.63	0	32.78	32.78	0	
263730	29.19	29.19	0	30.39	30.39	0	31.3	31.3	0	31.63	31.63	0	32.78	32.78	0	
263740	30.32	30.32	0	31.1	31.1	0	31.59	31.59	0	31.81	31.81	0	32.58	32.58	0	
263750	30.31	30.31	0	31.08	31.08	0	31.59	31.59	0	31.81	31.81	0	32.57	32.57	0	
263760	30.35	30.35	0	31.16	31.16	0	31.67	31.67	0	31.9	31.9	0	32.83	32.83	0	
263770	30.35	30.35	0	31.16	31.16	0	31.67	31.67	0	31.9	31.9	0	32.83	32.83	0	
263780	30.48	30.48	0	31.17	31.17	0	31.67	31.67	0	31.9	31.9	0	32.82	32.82	0	
263790	30.89	30.89	0	31.79	31.79	0	32.19	32.19	0	32.38	32.38	0	33.2	33.2	0	
263800	31.92	31.92	0	32.31	32.31	0	32.53	32.53	0	32.65	32.65	0	33.32	33.32	0	
263810	32.01	32.01	0	32.58	32.58	0	32.91	32.91	0	33.07	33.07	0	33.77	33.77	0	
263815	32.84	32.84	0	33.92	33.92	0	34.33	34.33	0	34.51	34.51	0	35.28	35.28	0	
263820	32.84	32.84	0	33.92	33.92	0	34.33	34.33	0	34.51	34.51	0	35.28	35.28	0	
263830	32.84	32.84	0	33.93	33.93	0	34.34	34.34	0	34.52	34.52	0	35.3	35.3	0	
263840	33.12	33.12	0	33.94	33.94	0	34.34	34.34	0	34.52	34.52	0	35.3	35.3	0	
263850	33.84	33.84	0	35.16	35.16	0	35.59	35.59	0	35.77	35.77	0	36.47	36.47	0	
263860	33.84	33.84	0	35.16	35.16	0	35.59	35.59	0	35.77	35.77	0	36.47	36.47	0	
263870	35.18	35.18	0	35.62	35.62	0	35.81	35.81	0	35.89	35.89	0	36.28	36.28	0	
263900	30.35	30.35	0	31.16	31.16	0	31.66	31.66	0	31.88	31.88	0	32.81	32.81	0	
263910	30.35	30.35	0	31.16	31.16	0	31.66	31.66	0	31.88	31.88	0	32.81	32.81	0	
263920	30.85	30.85	0	31.92	31.92	0	32.49	32.49	0	32.64	32.64	0	33.34	33.34	0	
263930	30.86	30.86	0	31.94	31.94	0	32.51	32.51	0	32.65	32.65	0	33.34	33.34	0	
263940	30.85	30.85	0	31.91	31.91	0	32.47	32.47	0	32.58	32.58	0	32.84	32.84	0	
263950	30.85	30.85	0	31.91	31.91	0	32.47	32.47	0	32.58	32.58	0	32.84	32.84	0	
263960	30.9	30.9	0	30.9	30.9	0	31.37	31.37	0	31.72	31.72	0	32.75	32.75	0	
263970	30.35	30.35	0	31.14	31.14	0	31.62	31.62	0	31.74	31.74	0	32.75	32.75	0	
263980	30.03	30.03	0	30.94	30.94	0	31.37	31.37	0	31.72	31.72	0	32.75	32.75	0	
263990	30.03	30.03	0	30.94	30.94	0	31.37	31.37	0	31.72	31.72	0	32.75	32.75	0	
264000	30.35	30.35	0	31.16	31.16	0	31.66	31.66	0	31.89	31.89	0	32.82	32.82	0	
264010	30.7	30.7	0	31.17	31.17	0	31.67	31.67	0	31.9	31.9	0	32.82	32.82	0	
264020	29.81	29.81	0	30.56	30.56	0	31.37	31.37	0	31.72	31.72	0	32.75	32.75	0	
264100	27	27	0	29.69	29.69	0	30.09	30.09	0	30.28	30.28	0	31.25	31.25	0	
264110	29.23	29.23	0	29.77	29.77	0	30.12	30.12	0	30.3	30.3	0	31.26	31.26	0	
264120	25.41	25.41	0	26.77	26.77	0	27.37	27.37	0	27.72	27.72	0	29.11	29.11	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
264130	29.6	29.6	0	29.95	29.95	0	30.13	30.13	0	30.21	30.21	0	30.59	30.59	0	
264140	25.82	25.82	0	27.2	27.2	0	27.82	27.82	0	28.14	28.14	0	29.21	29.21	0	
264150	25.83	25.83	0	27.2	27.2	0	27.82	27.82	0	28.14	28.14	0	29.21	29.21	0	
264160	27.96	27.96	0	28.48	28.48	0	28.76	28.76	0	28.89	28.89	0	29.81	29.81	0	
264170	27.97	27.97	0	28.5	28.5	0	28.79	28.79	0	28.92	28.92	0	29.81	29.81	0	
264200	26.19	26.19	0	27.86	27.86	0	28.56	28.56	0	28.85	28.85	0	29.87	29.87	0	
264208	26.35	26.35	0	27.94	27.94	0	28.64	28.64	0	28.94	28.94	0	30.01	30.01	0	
264210	26.22	26.22	0	27.88	27.88	0	28.58	28.58	0	28.87	28.87	0	29.91	29.91	0	
264220	26.35	26.35	0	27.95	27.95	0	28.64	28.64	0	28.94	28.94	0	30.01	30.01	0	
264230	26.35	26.35	0	27.94	27.94	0	28.63	28.63	0	28.93	28.93	0	30.01	30.01	0	
264240	26.35	26.35	0	27.93	27.93	0	28.6	28.6	0	28.9	28.9	0	30	30	0	
264250	26.35	26.35	0	27.93	27.93	0	28.6	28.6	0	28.9	28.9	0	30	30	0	
264260	25.99	25.99	0	27.9	27.9	0	28.51	28.51	0	28.78	28.78	0	29.76	29.76	0	
264270	25.95	25.95	0	27.64	27.64	0	28.23	28.23	0	28.49	28.49	0	29.5	29.5	0	
264280	25.95	25.95	0	27.55	27.55	0	28.16	28.16	0	28.42	28.42	0	29.47	29.47	0	
264290	26.22	26.22	0	27.88	27.88	0	28.58	28.58	0	28.87	28.87	0	29.91	29.91	0	
264300	31.63	31.63	0	31.76	31.76	0	31.82	31.82	0	31.85	31.85	0	32	32	0	
264310	26.37	26.37	0	28.03	28.03	0	28.75	28.75	0	29.08	29.08	0	30.39	30.39	0	
264320	28.66	28.66	0	29.62	29.62	0	30.04	30.04	0	30.23	30.23	0	31.03	31.03	0	
264330	29.04	29.04	0	29.97	29.97	0	30.36	30.36	0	30.54	30.54	0	31.28	31.28	0	
264340	29.05	29.05	0	30.19	30.19	0	30.69	30.69	0	30.91	30.91	0	31.88	31.88	0	
264350	30.05	30.05	0	30.7	30.7	0	31.06	31.06	0	31.23	31.23	0	32.07	32.07	0	
264360	30.98	30.98	0	31.2	31.2	0	31.31	31.31	0	31.38	31.38	0	32.07	32.07	0	
264370	28.44	28.44	0	29.09	29.09	0	29.4	29.4	0	29.54	29.54	0	30.23	30.23	0	
264380	26.53	26.53	0	28.01	28.01	0	28.6	28.6	0	28.93	28.93	0	32.16	32.16	0	
264390	27.04	27.04	0	27.93	27.93	0	28.55	28.55	0	28.82	28.82	0	30.08	30.08	0	
264395	27.59	27.59	0	28.64	28.64	0	29.25	29.25	0	29.55	29.55	0	30.15	30.15	0	
264398	28.95	28.95	0	29.8	29.8	0	30.26	30.26	0	30.49	30.49	0	31.68	31.68	0	
264400	28.97	28.97	0	29.8	29.8	0	30.26	30.26	0	30.49	30.49	0	31.68	31.68	0	
264410	30.54	30.54	0	32.31	32.31	0	32.72	32.72	0	32.89	32.89	0	33.64	33.64	0	
264500	26.47	26.47	0	28.1	28.1	0	28.79	28.79	0	29.09	29.09	0	30.52	30.52	0	
264510	27.59	27.59	0	28.65	28.65	0	29.29	29.29	0	29.59	29.59	0	30.78	30.78	0	
264520	27.61	27.61	0	28.72	28.72	0	29.34	29.34	0	29.64	29.64	0	30.92	30.92	0	
264530	27.59	27.59	0	28.65	28.65	0	29.29	29.29	0	29.59	29.59	0	30.78	30.78	0	
264540	27.65	27.65	0	28.67	28.67	0	29.29	29.29	0	29.6	29.6	0	30.78	30.78	0	
264550	29.29	29.29	0	30.3	30.3	0	30.51	30.51	0	30.59	30.59	0	30.94	30.94	0	
264560	27.58	27.58	0	28.17	28.17	0	28.54	28.54	0	28.82	28.82	0	29.85	29.85	0	
264570	27.63	27.63	0	28.38	28.38	0	28.82	28.82	0	29.05	29.05	0	30.01	30.01	0	
264580	29.87	29.87	0	30.1	30.1	0	30.22	30.22	0	30.28	30.28	0	30.58	30.58	0	
264590	30.25	30.25	0	30.84	30.84	0	32.11	32.11	0	32.6	32.6	0	33.46	33.46	0	
264600	31.48	31.48	0	32.42	32.42	0	32.64	32.64	0	32.74	32.74	0	33.47	33.47	0	
264610	28.36	28.36	0	29.41	29.41	0	29.85	29.85	0	30.05	30.05	0	30.95	30.95	0	
264700	26.18	26.18	0	27.85	27.85	0	28.52	28.52	0	28.8	28.8	0	29.84	29.84	0	
264710	26.18	26.18	0	27.69	27.69	0	28.21	28.21	0	28.52	28.52	0	29.76	29.76	0	
264720	26.18	26.18	0	27.69	27.69	0	28.21	28.21	0	28.53	28.53	0	30.07	30.07	0	
264730	28.62	28.62	0	29.3	29.3	0	29.54	29.54	0	29.65	29.65	0	30.24	30.24	0	
264740	28.62	28.62	0	29.31	29.31	0	29.54	29.54	0	29.65	29.65	0	30.25	30.25	0	
264750	26.24	26.24	0	27.93	27.93	0	28.62	28.62	0	28.9	28.9	0	29.97	29.97	0	
264760	26.25	26.25	0	27.94	27.94	0	28.62	28.62	0	28.9	28.9	0	29.97	29.97	0	
264770	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264780	26.38	26.38	0	28.13	28.13	0	28.83	28.83	0	29.1	29.1	0	30.16	30.16	0	
264790	28.36	28.36	0	28.51	28.51	0	28.85	28.85	0	29.11	29.11	0	30.16	30.16	0	
264800	28.71	28.71	0	29.28	29.28	0	29.51	29.51	0	29.62	29.62	0	30.25	30.25	0	
264810	28.84	28.84	0	29.29	29.29	0	29.52	29.52	0	29.63	29.63	0	30.25	30.25	0	
264820	28.34	28.34	0	28.84	28.84	0	29.08	29.08	0	29.2	29.2	0	30.1	30.1	0	
264830	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264840	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264850	29.83	29.83	0	30.01	30.01	0	30.1	30.1	0	30.14	30.14	0	30.35	30.35	0	
264860	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264870	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264880	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264890	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264900	27.51	27.51	0	29.37	29.37	0	29.78	29.78	0	29.96	29.96	0	30.63	30.63	0	
264910	28.98	28.98	0	29.41	29.41	0	29.79	29.79	0	29.97	29.97	0	30.63	30.63	0	
264920	29.05	29.05	0	29.54	29.54	0	29.87	29.87	0	30.05	30.05	0	30.67	30.67	0	
264930	29.13	29.13	0	29.81	29.81	0	30.13	30.13	0	30.25	30.25	0	30.74	30.74	0	
264940	29.16	29.16	0	29.85	29.85	0	30.17	30.17	0	30.28	30.28	0	30.75	30.75	0	
264950	26.32	26.32	0	28.02	28.02	0	28.71	28.71	0	29	29	0	30.1	30.1	0	
264960	28.36	28.36	0	28.87	28.87	0	29.1	29.1	0	29.21	29.21	0	30.1	30.1	0	
264970	28.38	28.38	0	28.91	28.91	0	29.17	29.17	0	29.29	29.29	0	30.1	30.1	0	
265000	26.62	26.62	0	28.83	28.83	0	29.84	29.84	0	30.15	30.15	0	31.15	31.15	0	
265010	29.6	29.6	0	30.71	30.71	0	31.16	31.16	0	31.35	31.35	0	32.15	32.15	0	
265020	28.88	28.88	0	29.56	29.56	0	29.81	29.81	0	29.96	29.96	0	30.85	30.85	0	
265030	27.08	27.08	0	29.99	29.99	0	30.8	30.8	0	31.09	31.09	0	31.97	31.97	0	
265040	30.39	30.39	0	31.56	31.56	0	31.99	31.99	0	32.17	32.17	0	32.89	32.89	0	
265050	29.87	29.87	0	30.96	30.96	0	31.4	31.4	0	31.58	31.58	0	32.35	32.35	0	
265060	26.17	26.17	0	27.87	27.87	0	29.43	29.43	0	29.79	29.79	0	31.01	31.01	0	
265070	26.53	26.53	0	29.05	29.05	0	30.23	30.23	0	30.63	30.63	0	31.97	31.97	0	
265100	27.76	27.76	0	28.53	28.53	0	28.84	28.84	0	29.03	29.03	0	30.13	30.13	0	
265110	29.19	29.19	0	29.64	29.64	0	29.82	29.82	0	29.91	29.91	0	30.39	30.39	0	
265120	29.3	29.3	0	29.88	29.88	0	30.14	30.14	0	30.26	30.26	0	30.86	30.86	0	
265130	29.38	29.38	0	29.92	29.92	0	30.17	30.17	0	30.28	30.28	0	30.88	30.88	0	
265140	29.51	29.51	0	30.11	30.11	0	30.39	30.39	0	30.51	30.51	0	31.14	31.14	0	
265150	29.51	29.51	0	30.09	30.09	0	30.36	30.36	0	30.49	30.49	0	31.13	31.13	0	
265160	29.7	29.7	0	30.12	30.12	0	30.35	30.35	0	30.47	30.47	0	31.05	31.05	0	
265170	29.7	29.7	0	30	30	0	30.19	30.19	0	30.28	30.28	0	30.71	30.71	0	
265180	29.27	29.27	0	29.92	29.92	0	30.13	30.13	0	30.22	30.22	0	30.69	30.69	0	
265190	28.8	28.8	0	29.43	29.43	0	29.64	29.64	0	29.77	29.77	0	30.44	30.44	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
265200	29.2	29.2	0	29.71	29.71	0	29.94	29.94	0	30.06	30.06	0	30.63	30.63	0	
265210	29.21	29.21	0	29.74	29.74	0	29.99	29.99	0	30.1	30.1	0	30.65	30.65	0	
265220	29.21	29.21	0	29.74	29.74	0	29.99	29.99	0	30.1	30.1	0	30.65	30.65	0	
265230	29.21	29.21	0	29.75	29.75	0	30	30	0	30.13	30.13	0	30.7	30.7	0	
265240	29.22	29.22	0	29.81	29.81	0	30.19	30.19	0	30.34	30.34	0	30.98	30.98	0	
265250	30.5	30.5	0	30.71	30.71	0	30.81	30.81	0	30.86	30.86	0	31.16	31.16	0	
265260	29.33	29.33	0	29.99	29.99	0	30.3	30.3	0	30.45	30.45	0	31.18	31.18	0	
265270	29.69	29.69	0	30.25	30.25	0	30.53	30.53	0	30.66	30.66	0	31.22	31.22	0	
265280	29.64	29.64	0	30.43	30.43	0	30.78	30.78	0	30.94	30.94	0	31.67	31.67	0	
265290	29.78	29.78	0	30.52	30.52	0	30.85	30.85	0	31	31	0	31.7	31.7	0	
265300	29.79	29.79	0	30.52	30.52	0	30.85	30.85	0	31	31	0	31.71	31.71	0	
265400	26.01	26.01	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.82	29.82	0	
265410	26.16	26.16	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.82	29.82	0	
265420	26.15	26.15	0	27.85	27.85	0	28.53	28.53	0	28.81	28.81	0	29.79	29.79	0	
265430	26.15	26.15	0	27.85	27.85	0	28.53	28.53	0	28.81	28.81	0	29.79	29.79	0	
265440	27.99	27.99	0	28.21	28.21	0	28.53	28.53	0	28.81	28.81	0	29.79	29.79	0	
265460	26.15	26.15	0	27.85	27.85	0	28.54	28.54	0	28.82	28.82	0	29.79	29.79	0	
265470	26.15	26.15	0	27.85	27.85	0	28.54	28.54	0	28.82	28.82	0	29.79	29.79	0	
265480	26.01	26.01	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.82	29.82	0	
265490	27.13	27.13	0	27.87	27.87	0	28.55	28.55	0	28.83	28.83	0	29.84	29.84	0	
265500	26.65	26.65	0	28.17	28.17	0	28.86	28.86	0	29.04	29.04	0	29.81	29.81	0	
265510	28.1	28.1	0	28.59	28.59	0	28.86	28.86	0	29.04	29.04	0	29.81	29.81	0	
265520	28.14	28.14	0	28.92	28.92	0	29.35	29.35	0	29.6	29.6	0	30.35	30.35	0	
265530	28.78	28.78	0	29.53	29.53	0	29.73	29.73	0	29.82	29.82	0	30.37	30.37	0	
265540	26.37	26.37	0	27.87	27.87	0	28.55	28.55	0	28.83	28.83	0	29.81	29.81	0	
265550	29.4	29.4	0	29.79	29.79	0	29.9	29.9	0	29.93	29.93	0	30.06	30.06	0	
265560	29.79	29.79	0	30.91	30.91	0	31.32	31.32	0	31.45	31.45	0	32	32	0	
265600	26.48	26.48	0	27.93	27.93	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265610	27.08	27.08	0	27.96	27.96	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265620	27.08	27.08	0	27.96	27.96	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265630	27.12	27.12	0	28.35	28.35	0	28.91	28.91	0	29.01	29.01	0	29.78	29.78	0	
265640	28.5	28.5	0	28.89	28.89	0	28.99	28.99	0	29.05	29.05	0	29.78	29.78	0	
265650	26.46	26.46	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265660	27.69	27.69	0	28.02	28.02	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265670	26.46	26.46	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265680	27.25	27.25	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265690	26.46	26.46	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
265700	26.83	26.83	0	28.67	28.67	0	29.36	29.36	0	29.59	29.59	0	30.39	30.39	0	
265710	28.14	28.14	0	29.04	29.04	0	29.48	29.48	0	29.66	29.66	0	30.41	30.41	0	
265720	28.15	28.15	0	29.06	29.06	0	29.5	29.5	0	29.68	29.68	0	30.42	30.42	0	
265730	26.56	26.56	0	28.06	28.06	0	28.66	28.66	0	28.85	28.85	0	29.78	29.78	0	
265740	27.41	27.41	0	28.06	28.06	0	28.66	28.66	0	28.85	28.85	0	29.78	29.78	0	
265750	26.63	26.63	0	28.21	28.21	0	28.67	28.67	0	28.85	28.85	0	29.78	29.78	0	
265760	27.27	27.27	0	28.22	28.22	0	28.67	28.67	0	28.85	28.85	0	29.78	29.78	0	
265770	27.33	27.33	0	28.33	28.33	0	28.75	28.75	0	28.89	28.89	0	29.78	29.78	0	
265780	28.37	28.37	0	28.78	28.78	0	28.94	28.94	0	29	29	0	29.78	29.78	0	
265790	27.4	27.4	0	28.85	28.85	0	29.19	29.19	0	29.33	29.33	0	29.94	29.94	0	
265800	28.65	28.65	0	28.98	28.98	0	29.19	29.19	0	29.33	29.33	0	29.94	29.94	0	
265810	26.67	26.67	0	28.37	28.37	0	28.86	28.86	0	29.05	29.05	0	29.79	29.79	0	
265820	26.72	26.72	0	28.43	28.43	0	28.95	28.95	0	29.13	29.13	0	29.82	29.82	0	
265830	27.62	27.62	0	28.6	28.6	0	28.96	28.96	0	29.14	29.14	0	29.82	29.82	0	
265900	26.62	26.62	0	28.33	28.33	0	28.84	28.84	0	29.03	29.03	0	29.79	29.79	0	
265910	26.62	26.62	0	28.33	28.33	0	28.84	28.84	0	29.03	29.03	0	29.79	29.79	0	
265940	26.65	26.65	0	28.3	28.3	0	28.81	28.81	0	29.01	29.01	0	29.78	29.78	0	
265950	28.6	28.6	0	29.97	29.97	0	30.46	30.46	0	30.66	30.66	0	31.52	31.52	0	
265960	30.2	30.2	0	30.32	30.32	0	30.39	30.39	0	30.42	30.42	0	30.57	30.57	0	
265970	28.16	28.16	0	28.66	28.66	0	28.87	28.87	0	28.96	28.96	0	29.79	29.79	0	
265980	28.33	28.33	0	29.03	29.03	0	29.22	29.22	0	29.28	29.28	0	29.78	29.78	0	
265990	28.84	28.84	0	29.03	29.03	0	29.22	29.22	0	29.28	29.28	0	29.78	29.78	0	
266000	29.16	29.16	0	29.63	29.63	0	29.83	29.83	0	29.92	29.92	0	30.4	30.4	0	
266010	26.46	26.46	0	27.86	27.86	0	28.55	28.55	0	28.83	28.83	0	29.79	29.79	0	
266110	29.31	29.31	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
266120	29.31	29.31	0	31.02	31.02	0	31.54	31.54	0	31.76	31.76	0	32.62	32.62	0	
266130	29.35	29.35	0	31.02	31.02	0	31.53	31.53	0	31.75	31.75	0	32.58	32.58	0	
266140	30.51	30.51	0	31.02	31.02	0	31.53	31.53	0	31.76	31.76	0	32.58	32.58	0	
266150	34.99	34.99	0	35.23	35.23	0	35.35	35.35	0	35.41	35.41	0	35.71	35.71	0	
266160	29.59	29.59	0	31.45	31.45	0	31.89	31.89	0	32.07	32.07	0	32.95	32.95	0	
266170	30.94	30.94	0	31.49	31.49	0	31.9	31.9	0	32.08	32.08	0	32.95	32.95	0	
266180	34.8	34.8	0	35.37	35.37	0	35.53	35.53	0	35.6	35.6	0	35.92	35.92	0	
266190	35.3	35.3	0	36.81	36.81	0	37.2	37.2	0	37.34	37.34	0	37.89	37.89	0	
266200	35.92	35.92	0	38.33	38.33	0	38.64	38.64	0	38.75	38.75	0	39.13	39.13	0	
266210	38.28	38.28	0	38.56	38.56	0	38.75	38.75	0	38.83	38.83	0	39.16	39.16	0	
266220	39.35	39.35	0	39.65	39.65	0	39.78	39.78	0	39.84	39.84	0	40.1	40.1	0	
266230	39.63	39.63	0	40.16	40.16	0	40.41	40.41	0	40.52	40.52	0	41.05	41.05	0	
266240	35.34	35.34	0	37.2	37.2	0	38.26	38.26	0	38.53	38.53	0	39.05	39.05	0	
266250	38.5	38.5	0	38.65	38.65	0	38.72	38.72	0	38.75	38.75	0	39.06	39.06	0	
266260	34.24	34.24	0	34.74	34.74	0	34.91	34.91	0	35.05	35.05	0	35.65	35.65	0	
266270	31.86	31.86	0	34.92	34.92	0	35.31	35.31	0	35.35	35.35	0	35.65	35.65	0	
266280	27.98	27.98	0	29.12	29.12	0	29.99	29.99	0	30.58	30.58	0	32.52	32.52	0	
266290	33.77	33.77	0	34.78	34.78	0	35.22	35.22	0	35.4	35.4	0	35.7	35.7	0	
266300	29.88	29.88	0	31.94	31.94	0	32.89	32.89	0	33.33	33.33	0	35.6	35.6	0	
266310	33.78	33.78	0	34.96	34.96	0	35.77	35.77	0	35.98	35.98	0	36.57	36.57	0	
266320	34.4	34.4	0	35.35	35.35	0	35.85	35.85	0	36.03	36.03	0	36.59	36.59	0	
266330	37.33	37.33	0	38.24	38.24	0	38.45	38.45	0	38.47	38.47	0	38.69	38.69	0	
266340	38.49	38.49	0	38.93	38.93	0	39.15	39.15	0	39.25	39.25	0	39.72	39.72	0	
266350	37.16	37.16	0	38.01	38.01	0	38.48	38.48	0	38.71	38.71	0	39.79	39.79	0	
266360	39.76	39.76	0	40.4	40.4	0	40.79	40.79	0	41	41	0	42.34	42.34	0	
266370	42.1	42.1	0	42.44	42.44	0	42.54	42.54	0	42.58	42.58	0	42.79	42.79	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
266400	11.14	11.14	0	11.57	11.57	0	11.77	11.77	0	11.84	11.84	0	12.14	12.14	0	
266410	10.62	10.62	0	12.6	12.6	0	13.14	13.14	0	13.36	13.36	0	14.04	14.04	0	
266420	12.03	12.03	0	12.6	12.6	0	13.14	13.14	0	13.36	13.36	0	14.04	14.04	0	
266430	12.99	12.99	0	13.39	13.39	0	13.54	13.54	0	13.6	13.6	0	14.04	14.04	0	
266440	13.49	13.49	0	13.69	13.69	0	13.8	13.8	0	13.84	13.84	0	14.04	14.04	0	
266450	10.96	10.96	0	11.36	11.36	0	11.89	11.89	0	12.22	12.22	0	13.3	13.3	0	
266460	11.92	11.92	0	12.2	12.2	0	12.34	12.34	0	12.4	12.4	0	13.3	13.3	0	
266500	11.76	11.76	0	12.36	12.36	0	12.66	12.66	0	12.81	12.81	0	14.14	14.14	0	
266510	11.83	11.83	0	12.78	12.78	0	13.36	13.36	0	13.55	13.55	0	14.31	14.31	0	
266520	12.65	12.65	0	13.23	13.23	0	13.48	13.48	0	13.59	13.59	0	14.31	14.31	0	
266600	19.51	19.51	0	20.6	20.6	0	21.08	21.08	0	21.28	21.28	0	22.15	22.15	0	
266610	21.69	21.69	0	21.9	21.9	0	22.09	22.09	0	22.18	22.18	0	22.56	22.56	0	
266620	22.94	22.94	0	24.07	24.07	0	24.46	24.46	0	24.62	24.62	0	25.24	25.24	0	
266630	22.09	22.09	0	22.56	22.56	0	22.92	22.92	0	23.08	23.08	0	23.85	23.85	0	
266640	23.12	23.12	0	23.83	23.83	0	24.14	24.14	0	24.3	24.3	0	25.05	25.05	0	
266650	14.74	14.74	0	15.67	15.67	0	16.01	16.01	0	16.16	16.16	0	16.71	16.71	0	
266700	35.54	35.54	0	36.42	36.42	0	36.7	36.7	0	36.78	36.78	0	37.07	37.07	0	
266710	35.56	35.56	0	36.55	36.55	0	36.91	36.91	0	37.04	37.04	0	37.48	37.48	0	
266720	36.17	36.17	0	36.82	36.82	0	37.35	37.35	0	37.53	37.53	0	38.26	38.26	0	
266730	38.21	38.21	0	39.1	39.1	0	39.54	39.54	0	39.7	39.7	0	40.62	40.62	0	
266740	40.34	40.34	0	40.87	40.87	0	41.1	41.1	0	41.19	41.19	0	41.47	41.47	0	
266750	40.28	40.28	0	40.35	40.35	0	40.4	40.4	0	40.53	40.53	0	41.49	41.49	0	
266760	40.28	40.28	0	40.35	40.35	0	40.4	40.4	0	40.53	40.53	0	41.46	41.46	0	
266770	32.03	32.03	0	33.57	33.57	0	33.75	33.75	0	33.8	33.8	0	34.22	34.22	0	
266810	1.72	1.72	0	1.82	1.82	0	1.88	1.88	0	1.92	1.92	0	2.1	2.1	0	
270005	3.43	3.43	0	3.91	3.91	0	4.15	4.15	0	4.27	4.27	0	4.8	4.8	0	
270010	3.45	3.45	0	3.92	3.92	0	4.16	4.16	0	4.28	4.28	0	4.8	4.8	0	
270020	6.49	6.49	0	7.71	7.71	0	7.97	7.97	0	8.08	8.08	0	8.53	8.53	0	
270030	4.62	4.62	0	5.04	5.04	0	5.18	5.18	0	5.24	5.24	0	5.53	5.53	0	
270040	4.97	4.97	0	6.64	6.64	0	7.46	7.46	0	7.75	7.75	0	8.94	8.94	0	
270050	5.85	5.85	0	6.99	6.99	0	7.55	7.55	0	7.81	7.81	0	8.96	8.96	0	
270060	5.43	5.43	0	5.94	5.94	0	6.17	6.17	0	6.26	6.26	0	6.6	6.6	0	
270070	6.17	6.17	0	6.89	6.89	0	7.19	7.19	0	7.32	7.32	0	7.87	7.87	0	
270080	6.28	6.28	0	6.98	6.98	0	7.28	7.28	0	7.41	7.41	0	7.95	7.95	0	
280010	2.21	2.21	0	3.23	3.23	0	3.72	3.72	0	3.93	3.93	0	4.71	4.71	0	
280020	2.84	2.84	0	4.26	4.26	0	4.85	4.85	0	5.09	5.09	0	5.98	5.98	0	
280030	3.5	3.5	0	5.09	5.09	0	5.71	5.71	0	5.96	5.96	0	6.89	6.89	0	
280040	3.5	3.5	0	5.11	5.11	0	5.74	5.74	0	6	6	0	6.96	6.96	0	
280050	3.63	3.63	0	5.3	5.3	0	5.95	5.95	0	6.21	6.21	0	7.2	7.2	0	
280060	3.63	3.63	0	5.32	5.32	0	5.98	5.98	0	6.25	6.25	0	7.25	7.25	0	
280070	3.66	3.66	0	5.46	5.46	0	6.2	6.2	0	6.51	6.51	0	7.72	7.72	0	
280080	4.26	4.26	0	5.84	5.84	0	6.52	6.52	0	6.83	6.83	0	8.05	8.05	0	
280090	4.28	4.28	0	5.86	5.86	0	6.54	6.54	0	6.85	6.85	0	8.1	8.1	0	
280100	6.2	6.2	0	7.02	7.02	0	7.44	7.44	0	7.66	7.66	0	8.64	8.64	0	
280110	6.21	6.21	0	7.03	7.03	0	7.46	7.46	0	7.67	7.67	0	8.65	8.65	0	
280120	7.31	7.31	0	8.22	8.22	0	8.61	8.61	0	8.8	8.8	0	9.65	9.65	0	
280130	8.91	8.91	0	10.46	10.46	0	11.1	11.1	0	11.39	11.39	0	12.64	12.64	0	
280140	9.34	9.34	0	10.68	10.68	0	11.27	11.27	0	11.53	11.53	0	12.72	12.72	0	
280150	9.45	9.45	0	10.74	10.74	0	11.31	11.31	0	11.57	11.57	0	12.74	12.74	0	
280160	9.5	9.5	0	10.78	10.78	0	11.34	11.34	0	11.6	11.6	0	12.76	12.76	0	
280170	10.58	10.58	0	11.16	11.16	0	11.55	11.55	0	11.76	11.76	0	12.81	12.81	0	
280180	10.58	10.58	0	11.16	11.16	0	11.55	11.55	0	11.76	11.76	0	12.81	12.81	0	
280190	11.7	11.7	0	12.33	12.33	0	12.6	12.6	0	12.75	12.75	0	13.47	13.47	0	
280200	11.7	11.7	0	12.33	12.33	0	12.6	12.6	0	12.75	12.75	0	13.47	13.47	0	
280210	12.07	12.07	0	13.23	13.23	0	13.73	13.73	0	13.99	13.99	0	15.14	15.14	0	
280220	12.19	12.19	0	13.46	13.46	0	14.01	14.01	0	14.29	14.29	0	15.54	15.54	0	
280230	12.75	12.75	0	14.17	14.17	0	14.74	14.74	0	15	15	0	16.12	16.12	0	
280240	13.15	13.15	0	14.62	14.62	0	15.21	15.21	0	15.47	15.47	0	16.6	16.6	0	
280250	14.27	14.27	0	15.72	15.72	0	16.32	16.32	0	16.59	16.59	0	17.75	17.75	0	
280260	15.28	15.28	0	16.69	16.69	0	17.3	17.3	0	17.57	17.57	0	18.74	18.74	0	
280270	15.71	15.71	0	17.14	17.14	0	17.78	17.78	0	18.06	18.06	0	19.22	19.22	0	
280280	15.73	15.73	0	17.19	17.19	0	17.86	17.86	0	18.15	18.15	0	19.4	19.4	0	
280290	17.24	17.24	0	18.51	18.51	0	19.11	19.11	0	19.39	19.39	0	20.5	20.5	0	
280300	17.25	17.25	0	18.55	18.55	0	19.17	19.17	0	19.45	19.45	0	20.63	20.63	0	
280310	17.76	17.76	0	19.12	19.12	0	19.79	19.79	0	20.09	20.09	0	21.28	21.28	0	
280320	17.76	17.76	0	19.13	19.13	0	19.81	19.81	0	20.11	20.11	0	21.3	21.3	0	
280330	18.08	18.08	0	19.51	19.51	0	20.22	20.22	0	20.52	20.52	0	21.7	21.7	0	
280340	18.1	18.1	0	19.57	19.57	0	20.31	20.31	0	20.64	20.64	0	21.92	21.92	0	
280350	18.48	18.48	0	20	20	0	20.67	20.67	0	20.97	20.97	0	22.19	22.19	0	
280360	18.92	18.92	0	20.48	20.48	0	21.08	21.08	0	21.35	21.35	0	22.52	22.52	0	
280370	18.95	18.95	0	20.51	20.51	0	21.09	21.09	0	21.37	21.37	0	22.54	22.54	0	
280380	19.01	19.01	0	20.56	20.56	0	21.12	21.12	0	21.39	21.39	0	22.56	22.56	0	
280390	19.02	19.02	0	20.62	20.62	0	21.23	21.23	0	21.52	21.52	0	22.7	22.7	0	
280400	21.74	21.74	0	22.77	22.77	0	23.09	23.09	0	23.2	23.2	0	23.79	23.79	0	
280410	22.47	22.47	0	23.72	23.72	0	23.98	23.98	0	24.05	24.05	0	24.51	24.51	0	
280420	22.69	22.69	0	23.72	23.72	0	23.97	23.97	0	24.04	24.04	0	24.49	24.49	0	
280430	22.87	22.87	0	23.73	23.73	0	23.95	23.95	0	24.02	24.02	0	24.41	24.41	0	
280440	22.95	22.95	0	23.73	23.73	0	23.95	23.95	0	24.01	24.01	0	24.4	24.4	0	
280450	23.64	23.64	0	23.87	23.87	0	23.98	23.98	0	24.03	24.03	0	24.28	24.28	0	
280460	24.61	24.61	0	25.07	25.07	0	25.3	25.3	0	25.42	25.42	0	26.01	26.01	0	
280470	24.83	24.83	0	25.21	25.21	0	25.42	25.42	0	25.54	25.54	0	26.11	26.11	0	
280480	31.36	31.36	0	31.84	31.84	0	32.13	32.13	0	32.25	32.25	0	32.8	32.8	0	
280490	31.7	31.7	0	32.12	32.12	0	32.26	32.26	0	32.34	32.34	0	32.83	32.83	0	
280500	5.59	5.59	0	7.23	7.23	0	8.08	8.08	0	8.48	8.48	0	10.44	10.44	0	
280510	180.8	180.8	0	181.12	181.12	0	181.29	181.29	0	181.38	181.38	0	181.84	181.84	0	
280520	6.4	6.4	0	7.11	7.11	0	7.41	7.41	0	7.53	7.53	0	8.09	8.09	0	
280530	3.66	3.66	0	5.47	5.47	0	6.21	6.21	0	6.53	6.53	0	7.73	7.73	0	
280540	3.66	3.66	0	5.47	5.47	0	6.22	6.22	0	6.53	6.53	0	7.74	7.74	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
280550	4.45	4.45	0	5.66	5.66	0	6.22	6.22	0	6.53	6.53	0	7.74	7.74	0	
280560	5.6	5.6	0	7.05	7.05	0	7.65	7.65	0	7.92	7.92	0	9.17	9.17	0	
280600	16.07	16.07	0	16.49	16.49	0	16.73	16.73	0	16.86	16.86	0	17.49	17.49	0	
280610	8.95	8.95	0	9.43	9.43	0	9.7	9.7	0	9.84	9.84	0	10.55	10.55	0	
280620	90.74	90.74	0	91.16	91.16	0	91.39	91.39	0	91.51	91.51	0	92.13	92.13	0	
280630	7.31	7.31	0	8.22	8.22	0	8.59	8.59	0	8.77	8.77	0	9.61	9.61	0	
280640	7.31	7.31	0	8.22	8.22	0	8.61	8.61	0	8.8	8.8	0	9.65	9.65	0	
280650	7.31	7.31	0	8.22	8.22	0	8.61	8.61	0	8.8	8.8	0	9.65	9.65	0	
280660	7.31	7.31	0	8.22	8.22	0	8.61	8.61	0	8.8	8.8	0	9.65	9.65	0	
280670	7.31	7.31	0	8.22	8.22	0	8.61	8.61	0	8.8	8.8	0	9.65	9.65	0	
280680	9.34	9.34	0	10.68	10.68	0	11.27	11.27	0	11.53	11.53	0	12.72	12.72	0	
280690	9.34	9.34	0	10.68	10.68	0	11.27	11.27	0	11.53	11.53	0	12.72	12.72	0	
280700	9.34	9.34	0	10.68	10.68	0	11.27	11.27	0	11.53	11.53	0	12.72	12.72	0	
280710	9.34	9.34	0	10.68	10.68	0	11.27	11.27	0	11.53	11.53	0	12.72	12.72	0	
280720	9.45	9.45	0	10.74	10.74	0	11.31	11.31	0	11.57	11.57	0	12.74	12.74	0	
280730	9.5	9.5	0	10.78	10.78	0	11.34	11.34	0	11.6	11.6	0	12.76	12.76	0	
280740	9.5	9.5	0	10.78	10.78	0	11.34	11.34	0	11.6	11.6	0	12.76	12.76	0	
280800	9.5	9.5	0	10.78	10.78	0	11.35	11.35	0	11.61	11.61	0	12.76	12.76	0	
280810	9.5	9.5	0	10.78	10.78	0	11.35	11.35	0	11.61	11.61	0	12.76	12.76	0	
280820	9.5	9.5	0	10.78	10.78	0	11.35	11.35	0	11.61	11.61	0	12.76	12.76	0	
280830	9.44	9.44	0	10.74	10.74	0	11.32	11.32	0	11.58	11.58	0	12.75	12.75	0	
280840	9.3	9.3	0	9.76	9.76	0	10.17	10.17	0	10.44	10.44	0	11.3	11.3	0	
280850	10.28	10.28	0	10.78	10.78	0	11.35	11.35	0	11.61	11.61	0	12.76	12.76	0	
280860	9.68	9.68	0	10.78	10.78	0	11.35	11.35	0	11.61	11.61	0	12.76	12.76	0	
280870	9.5	9.5	0	10.85	10.85	0	11.44	11.44	0	11.71	11.71	0	12.85	12.85	0	
280880	9.52	9.52	0	10.94	10.94	0	11.57	11.57	0	11.85	11.85	0	13.01	13.01	0	
280890	9.67	9.67	0	10.86	10.86	0	11.45	11.45	0	11.72	11.72	0	12.86	12.86	0	
280900	9.96	9.96	0	11.72	11.72	0	11.96	11.96	0	12.05	12.05	0	12.86	12.86	0	
281000	11.7	11.7	0	12.27	12.27	0	12.47	12.47	0	12.58	12.58	0	13.08	13.08	0	
281010	11.7	11.7	0	12.27	12.27	0	12.48	12.48	0	12.58	12.58	0	13.06	13.06	0	
281020	11.7	11.7	0	12.44	12.44	0	12.7	12.7	0	12.83	12.83	0	13.34	13.34	0	
281030	11.89	11.89	0	12.85	12.85	0	13.13	13.13	0	13.24	13.24	0	13.79	13.79	0	
281040	12.45	12.45	0	13.43	13.43	0	13.71	13.71	0	13.83	13.83	0	14.39	14.39	0	
281050	12.59	12.59	0	13.58	13.58	0	13.87	13.87	0	13.99	13.99	0	14.56	14.56	0	
281060	12.61	12.61	0	13.58	13.58	0	13.87	13.87	0	13.99	13.99	0	14.56	14.56	0	
281070	12.64	12.64	0	13.59	13.59	0	13.87	13.87	0	13.99	13.99	0	14.56	14.56	0	
281080	11.68	11.68	0	12.17	12.17	0	12.37	12.37	0	12.49	12.49	0	13.26	13.26	0	
281090	11.68	11.68	0	12.17	12.17	0	12.37	12.37	0	12.49	12.49	0	13.26	13.26	0	
281100	11.69	11.69	0	12.22	12.22	0	12.44	12.44	0	12.57	12.57	0	13.32	13.32	0	
281110	11.68	11.68	0	12.2	12.2	0	12.41	12.41	0	12.54	12.54	0	13.3	13.3	0	
281120	11.67	11.67	0	12.11	12.11	0	12.29	12.29	0	12.41	12.41	0	13.21	13.21	0	
281130	11.66	11.66	0	12.06	12.06	0	12.22	12.22	0	12.35	12.35	0	13.16	13.16	0	
281140	11.49	11.49	0	11.56	11.56	0	11.67	11.67	0	11.85	11.85	0	13.01	13.01	0	
281150	11.66	11.66	0	12.41	12.41	0	12.65	12.65	0	12.77	12.77	0	13.25	13.25	0	
281160	12.31	12.31	0	12.55	12.55	0	12.71	12.71	0	12.8	12.8	0	13.26	13.26	0	
281170	11.66	11.66	0	12.06	12.06	0	12.5	12.5	0	12.63	12.63	0	13.17	13.17	0	
281180	12.17	12.17	0	12.47	12.47	0	12.59	12.59	0	12.68	12.68	0	13.18	13.18	0	
281190	11.66	11.66	0	12.45	12.45	0	12.72	12.72	0	12.83	12.83	0	13.27	13.27	0	
281200	12.32	12.32	0	12.53	12.53	0	12.73	12.73	0	12.83	12.83	0	13.27	13.27	0	
281210	11.67	11.67	0	12.14	12.14	0	12.43	12.43	0	12.67	12.67	0	14.06	14.06	0	
281220	11.67	11.67	0	12.15	12.15	0	12.43	12.43	0	12.69	12.69	0	14.08	14.08	0	
281230	11.69	11.69	0	12.22	12.22	0	12.44	12.44	0	12.57	12.57	0	13.45	13.45	0	
281240	12.56	12.56	0	12.77	12.77	0	12.87	12.87	0	12.92	12.92	0	13.47	13.47	0	
281250	9.42	9.42	0	11.07	11.07	0	12.6	12.6	0	12.75	12.75	0	13.47	13.47	0	
281300	12.76	12.76	0	14.25	14.25	0	14.92	14.92	0	15.2	15.2	0	16.33	16.33	0	
281310	12.76	12.76	0	14.26	14.26	0	14.93	14.93	0	15.21	15.21	0	16.34	16.34	0	
281315	12.76	12.76	0	14.31	14.31	0	15.01	15.01	0	15.31	15.31	0	16.71	16.71	0	
281320	16.94	16.94	0	16.94	16.94	0	16.94	16.94	0	16.94	16.94	0	17.81	17.81	0	
281330	18.28	18.28	0	18.73	18.73	0	18.92	18.92	0	19	19	0	19.47	19.47	0	
281340	18.48	18.48	0	19.55	19.55	0	19.98	19.98	0	20.16	20.16	0	20.92	20.92	0	
281350	20	20	0	20.52	20.52	0	20.76	20.76	0	20.87	20.87	0	21.4	21.4	0	
281360	18.66	18.66	0	19.8	19.8	0	20.38	20.38	0	20.66	20.66	0	21.77	21.77	0	
281370	18.34	18.34	0	19.93	19.93	0	20.79	20.79	0	21.15	21.15	0	22.31	22.31	0	
281380	19.66	19.66	0	20.73	20.73	0	21.32	21.32	0	21.6	21.6	0	22.57	22.57	0	
281390	19.66	19.66	0	20.72	20.72	0	21.32	21.32	0	21.6	21.6	0	22.68	22.68	0	
281400	19.53	19.53	0	20.35	20.35	0	20.81	20.81	0	21.04	21.04	0	22.02	22.02	0	
281410	12.76	12.76	0	14.26	14.26	0	14.93	14.93	0	15.21	15.21	0	16.34	16.34	0	
281420	13.06	13.06	0	17.6	17.6	0	18.23	18.23	0	18.46	18.46	0	19.29	19.29	0	
281430	12.76	12.76	0	14.66	14.66	0	15.68	15.68	0	16.15	16.15	0	18.2	18.2	0	
281440	13.67	13.67	0	15.04	15.04	0	15.88	15.88	0	16.3	16.3	0	18.25	18.25	0	
281450	13.7	13.7	0	15.2	15.2	0	16.11	16.11	0	16.59	16.59	0	18.62	18.62	0	
281455	13.81	13.81	0	15.34	15.34	0	16.36	16.36	0	16.89	16.89	0	18.92	18.92	0	
281460	14.31	14.31	0	15.23	15.23	0	16.16	16.16	0	16.64	16.64	0	18.8	18.8	0	
281470	18.6	18.6	0	19	19	0	19.2	19.2	0	19.3	19.3	0	19.89	19.89	0	
281480	19.01	19.01	0	19.42	19.42	0	19.62	19.62	0	19.71	19.71	0	20.15	20.15	0	
281490	19.02	19.02	0	19.43	19.43	0	19.63	19.63	0	19.72	19.72	0	20.16	20.16	0	
281500	18.01	18.01	0	18.04	18.04	0	18.26	18.26	0	18.34	18.34	0	18.85	18.85	0	
281510	18.3	18.3	0	19.03	19.03	0	19.29	19.29	0	19.39	19.39	0	19.83	19.83	0	
281520	17.82	17.82	0	18.24	18.24	0	18.44	18.44	0	18.53	18.53	0	19.24	19.24	0	
281600	12.75	12.75	0	14.09	14.09	0	14.57	14.57	0	14.79	14.79	0	15.8	15.8	0	
281610	12.75	12.75	0	14.04	14.04	0	14.43	14.43	0	14.63	14.63	0	15.64	15.64	0	
281620	12.75	12.75	0	13.98	13.98	0	14.3	14.3	0	14.56	14.56	0	15.33	15.33	0	
281630	12.75	12.75	0	13.98	13.98	0	14.25	14.25	0	14.42	14.42	0	14.97	14.97	0	
281640	12.75	12.75	0	13.99	13.99	0	14.54	14.54	0	14.84	14.84	0	15.61	15.61	0	
281650	12.75	12.75	0	13.99	13.99	0	14.55	14.55	0	14.85	14.85	0	15.61	15.61	0	
281660	12.75	12.75	0	13.99	13.99	0	14.56	14.56	0	14.86	14.86	0	15.76	15.76	0	
281670	12.75	12.75	0	13.99	13.99	0	14.57	14.57	0	14.88	14.88	0	15.91	15.91	0	
281680	12.75	12.75	0	13.99	13.99	0	14.63	14.63	0	15	15	0	16.27	16.27	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
281690	12.75	12.75	0	14.35	14.35	0	15.31	15.31	0	15.59	15.59	0	16.45	16.45	0	
281700	15.99	15.99	0	17.14	17.14	0	17.43	17.43	0	17.55	17.55	0	18.06	18.06	0	
281710	17.22	17.22	0	17.52	17.52	0	17.68	17.68	0	17.76	17.76	0	18.17	18.17	0	
281720	12.75	12.75	0	14.83	14.83	0	15.8	15.8	0	16.08	16.08	0	16.89	16.89	0	
281800	15.29	15.29	0	16.69	16.69	0	17.3	17.3	0	17.57	17.57	0	18.74	18.74	0	
281810	15.3	15.3	0	16.7	16.7	0	17.3	17.3	0	17.57	17.57	0	18.74	18.74	0	
281820	15.32	15.32	0	16.7	16.7	0	17.3	17.3	0	17.57	17.57	0	18.74	18.74	0	
281830	15.32	15.32	0	16.7	16.7	0	17.3	17.3	0	17.57	17.57	0	18.74	18.74	0	
281840	15.48	15.48	0	16.72	16.72	0	17.3	17.3	0	17.57	17.57	0	18.72	18.72	0	
281850	15.55	15.55	0	16.82	16.82	0	17.42	17.42	0	17.69	17.69	0	18.88	18.88	0	
281860	15.55	15.55	0	16.83	16.83	0	17.43	17.43	0	17.72	17.72	0	18.98	18.98	0	
281870	15.89	15.89	0	17.04	17.04	0	17.63	17.63	0	17.92	17.92	0	19.17	19.17	0	
281880	17.45	17.45	0	18.46	18.46	0	19.11	19.11	0	19.44	19.44	0	21.14	21.14	0	
281890	17.97	17.97	0	18.83	18.83	0	19.43	19.43	0	19.75	19.75	0	21.73	21.73	0	
281900	21.06	21.06	0	21.47	21.47	0	21.68	21.68	0	21.77	21.77	0	22.27	22.27	0	
281910	21.38	21.38	0	21.79	21.79	0	22.01	22.01	0	22.11	22.11	0	22.63	22.63	0	
281915	22.03	22.03	0	22.91	22.91	0	23.87	23.87	0	24.13	24.13	0	25.01	25.01	0	
281920	23.09	23.09	0	24.49	24.49	0	25.07	25.07	0	25.33	25.33	0	26.36	26.36	0	
281930	23.09	23.09	0	24.49	24.49	0	25.07	25.07	0	25.33	25.33	0	26.36	26.36	0	
281940	23.15	23.15	0	24.21	24.21	0	24.61	24.61	0	24.7	24.7	0	25.71	25.71	0	
281950	23.52	23.52	0	24.18	24.18	0	24.52	24.52	0	24.66	24.66	0	25.7	25.7	0	
281960	23.53	23.53	0	24.18	24.18	0	24.51	24.51	0	24.66	24.66	0	25.7	25.7	0	
281970	23.57	23.57	0	24.21	24.21	0	24.52	24.52	0	24.69	24.69	0	25.98	25.98	0	
281980	23.97	23.97	0	24.23	24.23	0	24.52	24.52	0	24.7	24.7	0	25.99	25.99	0	
281990	24.02	24.02	0	24.24	24.24	0	24.52	24.52	0	24.71	24.71	0	26.02	26.02	0	
282000	24.29	24.29	0	25.17	25.17	0	25.72	25.72	0	25.83	25.83	0	26.21	26.21	0	
282010	24.3	24.3	0	25.22	25.22	0	25.92	25.92	0	26.1	26.1	0	26.77	26.77	0	
282020	24.61	24.61	0	25.32	25.32	0	25.99	25.99	0	26.16	26.16	0	26.82	26.82	0	
282100	15.45	15.45	0	16.7	16.7	0	17.3	17.3	0	17.57	17.57	0	18.74	18.74	0	
282110	15.46	15.46	0	16.7	16.7	0	17.3	17.3	0	17.57	17.57	0	18.74	18.74	0	
282120	16.15	16.15	0	16.9	16.9	0	17.4	17.4	0	17.68	17.68	0	18.91	18.91	0	
282130	16.6	16.6	0	17.48	17.48	0	17.89	17.89	0	18.07	18.07	0	18.84	18.84	0	
282140	16.7	16.7	0	17.67	17.67	0	18.15	18.15	0	18.37	18.37	0	19.2	19.2	0	
282150	17.19	17.19	0	18.39	18.39	0	18.88	18.88	0	19.09	19.09	0	19.8	19.8	0	
282160	17.19	17.19	0	18.4	18.4	0	18.89	18.89	0	19.1	19.1	0	19.82	19.82	0	
282170	15.81	15.81	0	16.72	16.72	0	17.3	17.3	0	17.57	17.57	0	18.72	18.72	0	
282180	15.24	15.24	0	15.45	15.45	0	15.58	15.58	0	15.67	15.67	0	16.13	16.13	0	
282190	17.46	17.46	0	17.92	17.92	0	18.07	18.07	0	18.13	18.13	0	19.17	19.17	0	
282200	18.87	18.87	0	19.48	19.48	0	19.67	19.67	0	19.75	19.75	0	20.02	20.02	0	
282210	15.85	15.85	0	16.83	16.83	0	17.44	17.44	0	17.72	17.72	0	18.98	18.98	0	
282220	18.13	18.13	0	18.5	18.5	0	18.71	18.71	0	18.83	18.83	0	19.77	19.77	0	
282230	15.9	15.9	0	15.9	15.9	0	15.9	15.9	0	15.9	15.9	0	15.9	15.9	0	
282240	17.35	17.35	0	17.62	17.62	0	17.72	17.72	0	17.92	17.92	0	19.17	19.17	0	
282245	19.41	19.41	0	19.98	19.98	0	20.25	20.25	0	20.38	20.38	0	20.97	20.97	0	
282250	19.39	19.39	0	19.98	19.98	0	20.25	20.25	0	20.38	20.38	0	20.97	20.97	0	
282260	20.33	20.33	0	20.65	20.65	0	20.79	20.79	0	20.84	20.84	0	21.14	21.14	0	
282270	20.34	20.34	0	20.7	20.7	0	20.87	20.87	0	20.95	20.95	0	21.32	21.32	0	
282280	18.54	18.54	0	19.85	19.85	0	20.45	20.45	0	20.73	20.73	0	21.77	21.77	0	
282290	20.89	20.89	0	21.16	21.16	0	21.3	21.3	0	21.36	21.36	0	21.68	21.68	0	
282300	17.69	17.69	0	18.08	18.08	0	18.23	18.23	0	18.3	18.3	0	19.36	19.36	0	
282310	19.37	19.37	0	19.92	19.92	0	20.09	20.09	0	20.18	20.18	0	20.59	20.59	0	
282320	15.89	15.89	0	18.01	18.01	0	18.67	18.67	0	18.92	18.92	0	19.82	19.82	0	
282330	18.23	18.23	0	18.69	18.69	0	19	19	0	19.17	19.17	0	19.88	19.88	0	
282340	18.42	18.42	0	19.59	19.59	0	20.16	20.16	0	20.42	20.42	0	21.43	21.43	0	
282350	19.18	19.18	0	20.25	20.25	0	20.71	20.71	0	20.92	20.92	0	21.57	21.57	0	
282360	21.15	21.15	0	21.65	21.65	0	21.86	21.86	0	21.95	21.95	0	22.36	22.36	0	
282400	21.53	21.53	0	21.73	21.73	0	21.85	21.85	0	22.05	22.05	0	25.21	25.21	0	
282420	24.07	24.07	0	25.16	25.16	0	25.64	25.64	0	25.87	25.87	0	26.88	26.88	0	
282430	22.69	22.69	0	24.29	24.29	0	25.07	25.07	0	25.33	25.33	0	26.36	26.36	0	
282440	22.29	22.29	0	22.98	22.98	0	24.12	24.12	0	24.71	24.71	0	26.05	26.05	0	
282500	24.07	24.07	0	25.16	25.16	0	25.64	25.64	0	25.87	25.87	0	26.88	26.88	0	
282510	24.09	24.09	0	25.2	25.2	0	25.76	25.76	0	26.02	26.02	0	27.05	27.05	0	
282520	25.53	25.53	0	25.7	25.7	0	26.04	26.04	0	26.26	26.26	0	27.18	27.18	0	
282530	26.01	26.01	0	28.71	28.71	0	30.27	30.27	0	30.36	30.36	0	30.66	30.66	0	
282540	27.69	27.69	0	28.92	28.92	0	30.36	30.36	0	30.52	30.52	0	31.08	31.08	0	
282550	25.45	25.45	0	26.04	26.04	0	26.44	26.44	0	26.62	26.62	0	27.52	27.52	0	
282560	25.95	25.95	0	27.77	27.77	0	28.29	28.29	0	28.47	28.47	0	29.01	29.01	0	
282570	28.25	28.25	0	28.71	28.71	0	28.85	28.85	0	28.9	28.9	0	29.15	29.15	0	
282580	27.37	27.37	0	27.56	27.56	0	27.54	27.54	0	27.53	27.53	0	27.86	27.86	0	
282590	28.57	28.57	0	30.4	30.4	0	30.75	30.75	0	30.93	30.93	0	31.53	31.53	0	
282600	24.08	24.08	0	25.17	25.17	0	25.65	25.65	0	25.88	25.88	0	26.89	26.89	0	
282610	24.43	24.43	0	26.31	26.31	0	26.49	26.49	0	26.57	26.57	0	26.89	26.89	0	
282620	24.09	24.09	0	25.43	25.43	0	25.97	25.97	0	26.2	26.2	0	27.18	27.18	0	
282700	22.94	22.94	0	23.58	23.58	0	23.84	23.84	0	23.95	23.95	0	24.4	24.4	0	
282710	22.85	22.85	0	23.53	23.53	0	23.82	23.82	0	23.94	23.94	0	24.4	24.4	0	
282720	22.61	22.61	0	22.78	22.78	0	22.96	22.96	0	23.08	23.08	0	24.35	24.35	0	
282730	22.34	22.34	0	22.53	22.53	0	22.85	22.85	0	23.04	23.04	0	24.34	24.34	0	
282740	22.29	22.29	0	22.4	22.4	0	22.85	22.85	0	23.04	23.04	0	24.32	24.32	0	
282750	21.97	21.97	0	22.36	22.36	0	22.85	22.85	0	23.04	23.04	0	24.32	24.32	0	
282760	21.8	21.8	0	22.14	22.14	0	22.31	22.31	0	22.73	22.73	0	24.34	24.34	0	
282770	23.43	23.43	0	24.18	24.18	0	24.51	24.51	0	24.66	24.66	0	25.7	25.7	0	
282780	22.73	22.73	0	24.24	24.24	0	24.52	24.52	0	24.71	24.71	0	26.02	26.02	0	
282800	15.28	15.28	0	16.7	16.7	0	17.32	17.32	0	17.6	17.6	0	18.82	18.82	0	
282810	16.26	16.26	0	16.91	16.91	0	17.4	17.4	0	17.68	17.68	0	18.91	18.91	0	
282820	16.3	16.3	0	17	17	0	17.49	17.49	0	17.79	17.79	0	19.09	19.09	0	
282830	16.3	16.3	0	17.05	17.05	0	17.67	17.67	0	18.02	18.02	0	19.49	19.49	0	
282840	18.92	18.92	0	19.42	19.42	0	19.68	19.68	0	19.79	19.79	0	20.32	20.32	0	
282850	19.3	19.3	0	19.58	19.58	0	19.77	19.77	0	19.87	19.87	0	20.37	20.37	0	

DRAFT

Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
282860	19.31	19.31	0	19.69	19.69	0	19.98	19.98	0	20.11	20.11	0	21.52	21.52	0	
282870	20.45	20.45	0	21	21	0	21.27	21.27	0	21.4	21.4	0	21.9	21.9	0	
282880	20.45	20.45	0	21.03	21.03	0	21.35	21.35	0	21.5	21.5	0	23.22	23.22	0	
282890	21.87	21.87	0	22.49	22.49	0	22.82	22.82	0	22.99	22.99	0	23.62	23.62	0	
282900	18.92	18.92	0	19.47	19.47	0	19.76	19.76	0	19.9	19.9	0	20.56	20.56	0	
282910	19.3	19.3	0	19.58	19.58	0	19.79	19.79	0	19.9	19.9	0	20.46	20.46	0	
282920	19.99	19.99	0	20.4	20.4	0	20.58	20.58	0	20.66	20.66	0	21.03	21.03	0	
282930	20.8	20.8	0	21.23	21.23	0	21.43	21.43	0	21.53	21.53	0	22.02	22.02	0	
282940	18.61	18.61	0	18.68	18.68	0	19.13	19.13	0	19.4	19.4	0	20.68	20.68	0	
282950	19.65	19.65	0	20.42	20.42	0	20.84	20.84	0	21	21	0	21.34	21.34	0	
282960	17.34	17.34	0	18.64	18.64	0	19.24	19.24	0	19.51	19.51	0	20.65	20.65	0	
282970	18.38	18.38	0	19.59	19.59	0	20	20	0	20.12	20.12	0	20.67	20.67	0	
282980	18.53	18.53	0	19.81	19.81	0	20.42	20.42	0	20.67	20.67	0	21.66	21.66	0	
282990	18.53	18.53	0	19.81	19.81	0	20.43	20.43	0	20.68	20.68	0	21.69	21.69	0	
283000	17.39	17.39	0	18.55	18.55	0	19.17	19.17	0	19.46	19.46	0	20.63	20.63	0	
283010	17.79	17.79	0	18.7	18.7	0	19.17	19.17	0	19.46	19.46	0	20.63	20.63	0	
283020	18.05	18.05	0	19.22	19.22	0	19.97	19.97	0	20.31	20.31	0	21.68	21.68	0	
283030	18.39	18.39	0	19.56	19.56	0	20.17	20.17	0	20.43	20.43	0	21.68	21.68	0	
283100	19.43	19.43	0	20.19	20.19	0	20.38	20.38	0	20.68	20.68	0	21.95	21.95	0	
283110	20.59	20.59	0	21.21	21.21	0	21.49	21.49	0	21.61	21.61	0	22.18	22.18	0	
283120	22.2	22.2	0	22.63	22.63	0	22.85	22.85	0	22.96	22.96	0	23.42	23.42	0	
283130	21.43	21.43	0	21.84	21.84	0	22.03	22.03	0	22.11	22.11	0	22.42	22.42	0	
283200	18.59	18.59	0	20.07	20.07	0	20.48	20.48	0	20.73	20.73	0	21.95	21.95	0	
283210	18.75	18.75	0	20.07	20.07	0	20.48	20.48	0	20.73	20.73	0	21.95	21.95	0	
283220	19.25	19.25	0	20.2	20.2	0	20.68	20.68	0	20.97	20.97	0	22.19	22.19	0	
283230	19.77	19.77	0	20.65	20.65	0	21.31	21.31	0	21.58	21.58	0	22.9	22.9	0	
283240	19.81	19.81	0	20.65	20.65	0	21.31	21.31	0	21.59	21.59	0	22.9	22.9	0	
283250	20.85	20.85	0	21.05	21.05	0	21.4	21.4	0	21.59	21.59	0	22.9	22.9	0	
283260	21.37	21.37	0	21.84	21.84	0	22.01	22.01	0	22.06	22.06	0	22.27	22.27	0	
283300	19.07	19.07	0	20.64	20.64	0	21.22	21.22	0	21.49	21.49	0	22.65	22.65	0	
283310	19.51	19.51	0	21.18	21.18	0	21.88	21.88	0	22.16	22.16	0	23.22	23.22	0	
283320	21.2	21.2	0	22.15	22.15	0	22.56	22.56	0	22.73	22.73	0	23.46	23.46	0	
283330	21.22	21.22	0	22.27	22.27	0	22.75	22.75	0	22.96	22.96	0	23.94	23.94	0	
283340	21.47	21.47	0	23.54	23.54	0	24.69	24.69	0	25.11	25.11	0	26.62	26.62	0	
283350	25.77	25.77	0	26.38	26.38	0	26.63	26.63	0	26.76	26.76	0	27.46	27.46	0	
283360	28.49	28.49	0	29.56	29.56	0	29.77	29.77	0	29.85	29.85	0	30.23	30.23	0	
283370	31.66	31.66	0	36.46	36.46	0	37.79	37.79	0	38.04	38.04	0	39.7	39.7	0	
283380	35.83	35.83	0	36.65	36.65	0	37.93	37.93	0	38.23	38.23	0	40.41	40.41	0	
283390	36.86	36.86	0	38.45	38.45	0	39.3	39.3	0	39.61	39.61	0	40.45	40.45	0	
283400	21.83	21.83	0	23.19	23.19	0	23.55	23.55	0	23.71	23.71	0	24.33	24.33	0	
283410	22.39	22.39	0	23.35	23.35	0	23.66	23.66	0	23.79	23.79	0	24.37	24.37	0	
283420	21.22	21.22	0	22.27	22.27	0	22.75	22.75	0	22.97	22.97	0	23.94	23.94	0	
283430	21.22	21.22	0	22.27	22.27	0	22.75	22.75	0	22.97	22.97	0	23.94	23.94	0	
283440	21.22	21.22	0	22.27	22.27	0	22.63	22.63	0	22.73	22.73	0	23.02	23.02	0	
283450	21.22	21.22	0	22.27	22.27	0	22.62	22.62	0	22.72	22.72	0	23	23	0	
283460	21.22	21.22	0	22.27	22.27	0	22.75	22.75	0	22.97	22.97	0	23.94	23.94	0	
283470	21.25	21.25	0	22.32	22.32	0	22.75	22.75	0	22.97	22.97	0	23.94	23.94	0	
283480	21.22	21.22	0	22.27	22.27	0	22.75	22.75	0	22.96	22.96	0	23.94	23.94	0	
283490	21.22	21.22	0	22.27	22.27	0	22.75	22.75	0	22.96	22.96	0	23.94	23.94	0	
283500	21.23	21.23	0	22.29	22.29	0	22.77	22.77	0	22.97	22.97	0	23.96	23.96	0	
283510	21.23	21.23	0	22.29	22.29	0	22.77	22.77	0	22.97	22.97	0	23.96	23.96	0	
283520	21.25	21.25	0	22.32	22.32	0	22.83	22.83	0	23.03	23.03	0	24.3	24.3	0	
283530	21.61	21.61	0	22.34	22.34	0	22.84	22.84	0	23.03	23.03	0	24.3	24.3	0	
283540	22.63	22.63	0	23.07	23.07	0	23.33	23.33	0	23.45	23.45	0	23.98	23.98	0	
283550	21.22	21.22	0	22.27	22.27	0	22.75	22.75	0	22.97	22.97	0	23.94	23.94	0	
283560	19.08	19.08	0	20.67	20.67	0	21.27	21.27	0	21.55	21.55	0	22.72	22.72	0	
283600	22.44	22.44	0	23.41	23.41	0	23.79	23.79	0	23.94	23.94	0	24.57	24.57	0	
283610	24.97	24.97	0	25.31	25.31	0	25.48	25.48	0	25.55	25.55	0	25.87	25.87	0	
283620	24.98	24.98	0	25.45	25.45	0	25.6	25.6	0	25.67	25.67	0	25.97	25.97	0	
283630	25.02	25.02	0	25.51	25.51	0	25.65	25.65	0	25.72	25.72	0	25.99	25.99	0	
283640	25.14	25.14	0	25.72	25.72	0	25.88	25.88	0	25.94	25.94	0	26.21	26.21	0	
283650	23.86	23.86	0	24.04	24.04	0	24.12	24.12	0	24.16	24.16	0	24.58	24.58	0	
283660	24.68	24.68	0	25.43	25.43	0	25.71	25.71	0	25.83	25.83	0	26.33	26.33	0	
283670	23.03	23.03	0	23.6	23.6	0	23.75	23.75	0	23.89	23.89	0	24.58	24.58	0	
283680	23.22	23.22	0	23.86	23.86	0	24.13	24.13	0	24.23	24.23	0	24.69	24.69	0	
283700	23.05	23.05	0	25.87	25.87	0	26.57	26.57	0	26.88	26.88	0	28.24	28.24	0	
283710	24.85	24.85	0	25.91	25.91	0	26.59	26.59	0	26.9	26.9	0	28.25	28.25	0	
283720	27.55	27.55	0	28.76	28.76	0	29.36	29.36	0	29.6	29.6	0	30.61	30.61	0	
283730	33.9	33.9	0	34.49	34.49	0	34.8	34.8	0	34.96	34.96	0	35.63	35.63	0	
283740	24.42	24.42	0	26.77	26.77	0	27.44	27.44	0	27.74	27.74	0	29.08	29.08	0	
283750	26.1	26.1	0	26.88	26.88	0	27.47	27.47	0	27.75	27.75	0	29.08	29.08	0	
283760	26.12	26.12	0	26.9	26.9	0	27.5	27.5	0	27.79	27.79	0	29.08	29.08	0	
283770	26.4	26.4	0	27.03	27.03	0	27.5	27.5	0	27.79	27.79	0	29.08	29.08	0	
283780	24.84	24.84	0	25.75	25.75	0	26.3	26.3	0	26.55	26.55	0	27.52	27.52	0	
283790	24.66	24.66	0	25.53	25.53	0	26.22	26.22	0	26.48	26.48	0	27.5	27.5	0	
283800	25.8	25.8	0	26.69	26.69	0	27.27	27.27	0	27.52	27.52	0	28.72	28.72	0	
283810	27.62	27.62	0	28.03	28.03	0	28.18	28.18	0	28.28	28.28	0	28.99	28.99	0	
283820	34.28	34.28	0	35.11	35.11	0	35.51	35.51	0	35.68	35.68	0	36.21	36.21	0	
283830	27.04	27.04	0	27.22	27.22	0	27.31	27.31	0	27.35	27.35	0	27.55	27.55	0	
283840	27.36	27.36	0	27.7	27.7	0	27.83	27.83	0	27.9	27.9	0	28.23	28.23	0	
283850	34.43	34.43	0	36.56	36.56	0	37.83	37.83	0	38.03	38.03	0	38.4	38.4	0	
283860	34.82	34.82	0	36.78	36.78	0	37.83	37.83	0	38.03	38.03	0	38.37	38.37	0	
283900	21.72	21.72	0	22.65	22.65	0	22.96	22.96	0	23.05	23.05	0	23.55	23.55	0	
283910	21.38	21.38	0	22.54	22.54	0	22.78	22.78	0	22.87	22.87	0	23.35	23.35	0	
283920	23.16	23.16	0	23.79	23.79	0	24.01	24.01	0	24.1	24.1	0	24.58	24.58	0	
283930	23.16	23.16	0	23.79	23.79	0	24.01	24.01	0	24.1	24.1	0	24.58	24.58	0	
283940	23.16	23.16	0	23.79	23.79	0	24.03	24.03	0	24.13	24.13	0	24.58	24.58	0	
283950	23.05	23.05	0	24.04	24.04	0	24.46	24.46	0	24.48	24.48	0	24.74	24.74	0	

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Summary of Corrected and Revised Stages for Bridge

Node	2.33YR24HR			25YR24HR			50YR24HR			100YR24HR			500YR24HR			Notes
	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	Corrected Effective Stage (ft)	Proposed Stage (ft)	Difference (ft)	
283960	25.25	25.25	0	26.23	26.23	0	26.59	26.59	0	26.73	26.73	0	27.26	27.26	0	
283970	25.72	25.72	0	26.5	26.5	0	26.78	26.78	0	26.89	26.89	0	27.34	27.34	0	
283990	27.32	27.32	0	28.16	28.16	0	28.54	28.54	0	28.65	28.65	0	29.06	29.06	0	
284000	22.5	22.5	0	23.78	23.78	0	24.05	24.05	0	24.12	24.12	0	24.57	24.57	0	
284010	22.52	22.52	0	25.17	25.17	0	26.27	26.27	0	26.58	26.58	0	27.99	27.99	0	
284020	22.52	22.52	0	26.03	26.03	0	27.54	27.54	0	27.75	27.75	0	28.59	28.59	0	
284030	27.13	27.13	0	27.43	27.43	0	27.72	27.72	0	27.92	27.92	0	28.77	28.77	0	
284040	27.13	27.13	0	27.57	27.57	0	28.08	28.08	0	28.43	28.43	0	29.93	29.93	0	
284050	31.67	31.67	0	32.03	32.03	0	32.18	32.18	0	32.25	32.25	0	32.46	32.46	0	
284060	32.51	32.51	0	33.01	33.01	0	33.24	33.24	0	33.32	33.32	0	33.54	33.54	0	
284070	32.53	32.53	0	33.28	33.28	0	33.82	33.82	0	34.13	34.13	0	35.16	35.16	0	
284080	32.68	32.68	0	34.34	34.34	0	34.8	34.8	0	34.87	34.87	0	35.3	35.3	0	
284090	25.59	25.59	0	26.13	26.13	0	26.35	26.35	0	26.6	26.6	0	27.99	27.99	0	
284100	25.59	25.59	0	26.13	26.13	0	26.35	26.35	0	26.6	26.6	0	27.99	27.99	0	
284110	25.59	25.59	0	26.13	26.13	0	26.35	26.35	0	26.6	26.6	0	27.99	27.99	0	
284120	26.68	26.68	0	26.91	26.91	0	27.01	27.01	0	27.06	27.06	0	27.99	27.99	0	
284210	10.3	10.3	0	10.68	10.68	0	10.9	10.9	0	11	11	0	11.55	11.55	0	
284220	14.16	14.16	0	16.19	16.19	0	17.14	17.14	0	17.6	17.6	0	19.88	19.88	0	
284230	15.07	15.07	0	16.9	16.9	0	17.83	17.83	0	18.29	18.29	0	20.66	20.66	0	
284240	5.03	5.03	0	6.62	6.62	0	7.46	7.46	0	7.86	7.86	0	9.83	9.83	0	
230202	4.67	4.95	0.28	5.23	5.42	0.19	5.85	5.63	-0.22	6.11	5.7	-0.41	7.15	6.78	-0.37	Dummy Node
300010		4.72			5.75			6.13			6.3			7.01	7.01	
300012		4.72			5.75			6.13			6.3			7	7	
300014		4.72			5.75			6.13			6.3			7	7	
300020		5.82			6.96			7.39			7.58			8.39	8.39	
300022		6.54			7.12			7.42			7.62			8.42	8.42	
300024		5.82			6.96			7.39			7.58			8.39	8.39	
300026		5.7			6.95			7.38			7.57			8.38	8.38	
300028		5.7			6.95			7.38			7.57			8.38	8.38	
300030		4.18			5.21			5.68			5.89			6.73	6.73	
300032		4.17			5.19			5.66			5.86			6.71	6.71	
300034		3.99			5.18			5.64			5.85			6.69	6.69	

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Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
223206	1.34	1.34	1.34	1.34	2.31	2.31	2.31	2.31	2.79	2.79	2.79	2.79	3.02	3.02	3.02	3.02	5.56	5.56	5.56	5.56
223226	11.59	11.59	11.59	11.59	18.62	18.62	18.62	18.62	19.62	19.62	19.62	19.62	20.02	20.02	20.02	20.02	23.73	23.73	23.73	23.73
223256	7.97	7.96	7.96	7.96	18.87	18.87	18.87	18.87	20.21	20.21	20.21	20.21	20.78	20.78	20.78	20.78	46.97	46.97	46.97	46.97
223276	2.5	2.5	2.5	2.5	4.61	4.61	4.61	4.61	5.47	5.47	5.47	5.47	5.87	5.87	5.87	5.87	9.91	9.91	9.91	9.91
223288	4.15	4.15	4.15	4.15	13.64	13.64	13.64	13.64	16.27	16.27	16.27	16.27	17.26	17.26	17.26	17.26	19.23	19.23	19.23	19.23
223296	3.52	3.52	3.52	3.52	9.49	9.49	9.49	9.49	9.9	9.9	9.9	9.9	9.98	9.98	9.98	9.98	10.27	10.27	10.27	10.27
223308	21.47	21.47	21.47	21.47	68.92	68.92	68.92	68.92	97.49	97.49	97.49	97.49	111.97	111.97	111.97	111.97	189.74	189.74	189.74	189.74
223316	2.31	2.31	2.31	2.31	6.12	6.12	6.12	6.12	7.15	7.15	7.15	7.15	8.94	8.94	8.94	8.94	23.8	23.8	23.8	23.8
223326	3.66	3.66	3.66	3.66	7.71	7.71	7.71	7.71	8.73	8.73	8.73	8.73	8.91	8.91	8.91	8.91	11.88	11.88	11.88	11.88
223338	2.94	2.94	2.94	2.94	5.18	5.18	5.18	5.18	5.78	5.78	5.78	5.78	5.87	5.87	5.87	5.87	6.12	6.12	6.12	6.12
223348	5.24	5.24	5.24	5.24	87.66	87.66	87.66	87.66	158.51	158.51	158.51	158.51	195.05	195.05	195.05	195.05	387.25	387.25	387.25	387.25
223408	26.18	26.18	26.18	26.18	89.21	89.21	89.21	89.21	123.03	123.03	123.03	123.03	138.4	138.4	138.4	138.4	189.75	189.75	189.75	189.75
223418	7.05	7.05	7.05	7.05	8.75	8.75	8.75	8.75	8.91	8.91	8.91	8.91	8.97	8.97	8.97	8.97	9.38	9.38	9.38	9.38
223428	1.84	1.84	1.84	1.84	3.15	3.15	3.15	3.15	3.3	3.3	3.3	3.3	3.35	3.35	3.35	3.35	3.51	3.51	3.51	3.51
223446	6.01	6.02	6.02	6.02	8.36	8.36	8.36	8.36	9.36	9.36	9.36	9.36	9.82	9.82	9.82	9.82	11.95	11.95	11.95	11.95
223456	15.73	15.73	15.73	15.73	43.37	43.37	43.37	43.37	69.17	69.17	69.17	69.17	81.02	81.02	81.02	81.02	149.44	149.44	149.44	149.44
223468	16.67	16.67	16.67	16.67	74.88	74.88	74.88	74.88	113.38	113.38	113.38	113.38	134.73	134.73	134.73	134.73	182.54	182.54	182.54	182.54
223478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223488	5.08	5.08	5.08	5.08	7.28	7.28	7.28	7.28	8.14	8.14	8.14	8.14	8.5	8.5	8.5	8.5	9.93	9.93	9.93	9.93
223526	11.79	11.79	11.79	11.79	26.98	26.98	26.98	26.98	41.55	41.55	41.55	41.55	55.49	55.49	55.49	55.49	106.76	106.76	106.76	106.76
223536	3.42	3.42	3.42	3.42	4.36	4.36	4.36	4.36	4.54	4.54	4.54	4.54	4.62	4.62	4.62	4.62	4.99	4.99	4.99	4.99
223548	7.49	7.49	7.49	7.49	12.16	12.16	12.16	12.16	14.13	14.13	14.13	14.13	14.62	14.62	14.62	14.62	16.08	16.08	16.08	16.08
223558	6.36	6.36	6.36	6.36	14.02	14.02	14.02	14.02	17.12	17.12	17.12	17.12	18.55	18.55	18.55	18.55	23.78	23.78	23.78	23.78
230000	100.98	83.92	80.97	80.97	245.01	233.76	227.38	227.38	311.16	294.02	290.23	290.23	340.35	319.64	316.17	316.17	468.36	431.08	424.6	424.6
240000	261.44	261.52	261.52	261.52	502.33	502.47	502.47	502.47	642.28	642.28	642.28	642.28	687.37	687.39	687.4	687.38	949.74	949.74	949.74	949.74
250000	82.96	86.5	86.5	86.5	172.81	179.55	179.55	179.55	221.85	228.3	228.3	228.3	244.66	250.75	250.74	250.74	348.41	350.87	350.86	350.86
250195	0	0	0	0	0	0	0	0	4.54	4.54	4.54	4.54	6.95	6.95	6.95	6.95	19.38	19.38	19.38	19.38
250435	10.69	10.69	10.69	10.69	29.77	29.77	29.77	29.77	43.1	43.1	43.1	43.1	49.68	49.68	49.68	49.68	82.07	82.07	82.07	82.07
260000	197.21	197.3	197.3	197.3	319.24	319.28	319.28	319.28	366.75	366.75	366.75	366.75	390.26	390.26	390.26	390.26	515.85	515.85	515.85	515.85
262360	0	0	0	0	0	0	0	0	0	0	0	0	0.52	0.52	0.52	0.52	5.89	5.89	5.89	5.89
266278	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
266800	115.18	115.18	115.18	115.18	169.26	169.26	169.26	169.26	196.55	196.55	196.55	196.55	209.58	209.58	209.58	209.58	274.46	274.46	274.46	274.46
270000	95.75	95.75	95.75	95.75	122.87	122.94	122.94	122.94	138.02	138.16	138.16	138.16	145.23	145.37	145.37	145.37	180.22	180.33	180.33	180.33
280000	63.59	62.78	62.78	62.78	131.91	131.94	131.94	131.94	167.53	167.53	167.53	167.53	183.41	183.41	183.41	183.41	248.63	248.63	248.63	248.63
280448	6.84	6.85	6.85	6.85	19.16	19.17	19.17	19.17	26.29	26.29	26.29	26.29	29.73	29.73	29.73	29.73	49.21	49.21	49.21	49.21
280465	22.88	22.88	22.88	22.88	58.6	58.6	58.6	58.6	81.97	81.97	81.97	81.97	96.74	96.74	96.74	96.74	178.2	178.2	178.2	178.2
280623	4.62	4.63	4.63	4.63	45.95	45.96	45.96	45.96	70.25	70.25	70.25	70.25	82.74	82.74	82.74	82.74	147.18	147.18	147.18	147.18
200010	88.49	88.39	88.51	88.13	180.05	182.03	182.61	181.42	201.32	205.63	205.79	205.24	211.78	216.88	216.85	216.69	264.99	273.39	272.29	273.96
200020	87.63	87.53	87.64	87.29	180.39	181.95	182.43	181.42	200.33	204.69	204.83	204.3	210.51	215.7	215.69	215.54	264.04	272.96	271.62	273.49
200030	86.06	85.98	86.07	85.75	178.01	179.45	179.92	178.97	197.1	201.44	201.56	201.03	207.28	212.4	212.28	212.16	261.99	271.16	269.69	271.65
200040	92.91	92.17	91.89	91.89	211.91	215.2	216.03	214.51	245.15	253.54	253.85	252.93	263.58	273.39	273.23	273.05	350.88	364.9	362.44	365.73
200050	89.66	88.18	87.37	87.37	169.92	169.49	169.61	169.6	199.9	204	204.12	203.63	217.44	222.13	222.03	221.86	305.72	309.94	308.99	310.14
200060	80.61	80.62	80.61	80.61	208.52	208.51	209.5	209.16	229.85	229.21	229.49	229.15	253.14	252.82	252.89	252.65	323.07	323.08	323.23	323
200070	79.79	79.81	79.8	79.8	239.31	239.48	240.66	240.2	248.64	248.23	248.97	248.62	261.81	261.65	262.13	261.88	327.89	323.55	324.04	323.18
200080	80.12	80.15	80.14	80.15	162.47	159.23	159.16	159.1	208.03	205.13	205.22	204.99	230.21	228.18	228.24	228.03	399.06	397.38	397.32	397.24
200090	64.77	64.79	64.79	64.79	109.16	109.19	109.15	109.21	139.57	139.51	139.45	139.54	153.57	153.46	153.41	153.47	206.73	206.68	206.64	206.69
200100	64.78	64.8	64.8	64.8	109.72	109.76	109.74	109.78	140.56	140.52	140.46	140.54	154.54	154.46	154.41	154.48	208.57	208.53	208.49	208.54
200110	64.8	64.82	64.82	64.82	109.9	109.94	109.91	109.95	140.98	140.94	140.89	140.96	155.01	154.93	154.89	154.95	209.63	209.59	209.55	209.6
200120	60.41	60.43	60.43	60.43	96.22	96.23	96.23	96.23	125.24	125.24	125.24	125.24	139.72	139.72	139.72	139.72	200.91	200.91	200.91	200.91
200130	58.93	58.94	58.94	58.94	89.76	89.78	89.78	89.78	120.92	120.87	120.88	120.88	136.01	135.96	135.97	135.96	201.62	201.56	201.57	201.56
200140	72.5	72.52	72.52	72.52	172.4	172.45	172.45	172.45	228.34	228.34	228.34	228.34	252.7	252.7	252.7	252.7	391.71	391.71	391.71	391.71
200150	65.07	65.11	65.11	65.11	161.17	161.21	161.21	161.21	223.71	223.71	223.71	223.71	254.62	254.61	254.62	254.61	391.89	391.85	391.86	391.85
200160	39	38.99	38.99	38.99	94.42	94.43	94.43	94.43	115.68	115.68	115.68	115.68	126.5	126.5	126.5	126.5	179.78	179.78	179.78	179.78
200170	31.77	31.77	31.77	31.77	63.73	63.75	63.75	63.75	83.22	83.22	83.22	83.22	92.82	92.82	92.82	92.82	144.36	144.36	144.36	144.36
200180	23.86	23.86	23.86	23.86	52.6	52.6	52.6	52.6	69.14	69.14	69.14	69.14	77.38	77.38	77.38	77.38	130.09	130.09	130.09	130.09
200200	46.54	43.56	38.71	38.71	56.84	54.84	50.65	50.65	56.88	55.31	51.67	51.67	56.08	54.72	51.45	51.45	49.54	48.92	46.69	46.6
200210	54.27	50.48	44.34	44.34	115.25	126.36	128.67	124.62	149.2	166.39	166.97	165.17	166.53	186.53	186.35	186.09	243.32	280.63	274.47	282.8
200220	40.4	37.54	34.91	34.91	114.12	125.17	127.45	123.41	147.83	165.02	165.61	163.8	165	185.01	184.83	184.57	241.32	278.66	272.44	280.82
200230	41.59	38.49	35.67	35.67	119.33	133.85	137.65	132.51	139	156.51	158.79	156.4	148.23	172.99	173.27	172.92	216.56	254.79	248.27	256.99
200240	0	0	0	0	0.29	0.29	0.29	0.29	0.52	0.52	0.52	0.52	0.65	0.65	0.65	0.65	1.2	1.2	1.2	1.2
200250	7.41	7.41	7.41	7.41	13.51	13.51	13.51	13.51	16.97	16.97	16.97	16.97	18.69	18.69	18.69	18.69	27.81	27.81	27.81	27.81
200260	4.75	4.75	4.75	4.75	7.75	8.19	8.8	8.8	7.94	8.47	9.37	9.37	7.91	8.44	9.37	9.37	6.57	7.02	8.01	8.01
200270	11.34	11.34	11.34	11.34	20.59	20.59	20.59	20.59	25.84	25.84	25.84	25.84	28.46	28.46	28.46	28.46	42.32	42.32	42.32	42.32
200280	46.83	46.83	36.24	36.24	161.95	190.15	195.87	185.47	229.6	277.13	278.23	273.53	262.19	318.62	316.63	316.35	403.82	507.41	481.84	510.61
200300	3.7	3.7	3.7	3.7	6.96	6.96	6.96	6.96	8.8	8.8	8.8	8.8	9.71	9.71	9.71	9.71	14.53	14.53	14.53	14.53
200310	6.57	6.57	6.57	6.57	63.23	64.01	64.43	63.56	87.82	89.76	89.86	89.54	100.87	102.84	102.81	102.68	170.85	171.85	171.59	171.9
200320	10.54	9.77	8.9	8.9	55.83	55.94	56.5	55.88	55.65	55.74	55.75	55.69	56	55.8	55.55	55.5	60.75	60.77	59.86	59.69
200330	40.08	40.08	40.08	40.08	73.97	73.97	73.97	73.97	93.14	93.14	93.14	93.14	110.61	110.03	110.58	110.07	188.56	187.28	187.95	187.24
200400	14.94	14.94	14.94	14.94	47.79	47.78	47.86	47.73	56.38	56.04	55.96	56.21	59.12	58.71	58.63	58.91	73.19	72.7	72.51	72.81
200410	66.3	66.3	66.3	66.3	122.5	122.5	122.5	122.5	154.05	154.05	154.05	154.05	169.49	169.49	169.5	169.5	247.48	247.49	247.5	247.5
200420	13.25	13.25	13.25	13.25	37.35	37.29	37.28	37.35	54.35	53.92	53.76	53.99	56.05	55.57	55.38	55.62	46.6	46.45	46.46	46.49
200430	20.02	20.02	20.02	20.02	38.47	38.4	38.34	38.43	74.42	74.24	74.24	74.24	96.98	96.68	96.66	96.67	137.97	137.8	137.71	137.78
200440	11.14	11.14	11.14	11.14	30.76	30.71	30.59	30.75	31.33	31.4	31.37	31.45	31.75	31.66	31.63	31.66	30.25	30.28	30.26	30.3
200450	30.92	30.92	30.92	30.92	57.92	57.92	57.92	57.92	79.79	79.68	79.67	79.67	104.46	104.38	104.37	104.38	163.17	163.19	163.16	163.22
200460	12.55	12.55	12.55	12.55	39.1	39.07	39.02	39.09	65.32	65.28	65.25	65.3	73.54	73.54	73.52	73.55	91.3	91.33	91.33	91.35
200470	35.89	35.89	35.89	35.89	112.08	112.09	112.09	112.09	172.19	172.17	172.17	172.16	204.14	204.13	204.12	204.12	346.88	346.87	346.87	346.86
200480	4.68	4.68	4.68	4.68	13.85	13.85	13.85	13.84	18.27	18.26	18.26	18.26	19.73	19.72	19.72	19.72	22.62	22.62	22.62	22.62
200490	15.93	15.93	15.93	15.93	30.06	30.06	30.06	30.06	38.03	38.03	38.03	38.03	49.26	49.22	49.23	49.21	101.1	101.08	101.07	101.08
200500	25.01	25.01	25.01	25.01	40.44	40.44	40.44	40.44	50.91	50.91	50.91	50.91	56.12	56.12	56.12	56.12	83.68	83.68	83.68	83.68
200600	15.87	15.88	15.88	15.88	27.55	27.53	27.54	27.54	32.89	32.89	32.89	32.89	36.11	35.98	35.94	35.99	42.75	42.8	42.78	42.83
200610	115.74	115.76	115.76	115.76	295.72	295.78	295.77	295.77	391.51	391.5	391.48	391.48	438.53	438.51	438.49	438.49	659.7	659.65	659.62	659.6
200620	14.53	14.53	14.53	14.53	35.03	35.04	35.04	35.04	43.57	43.57	43.58	43.58	48.94	48.94	48.94	48.94	57.61	57.61	57.61	57.61
200630	40.06	40.07	40.07	40.07	97.6	97.6	97.6	97.6	121.09	121.1	121.1	121.1	135.88	135.88	135.88	135.88	157.89	157.89	157.89	157.89
200640	73.78	73.81	73.81	73.81	194	194.03	194.03	194.03	254.55	254.55	254.55	254.55	284.19	284.19	284.19	284.19	439.36	439.36	439.36	439.36
200650	9.92	9.92	9.92	9.92	13.55	13.54	13.54	13.54	17.53	17.53	17.52	17.53	16.56	16.56	16.56	16.56	14.92	14.92	14.92	14.92
201010	195.83	195.85	195.85	195.85	349.91	349.92	349.92	349.92	436.15	436.15	436.15	436.15	479.44	479.44	479.44	479.44	709.04	709.04	709.04	709.04
201020	114.69	114.73	114.73	114.73	217.59	217.61	217.61	217.61	275.49	275.49	275.49	275.49	303.71	303.71	303.71	303.71	453.01	453.01	453.01	453.01
201030	28.16	28.16	28.16	28.16	51.04	51.04	51.04	51.04	63.38	63.38	63.38	63.38	69.25	69.25	69.25	69.25	97.16	97.16	97.15	97.15
201040	22.49	22.5	22.5	22.5	34.03	34.03	34.03	34.03	37.79	37.79	37.79	37.79	39.43	39.43	39.43	39.43	45.52	45.52	45.52	45.52
201050	53.89	53.89	53.89	53.89	80.62	80.62	80.62	80.62	90.62	90.62	90.62	90.62	94.89	94.89	94.89	94.89	112.58	112.58	112.58	112.58
201060	53.96	53.96	53.96	53.96	80.63	80.63	80.63	80.63	90.61	90.61	90.61	90.61	94.86	94.86	94.86	94.86	112.45	112.45	112.45	112.45
201070	78.85	78.85	78.85	78.85	126.26	126.26	126.26	126.26	146.03	146.03	146.03	146.03	155.64	155.64	155.64	155.64	201.74	201.74	201.74	201.74
201080	67.09	67.1	67.1	67.1	93.77	93.77	93.77	93.77	108.09	108.09	108.09	108.09	116.56	116.56	116.56	116.56	158.71	158.71	158.71	158.71
201090	48.45	48.45	48.45	48.45	60.62	60.62	60.62	60.62	65.76	65.8	65.81	65.79	68.5	68.53	68.54	68.53	76.53	76.54	76.52	76.54
201100	47.54	47.54	47.54	47.54	59.77	59.77	59.79	59.77	65.75	65.79	65.8	65.78	68.49	68.52	68.52	68.51	83.61	83.63	83.6	83.63
201110	98.39	98.4	98.4	98.4	211.37	211.37	211.37	211.37	270.05	270.05	270.05	270.05	298.3	298.3	298.3	298.3	461.31	461.31	461.31	461.31

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Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
201120	22.2	22.2	22.2	22.2	44.01	44.01	44.01	44.01	52.41	52.41	52.41	52.41	63.58	63.72	63.77	63.7	159.35	159.45	159.48	159.46
201130	18.34	18.35	18.35	18.35	31.41	31.41	31.41	31.41	45.97	46.44	46.56	46.35	58.68	59.15	59.21	59.11	135.67	135.91	135.91	135.93
201140	29.74	29.76	29.76	29.76	63.24	63.24	63.24	63.24	82.61	82.61	82.61	82.61	92.14	92.14	92.14	92.14	136.16	136.4	136.4	136.42
201150	11.49	11.49	11.49	11.49	32.94	32.95	32.95	32.95	40.9	40.9	40.9	40.9	45.38	45.38	45.38	45.38	48.95	48.96	48.96	48.97
201160	8.57	8.58	8.58	8.58	30.57	30.57	30.57	30.57	40.96	40.96	40.96	40.96	45.43	45.43	45.43	45.43	49.57	49.57	49.58	49.58
201170	12.07	12.07	12.07	12.07	33.1	33.1	33.1	33.1	47.45	47.45	47.45	47.45	54.18	54.18	54.18	54.18	101.57	101.57	101.57	101.58
201180	8.61	8.61	8.61	8.61	30.97	30.98	30.98	30.98	44.91	44.91	44.91	44.91	51.61	51.61	51.61	51.61	99.04	99.04	99.04	99.04
201190	39.97	39.97	39.97	39.97	80.43	80.43	80.43	80.43	103.33	103.33	103.33	103.33	114.72	114.72	114.72	114.72	200.97	200.97	200.97	200.97
201200	110.8	110.83	110.83	110.83	209.22	209.23	209.23	209.23	264.36	264.36	264.36	264.36	291.9	291.9	291.9	291.9	428.75	428.75	428.75	428.75
201210	51.4	51.41	51.41	51.41	86.75	86.76	86.76	86.76	104.34	104.34	104.34	104.34	112.48	112.48	112.48	112.48	150.38	150.38	150.38	150.38
201220	38.58	38.59	38.59	38.59	57.04	57.04	57.04	57.04	63.33	63.33	63.33	63.33	65.74	65.74	65.74	65.74	75.95	77	76.97	77.08
201230	40.22	40.23	40.23	40.23	69.52	69.53	69.53	69.53	86.53	86.53	86.53	86.53	94.37	94.37	94.37	94.37	132.97	132.97	132.97	132.97
201240	6.68	6.68	6.68	6.68	11.16	11.16	11.16	11.16	12.48	12.48	12.48	12.48	15.35	21.27	21.45	20.97	42.16	43.09	42.96	43.14
201250	7.1	7.1	7.1	7.1	13.44	13.44	13.44	13.44	16.75	16.75	16.75	16.75	18.49	21.48	21.66	21.18	42.34	43.37	43.21	43.42
201260	0.47	0.47	0.47	0.47	1.35	1.35	1.35	1.35	1.77	1.8	1.8	1.8	1.89	1.89	1.89	1.89	2.64	2.64	2.64	2.64
201270	17.55	17.55	17.55	17.55	32.76	32.76	32.76	32.76	41.35	41.35	41.35	41.35	45.63	45.63	45.63	45.63	68.21	68.21	68.21	68.21
201280	17.03	17.03	17.03	17.03	20.19	20.19	20.19	20.19	22.17	22.51	22.52	22.49	22.76	22.93	22.93	22.93	21.89	22.39	22.31	22.42
201290	36.56	36.56	36.56	36.56	64.59	64.58	64.58	64.58	78.36	78.36	78.36	78.36	85.04	85.04	85.04	85.04	117.5	117.5	117.5	117.5
201300	3.4	3.4	3.4	3.4	4.57	4.57	4.57	4.57	5.21	5.21	5.21	5.21	6.08	7.72	7.84	7.51	21.86	22.45	22.37	22.48
201310	20.21	20.21	20.21	20.21	37.72	37.72	37.72	37.72	47.61	47.61	47.61	47.61	52.54	52.54	52.54	52.54	78.53	78.53	78.53	78.53
201400	94.49	94.49	94.49	94.49	167.59	167.59	167.59	167.59	209.05	209.05	209.05	209.05	230.09	230.09	230.09	230.09	334.12	334.12	334.12	334.12
201410	51.4	51.4	51.4	51.4	69.73	69.73	69.73	69.73	76.9	76.9	76.9	76.9	79.92	79.92	79.92	79.92	93.35	93.35	93.35	93.35
201420	19.87	19.87	19.87	19.87	22.84	22.84	22.84	22.84	23.63	23.63	23.63	23.63	23.95	23.95	23.95	23.95	25.49	25.49	25.49	25.49
201430	0.66	0.66	0.66	0.66	2.1	2.1	2.1	2.1	2.9	2.9	2.9	2.9	3.65	3.65	3.65	3.65	8.31	8.31	8.31	8.31
201440	24.5	24.5	24.5	24.5	45.54	45.54	45.54	45.54	57.43	57.43	57.43	57.43	63.35	63.35	63.35	63.35	94.62	94.62	94.62	94.62
201450	24.95	24.97	24.97	24.97	47.52	47.52	47.52	47.52	57.65	57.65	57.65	57.65	62.34	62.34	62.34	62.34	84.78	84.78	84.78	84.78
201460	25.19	25.21	25.21	25.21	52.72	52.73	52.73	52.73	68.11	68.11	68.11	68.11	75.13	75.13	75.13	75.13	108.25	108.25	108.25	108.25
201470	6.08	6.08	6.08	6.08	28.77	28.77	28.77	28.77	33.7	33.7	33.7	33.7	35.17	35.17	35.17	35.17	46	46	46	46
201480	17.04	17.04	17.04	17.04	35.87	35.87	35.87	35.87	46.58	46.58	46.58	46.58	51.9	51.9	51.9	51.9	79.85	79.85	79.85	79.85
201490	36.08	36.08	36.08	36.08	74.67	74.67	74.67	74.67	96.29	96.29	96.29	96.29	107.03	107.03	107.03	107.03	163.27	163.27	163.27	163.27
201500	2.83	2.83	2.83	2.83	4.34	4.34	4.34	4.34	5.22	5.22	5.22	5.22	5.67	5.67	5.67	5.67	10.62	10.62	10.62	10.62
201510	6.77	6.77	6.77	6.77	13.46	13.46	13.46	13.46	17.23	17.23	17.23	17.23	19.1	19.1	19.1	19.1	28.96	28.96	28.96	28.96
201600	26.58	26.62	26.62	26.62	51.95	51.94	51.94	51.94	64.21	64.21	64.21	64.21	70.92	70.92	70.92	70.92	111.42	111.42	111.42	111.42
201610	48.06	48.06	48.06	48.06	113.95	113.94	113.94	113.94	138.5	138.5	138.5	138.5	149.45	149.45	149.45	149.45	226.6	226.6	226.6	226.6
201620	48.43	48.43	48.43	48.43	99.95	99.95	99.95	99.95	127.83	127.83	127.83	127.83	140.75	140.75	140.75	140.75	206.32	206.32	206.32	206.32
201630	2.99	2.99	2.99	2.99	5.9	5.9	5.9	5.9	7.37	7.37	7.37	7.37	7.99	7.99	7.99	7.99	18.9	18.99	18.9	18.97
201640	48.07	48.07	48.07	48.07	91.35	91.35	91.35	91.35	115.8	115.8	115.8	115.8	127.97	127.97	127.97	127.97	192.11	192.11	192.11	192.11
201650	15.14	15.14	15.14	15.14	18.6	18.6	18.6	18.6	23.38	23.38	23.38	23.38	25.76	25.76	25.76	25.76	38.36	38.36	38.36	38.36
201660	4.5	4.5	4.5	4.5	4.64	4.64	4.64	4.64	4.67	4.67	4.67	4.67	5.54	5.55	5.56	5.56	6.63	6.42	6.44	6.43
201670	23.62	23.62	23.62	23.62	46.23	46.23	46.23	46.23	58.97	58.97	58.97	58.97	65.31	65.31	65.31	65.31	99.62	99.62	99.62	99.62
201700	33.58	33.58	33.58	33.58	65.6	65.6	65.6	65.6	82.11	82.11	82.11	82.11	89.9	89.9	89.9	89.9	129	129	129	129
201710	42.41	42.41	42.41	42.41	80.12	80.12	80.12	80.12	101.4	101.4	101.4	101.4	112	112	112	112	167.84	167.84	167.84	167.84
201720	13.24	13.25	13.25	13.25	16.59	16.58	16.58	16.58	16.01	16.01	16.01	16.01	16.36	16.36	16.36	16.36	18.08	18.07	18.08	18.07
201730	13.33	13.34	13.34	13.34	19.99	20	20	20	23.96	23.96	23.96	23.96	25.49	25.49	25.49	25.49	28.27	28.27	28.27	28.27
201740	14.41	14.42	14.42	14.42	25.94	25.95	25.95	25.95	42.48	42.39	42.4	42.38	49.59	49.48	49.49	49.47	66.85	66.79	66.8	66.78
201750	24.58	24.6	24.6	24.6	41.46	41.46	41.46	41.46	59.01	59.01	59.01	59.01	69.76	69.75	69.75	69.75	107.5	107.48	107.49	107.48
201760	4.76	4.76	4.76	4.76	3.43	3.43	3.43	3.43	3.23	3.23	3.23	3.23	3.22	3.22	3.22	3.22	4.31	4.31	4.31	4.31
201770	42.36	42.34	42.34	42.34	59.6	59.62	59.62	59.62	82.55	82.55	82.55	82.55	92.56	92.56	92.56	92.56	145.86	145.86	145.86	145.86
201780	70.05	70.11	70.11	70.11	230.6	230.65	230.65	230.65	326.61	326.61	326.61	326.61	381.71	381.71	381.71	381.71	647.84	647.84	647.84	647.84
201900	33.49	33.52	33.52	33.52	45.29	45.3	45.3	45.3	73.49	73.48	73.48	73.48	85.72	85.66	85.67	85.66	113.31	113.25	113.26	113.24
201910	25.71	25.72	25.72	25.72	46.19	46.2	46.2	46.2	75.56	75.55	75.55	75.54	88.77	88.72	88.73	88.72	121.74	121.69	121.7	121.69
201920	47.58	47.58	47.58	47.58	110.91	110.91	110.91	110.91	156.07	156.07	156.07	156.07	177.59	177.59	177.59	177.59	285.34	285.34	285.34	285.34
201930	7.07	7.07	7.07	7.07	12	12	12	12	12.76	12.76	12.76	12.76	12.92	12.92	12.92	12.92	13.19	13.19	13.19	13.19
201940	24.35	24.35	24.35	24.35	47.93	47.93	47.93	47.93	61.25	61.25	61.25	61.25	67.88	67.88	67.88	67.88	102.73	102.73	102.73	102.73
201950	23.2	23.21	23.21	23.21	56.34	56.35	56.35	56.35	76.21	76.21	76.21	76.21	86.47	86.47	86.47	86.47	128.82	128.82	128.82	128.82
201952	20.37	20.39	20.39	20.39	30.57	30.57	30.57	30.57	35.41	35.41	35.41	35.41	37.68	37.68	37.68	37.68	45.31	45.31	45.31	45.31
201954	18.64	18.65	18.65	18.65	25.12	25.13	25.13	25.13	27.94	27.94	27.94	27.94	29.38	29.38	29.38	29.38	41.59	41.59	41.59	41.59
201960	3.94	3.94	3.94	3.94	6.36	6.37	6.37	6.37	8.26	8.26	8.26	8.26	8.92	8.92	8.92	8.92	11.31	11.31	11.31	11.31
201970	15.9	15.9	15.9	15.9	30.03	30.03	30.03	30.03	38	38	38	38	41.97	41.97	41.97	41.97	62.89	62.89	62.89	62.89
201980	38.56	38.56	38.56	38.56	79.28	79.28	79.28	79.28	102.38	102.38	102.38	102.38	113.87	113.87	113.87	113.87	174.22	174.22	174.22	174.22
202010	83.59	83.59	83.59	83.59	158.58	158.58	158.58	158.58	200.89	200.89	200.89	200.89	221.95	221.95	221.95	221.95	332.93	332.93	332.93	332.93
202110	213.01	213.02	213.02	213.02	409.92	409.92	409.92	409.92	517.6	517.6	517.6	517.6	570.84	570.84	570.84	570.84	853.07	853.07	853.07	853.07
210010	626.02	623.08	621.47	628.45	908.2	909.37	911.23	917.03	1013.92	1018.8	1024.66	1026.32	1061.69	1066.23	1075.17	1074.58	1381.33	1367.96	1365.02	1373.9
210020	643.75	642.6	639.02	647.74	920.65	923.49	926.44	931.48	1023.44	1029.51	1037.07	1037.13	1107.13	1099.57	1091.82	1101.63	1507.25	1505.56	1495.6	1505.48
210028	573.43	573.43	570.71	577.93	806.25	809.68	812.95	817.75	896.38	904.04	911.76	911.51	938.52	946.02	956.57	953.87	1115.79	1126.03	1148.78	1133.49
210030	664.3	663.42	658.63	673.83	980.58	975.74	979.29	991.96	1070.18	1076.48	1089.09	1089.8	1109.96	1122.99	1141.74	1135.68	1271.39	1321.4	1376.64	1329.54
210040	659.17	658.27	654.74	669.82	971.72	966.96	971.91	984.37	1059.88	1066.37	1080.45	1081.03	1098.62	1112.75	1132.93	1126.73	1257.66	1308.7	1369.48	1317.81
210050	694.03	699.68	696.68	704.42	1192.02	1220.58	1219.69	1224.16	1369.63	1397.65	1399.88	1402.21	1446.11	1470.9	1474.73	1475.6	1834.25	1833.92	1862.47	1840.97
210060	689.26	695.63	692.89	700.49	1183.28	1211.57	1211.22	1215.68	1359.72	1387.51	1390.46	1392.69	1430.7	1460.1	1464.6	1465.43	1702.17	1709.66	1732.18	1715.33
210070	694.91	699.59	697.93	704.27	1221.26	1248.2	1247.66	1251.68	1402.19	1430.13	1432.33	1434.72	1475.24	1505.31	1508.96	1510.15	1843.76	1843.31	1859.92	1847.07
210080	473.64	477.65	476.77	480.46	850.32	868.21	867.67	870.32	984.07	1001.48	1002.6	1004.27	1049.24	1062.36	1064.93	1065.01	1333.32	1332.71	1344.19	1335.28
210085	238.55	241.7	239.28	240.57	377.61	385.89	383.81	385.85	412.08	423.15	421.56	423.54	425.06	437.96	436.82	438.62	530.92	533.2	536.29	534.24
210090	711.56	721.44	716.42	721.73	1240.14	1269.29	1265.9	1270.59	1409.51	1444.21	1442.46	1446.29	1477.41	1514.64	1513.34	1517.07	1848.4	1854.26	1866.49	1857.44
210100	707.42	717.06	712.06	717.19	1222.06	1251.29	1247.99	1252.68	1388.07	1422.48	1420.95	1424.69	1469.06	1497.62	1498.2	1500.54	1840.61	1846.23	1858.54	1849.41
210110	707	714.47	709.75	713.24	1260.23	1275.62	1273.44	1276.05	1476.92	1494.19	1492.87	1494.98	1561.76	1580.32	1579.26	1581.32	1891.79	1911.65	1911.76	1913.09
210120	727.23	728.9	727.83	728.02	1302.18	1305.08	1303.43	1304.93	1502.54	1514.32	1512.77	1514.85	1587.87	1600.64	1599.32	1601.37	1935.58	1949.73	1950.35	1950.91
210130	742.46	743.2	743.05	743.13	1375.62	1377.31	1376.53	1377.24	1588.79	1590.98	1589.95	1590.98	1661.02	1663.35	1662.19	1663.41	1926.79	1929.83	1929.35	1930.04
210140	713.8	714.42	714.34	714.39	1324.55	1325.93	1325.38	1325.88	1543.67	1545.4	1544.81	1545.43	1620.65	1622.58	1622.03	1622.66	1894.84	1898.05	1897.57	1898.26
210150	728.03	728.6	728.57	728.59	1391.21	1391.76	1391.59	1391.74	1690.82	1691.06	1690.97	1691.07	1817.08	1817.4	1817.24	1817.41	2289.24	2289.93	2289.62	2289.95
210160	684.02	684.5	684.49	684.5	1241.76	1242.1	1241.99	1242.09	1487.8	1487.91	1487.85	1487.91	1586.91	1587.02	1586.97	1587.02	1954.34	1954.66	1954.48	1954.66
210170	646.14	646.57	646.57	646.57	1177.48	1177.72	1177.68	1177.71	1406.61	1406.68	1406.65	1406.68	1494.85	1494.92	1494.88	1494.92	1795.58	1795.88	1795.73	1795.88
210180	617.09	617.5	617.5	617.5	1100.62	1100.81	1100.79	1100.81	1327.55	1327.59	1327.57	1327.59	1415.22	1415.26	1415.24	1415.26	1743.48	1743.67	1743.56	1743.67
210185	610.64	611.03	611.03	611.03	1085.93	1086.06	1086.05	1086.06	1306.61	1306.62	1306.61	1306.62	1388.24	1388.26	1388.24	1388.26	1723.73	1723.78	1723.75	1723.78
210190	582.23	582.6	582.6	582.6	1012.14	1012.27	1012.27	1012.27	1196.35	1196.37	1196.35	1196.36	1270.35	1270.36	1270.35	1270.36	1558.38	1558.42	1558.39	1558.42
210200	577.34	577.71	577.71	577.71	1008.5	1008.63	1008.63	1008.63	1194.12	1194.13	1194.12	1194.12	1273.98	1273.99	1273.98	1273.99	1622.19	1622.21	1622.2	1622.21
210210	383.94	384.18	384.18	384.18	738.92	739.02	739.02	739.02	883.64	883.65	883.64	883.65	943.18	943.18	943.18	943.18	1174.36	1174.39	1174.37	1174.39
210220	379.96	380.2	380.2	380.2	729.94	730.03	730.03	730.03	870.86	870.86	870.86	870.86	928.56	928.56	928.56	928.56	1155.84	1155.87	1155.85	1155.87
210230	368.98	369.22	369.22	369.22	705.03	705.14	705.13	705.14	834.51	834.51	834.51	834.51	886.41	886.42	886.42	886.42	1106.7	1106.72	1106.71	1106.72
210240	238.27	238.44	238.44	238.44	497.85	497.95	497.95	497.95	605.98	605.98	605.98	605.98	652.45	652.45	652.45	652.45	846.17	846.17	846.17	846.17
210250	226.93	227.09	227.09	227.09	463.6	463.67	463.67	463.67	555.15	555.15	555.15	555.15	591.61	591.61	591.61	591.61	754.9	754.9	754.9	754.9
210260	184.43	184.54	184.54	184.54	355.28	355.33	355.33	355.33	424.15	424.15	424.15	424.15	456.83	456.83	456.83	456.83	637.77	637.78	637.78	637.78
210270	184.21	184.33	184.33	184.33	355.53	355.57	355.57	355.57	423.91	423.91	423.91	423.91	458.05	458.05	458.05	458.05	631.03	631.03	631.03	631.03
210280	194.04	194.12	194.12	194.12	353.92	353.93	353.93	353.93	403.4	403.4	403.4	403.4	435.15	435.16	435.16	435.16	606.87	606.88	606.88	606.88
210290	152.74	152.78	152.78	152.78	273.32	273.36	273.36	273.36	343.95	343.95	343.95	343.95	378.32	378.32	378.32	378.32	542.1	542.1	542.1	542.1
210300	151.49	151.53	151.53	151.53	266.03	266.07	266.07	266.07	328.04	328.04	328.04	328.04	360.1	360.1	360.1	360.1	593.22	593.22	593.22	593.22
210310	148.32	148.36	148.36	148.36	259.2	259.23	259.23	259.23	316.78	316.78	316.78	316.78	344.18	344.18	344.18	344.18	485.4	485.4	485.4	485.4

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Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
210320	148.07	148.1	148.1	148.1	258.6	258.64	258.64	258.64	315.02	315.02	315.02	315.02	342.28	342.28	342.28	342.28	481.68	481.68	481.69	481.68
210330	146.35	146.39	146.39	146.39	255.71	255.74	255.74	255.74	309.94	309.94	309.94	309.94	337.18	337.18	337.18	337.18	456.93	456.93	456.93	456.93
210340	128.61	128.64	128.64	128.64	220.97	220.99	220.99	220.99	272.43	272.43	272.43	272.43	296.57	296.57	296.57	296.57	417.86	417.86	417.86	417.86
210350	145.53	145.56	145.56	145.56	233.03	233.05	233.05	233.05	273.39	273.39	273.39	273.39	293.56	293.56	293.56	293.56	399.11	399.11	399.11	399.11
210360	161.2	161.25	161.25	161.25	281.57	281.57	281.57	281.57	338.44	338.44	338.44	338.44	365.81	365.81	365.81	365.81	502.27	502.27	502.27	502.27
210370	103.5	103.51	103.51	103.51	174.11	174.12	174.12	174.12	212.26	212.26	212.26	212.26	229.99	229.99	229.99	229.99	302.5	302.5	302.5	302.5
210380	188.89	188.9	188.9	188.9	369.56	369.57	369.57	369.57	455.99	455.99	455.99	455.99	497.2	497.2	497.2	497.2	699.61	699.61	699.61	699.61
210390	152.6	152.66	152.66	152.66	384.11	384.17	384.17	384.17	528.6	528.6	528.6	528.6	600.49	600.49	600.49	600.49	984.07	984.07	984.07	984.07
210400	121.3	121.32	121.32	121.32	210.27	210.29	210.29	210.29	243.48	243.48	243.48	243.48	259.94	259.94	259.94	259.94	323.8	323.8	323.8	323.8
210410	117.21	117.23	117.23	117.23	206.25	206.27	206.27	206.27	239.25	239.25	239.25	239.25	255.43	255.43	255.43	255.43	314.14	314.14	314.14	314.14
210420	109.68	109.7	109.7	109.7	176.94	176.95	176.95	176.95	204.32	204.32	204.32	204.32	220.13	220.13	220.13	220.13	268.38	268.38	268.38	268.38
210430	109.28	109.3	109.3	109.3	176.25	176.26	176.26	176.26	202.12	202.12	202.12	202.12	216.45	216.45	216.45	216.45	263.65	263.65	263.65	263.65
210450	108.45	108.47	108.47	108.47	176.38	176.39	176.39	176.39	201.19	201.19	201.19	201.19	206.33	206.33	206.33	206.33	226.44	226.44	226.44	226.44
210460	110	110.02	110.02	110.02	179.55	179.56	179.56	179.56	205.31	205.31	205.31	205.31	212.7	212.7	212.7	212.7	315.8	315.8	315.8	315.8
210470	109.32	109.34	109.34	109.34	178.58	178.59	178.59	178.59	204.43	204.43	204.43	204.43	211.67	211.67	211.67	211.67	232.84	232.84	232.84	232.84
210480	108.68	108.69	108.69	108.69	165.08	165.08	165.08	165.08	164.71	164.71	164.71	164.71	164.18	164.18	164.18	164.18	161.2	161.2	161.2	161.2
210490	110.18	110.2	110.2	110.2	180.44	180.45	180.45	180.45	208.13	208.13	208.13	208.13	217.93	217.93	217.93	217.93	254.45	254.45	254.45	254.45
210500	67.86	67.88	67.88	67.88	119.99	120.01	120.01	120.01	140.87	140.87	140.87	140.87	144.83	144.83	144.83	144.83	162.42	162.42	162.42	162.42
210510	82.26	82.3	82.3	82.3	158.08	158.11	158.11	158.11	198.64	198.64	198.64	198.64	216.46	216.46	216.46	216.46	291.82	291.82	291.82	291.82
210520	65.55	65.56	65.56	65.56	97.07	97.08	97.08	97.08	110.92	110.92	110.92	110.92	116.99	116.99	116.99	116.99	150.75	150.75	150.75	150.75
210530	9.75	9.75	9.75	9.75	21.72	21.72	21.72	21.72	28.85	28.85	28.85	28.85	32.46	32.46	32.46	32.46	67.9	67.9	67.9	67.9
210540	9.73	9.74	9.74	9.74	21.67	21.68	21.68	21.68	28.79	28.79	28.79	28.79	32.47	32.47	32.47	32.47	68.47	68.47	68.47	68.47
210550	84.54	84.59	84.59	84.59	169.75	169.82	169.82	169.82	216.55	216.55	216.55	216.55	236	236	236	236	329.28	329.28	329.28	329.28
210560	31.03	31.06	31.06	31.06	70.02	70.07	70.07	70.07	90.33	90.33	90.33	90.33	97.7	97.7	97.7	97.7	137.6	137.6	137.6	137.6
210570	24.92	24.95	24.95	24.95	51.25	51.27	51.27	51.27	67.73	67.73	67.73	67.73	75.31	75.31	75.31	75.31	118.04	118.04	118.04	118.04
210580	11.6	11.6	11.6	11.6	38.48	38.48	38.48	38.48	61.54	61.54	61.54	61.54	73.11	73.11	73.11	73.11	128.3	128.3	128.3	128.3
210590	3.27	3.27	3.27	3.27	17.46	17.46	17.46	17.46	31.11	31.11	31.11	31.11	40.73	40.73	40.73	40.73	76.34	76.34	76.34	76.34
210600	93.33	93.33	93.33	93.33	291.82	291.84	291.84	291.84	426.03	426.03	426.03	426.03	497.46	497.46	497.46	497.46	860.44	860.44	860.44	860.44
210610	0.51	0.51	0.51	0.51	1.48	1.48	1.48	1.48	2.09	2.09	2.09	2.09	3.78	3.78	3.78	3.78	12.86	11.83	11.83	11.83
210620	56.59	56.59	56.59	56.59	141.4	141.4	141.4	141.4	195.86	195.86	195.86	195.86	224.96	224.96	224.96	224.96	366.25	366.25	366.25	366.25
210630	4.62	4.62	4.62	4.62	16.67	16.67	16.67	16.67	29.95	29.95	29.95	29.95	39.98	39.98	39.98	39.98	66.5	66.5	66.5	66.5
210640	0.42	0.42	0.42	0.42	9.6	9.6	9.6	9.6	24.57	24.57	24.57	24.57	30.8	30.8	30.8	30.8	79.51	79.51	79.51	79.51
210650	0	0	0	0	8.98	8.98	8.98	8.98	16.32	16.32	16.32	16.32	20.34	20.34	20.34	20.34	48.68	48.68	48.68	48.68
210660	4.39	4.39	4.39	4.39	8.84	8.84	8.84	8.84	10.1	10.1	10.1	10.1	14	14	14	14	33.52	33.52	33.52	33.52
210670	17.57	17.57	17.57	17.57	39.14	39.14	39.14	39.14	52.11	52.11	52.11	52.11	58.08	58.08	58.08	58.08	86.53	86.53	86.53	86.53
210680	16.52	16.52	16.52	16.52	31.42	31.42	31.42	31.42	39.82	39.82	39.82	39.82	44.01	44.01	44.01	44.01	66.03	66.03	66.03	66.03
210700	32.76	34	32.67	32.17	60.08	60.04	59.85	60.57	65.46	65.55	65.54	65.95	73.29	72.94	72	71.5	109.03	108.68	107.2	107.15
210710	42.68	43.11	42.32	42.22	81.44	82.3	81.68	81.34	101.61	102.56	102.05	101.56	111.48	112.32	111.85	111.43	161.33	161.43	160.94	160.49
210720	23.49	22.93	22.16	22.97	49.04	48.96	48.97	49.24	54.16	53.89	54.03	54.14	56.69	56.19	56.42	56.48	66.11	65.08	65.62	65.28
210730	67.44	66.74	64.33	64.33	140.56	140.13	137.94	137.94	178.98	178.93	177.18	177.18	197.81	197.83	196.33	196.36	293.4	293.19	292.19	292.86
210740	27.56	26.84	25.73	26.87	53.09	52.62	52.93	53.31	61.35	58.21	58.89	58.84	64.79	60.52	61.4	61.16	72.08	67.94	69.6	68.38
210750	52.92	52.98	46.54	46.54	100.69	102.87	95.77	95.77	127.47	130.12	122.61	122.61	141.12	144.02	136.16	136.16	212.26	215	205.96	211.69
210760	19.75	21.78	21.69	21.69	26.28	29.04	29.47	29.36	27.65	30.26	30.93	30.66	27.68	30.39	31.16	30.89	54.76	39.48	42.45	41.32
210770	19.92	22.08	22.17	22.17	26.69	29.31	30.21	30.21	29.7	33.53	34.89	34.89	31.06	35.37	36.86	36.86	55.05	42.69	44.36	44.24
210780	20.88	23.06	23.22	23.22	29.34	32.04	32.82	32.82	55.32	37.28	38.28	38.28	81.49	39.8	40.96	40.96	180.68	49.39	51.1	51.03
210790	39.8	39.8	41.34	41.34	77.29	77.29	80.28	80.28	98.43	98.43	102.25	102.25	108.95	108.95	113.17	113.17	170.5	164.3	170.65	170.65
210800	31	27.42	27.35	27.35	76	69.74	69.95	69.95	99.47	95.55	95.78	95.78	112.36	108.63	108.86	108.86	192.72	179.11	179.71	179.82
210810	64.21	63.71	61.88	67.31	131.18	130.27	131.16	134.68	171.6	177.26	181.7	181.17	197.16	203.22	209.68	207.84	319.15	328.72	343.78	333.95
210900	28.31	33.21	35.19	29.17	97.04	101.31	104.98	98.87	121.08	127.56	130.2	123.98	132.55	139.7	141.68	135.69	203.69	209.18	204.94	200.4
210910	1.59	2.61	1.48	1.48	3.08	4.37	3.54	3.13	4.24	5.48	3.95	4.02	4.01	7.11	4.99	5.19	8.59	11.39	9.43	9.16
210920	2.24	3.44	2.16	2.16	4.89	5.76	4.95	4.95	7.22	6.63	5.88	5.88	10.93	8.78	7.93	7.97	23.77	14.5	14.84	14.88
210930	1.35	2.55	1.31	1.31	2.73	3.72	3.1	2.77	7.18	4.26	4.49	4.27	10.91	4.61	5.09	5.02	23.75	7.88	7.75	8.44
210940	1.61	2.73	1.59	1.59	2.85	3.95	2.98	2.94	3.52	4.31	4.08	3.9	3.77	4.59	4.47	4.43	5.81	5.76	5.29	5.7
210950	2.55	3.26	2.55	2.55	3.27	4.28	3.44	3.45	3.83	4.71	4.05	4.06	4.03	4.86	4.41	4.38	5.92	5.74	5.41	5.64
210960	4.71	4.71	4.71	4.71	6.31	4.74	4.71	4.71	19.61	5.22	4.94	4.95	26.2	5.64	5.21	5.22	57.02	6.85	6.34	6.34
210970	67.52	67.52	58.96	58.96	123.84	123.84	109.05	109.05	155.75	155.75	137.39	137.39	174.51	171.66	151.51	151.51	278.74	255.73	226.08	226.08
210980	1.82	1.82	1.82	1.82	3.5	3.73	3.51	3.51	4.51	4.48	4.5	4.5	8.58	7.52	8.03	8.05	16.03	15.48	15.74	15.75
210990	9.06	9.03	9.03	9.03	9.06	9.03	9.03	9.03	9.44	9.44	9.44	9.44	10.43	10.43	10.43	10.43	49.64	49.32	49.39	49.3
211000	32.31	32.31	32.31	32.31	38.96	39	38.98	39	41.25	41.09	41.24	41.16	43.46	43.14	43.4	43.27	142.58	134.9	129.73	133.06
211010	71.05	71.06	71.06	71.06	124.62	124.62	124.62	124.62	152.59	152.59	152.59	152.59	166.3	166.29	166.3	166.29	237.25	237.27	237.25	237.27
211020	14.74	14.74	14.74	14.74	14.21	14.21	14.21	14.21	13.39	13.39	13.39	13.39	13.1	13.1	13.1	13.1	12.74	12.59	12.69	12.62
211030	26.49	26.49	26.49	26.49	49.76	49.76	49.76	49.76	62.89	62.89	62.89	62.89	69.67	69.67	69.67	69.67	106.14	106.14	106.14	106.14
211040	6.3	6.29	6.29	6.29	6.35	6.33	6.33	6.33	5.22	5.22	5.22	5.22	4.9	4.9	4.9	4.9	5.72	5.72	5.72	5.72
211050	3.83	3.83	3.83	3.83	4.34	4.34	4.34	4.34	5.32	5.32	5.32	5.32	5.65	5.65	5.65	5.65	6.82	6.82	6.82	6.82
211060	21	21	21	21	39.04	39.04	39.04	39.04	49.24	49.24	49.24	49.24	54.32	54.32	54.32	54.32	81.13	81.13	81.13	81.13
211070	18.69	18.69	18.69	18.69	35.13	35.13	35.13	35.13	44.41	44.41	44.41	44.41	49.03	49.03	49.03	49.03	73.4	73.4	73.4	73.4
211080	19.58	19.58	19.58	19.58	36.79	36.79	36.79	36.79	46.5	46.5	46.5	46.5	51.33	51.33	51.33	51.33	76.83	76.83	76.83	76.83
211100	61.38	61.39	61.39	61.39	128.52	128.52	128.52	128.52	165.86	165.86	165.86	165.86	184.12	184.12	184.12	184.12	287.45	287.49	287.63	287.51
211110	1.25	1.25	1.25	1.25	4.33	3.94	3.98	3.91	6.88	6.8	6.82	6.8	7.91	7.94	7.95	7.95	11.35	11.55	11.55	11.57
211120	24.24	24.24	24.24	24.24	48.18	48.18	48.18	48.18	61.69	61.69	61.69	61.69	68.4	68.4	68.4	68.4	103.69	103.69	103.69	103.69
211130	11.76	11.76	11.76	11.76	21.86	21.86	21.86	21.86	27.57	27.57	27.57	27.57	30.42	30.42	30.42	30.42	45.43	45.43	45.43	45.43
211140	24.53	24.53	24.53	24.53	61.31	61.67	61.37	61.65	79.22	79.22	79.22	79.22	89.69	89.69	89.69	89.69	143.35	143.35	143.35	143.35
211200	1.62	1.62	1.62	1.62	3.16	3.16	3.16	3.16	3.8	3.8	3.8	3.8	4.07	4.07	4.07	4.07	4.51	4.52	4.51	4.52
211210	24.84	24.84	24.84	24.84	49.98	49.98	49.98	49.98	64.27	64.27	64.27	64.27	71.48	71.48	71.48	71.48	108.26	108.26	108.26	108.26
211220	1.45	1.45	1.45	1.45	2.91	2.91	2.91	2.91	4.05	4.05	4.05	4.05	4.74	4.74	4.74	4.74	8.3	8.3	8.3	8.3
211230	5.16	5.16	5.16	5.16	9.66	9.66	9.66	9.66	12.2	12.2	12.2	12.2	13.47	13.47	13.47	13.47	20.15	20.15	20.15	20.15
211300	124.12	124.4	123.94	125.31	207.81	211.18	211.34	211.93	262.93	266.13	266.82	266.96	285.48	288.51	289.45	289.3	391.43	393.89	396.21	394.58
211310	117.63	118.1	117.74	118.73	197.32	200.64	200.67	201.21	251.72	256.73	256.66	257.14	282.7	287.88	287.76	288.25	493.92	495.16	495.08	495.31
211320	136.31	136.32	136.33	136.34	193.59	193.6	193.38	193.55	225.45	226.23	225.56	226.19	258.17	259.31	258.81	259.4	399.27	400.54	400.48	400.67
211330	117.33	117.35	117.35	117.35	177.08	177.12	177.03	177.11	216.67	216.86	216.6	216.81	234.32	234.55	234.3	234.52	317.98	318.18	318.08	318.19
211340	80.35	80.35	80.35	80.36	133.73	134.11	134.07	134.13	178.09	178.58	178.55	178.61	200.04	200.52	200.5	200.55	287.79	288.34	288.36	288.38
211350	80.76	80.77	80.77	80.77	134.57	134.77	134.74	134.78	179.96	180.18	180.15	180.19	202.34	202.53	202.51	202.54	294.4	294.71	294.7	294.73
211360	77.24	77.26	77.25	77.25	130.76	130.94	130.91	130.94	176.89	177.09	177.06	177.1	199.33	199.5	199.49	199.51	291.37	291.67	291.66	291.69
211370	97.19	97.2	97.2	97.2	201.29	201.29	201.29	201.29	260.22	260.22	260.22	260.22	289.12	289.12	289.12	289.12	453.09	453.09	453.09	453.09
211380	52.75	52.76	52.76	52.76	100.52	100.53	100.53	100.53	127.72	127.72	127.72	127.72	139.28	139.28	139.28	139.28	170.46	170.48	170.47	170.48
211390	61.55	61.55	61.55	61.55	138.45	138.45	138.45	138.45	182.97	182.97	182.97	182.97	201.23	201.23	201.23	201.23	293.43	293.43	293.43	293.43
211400	44.03	44.03	44.03	44.03	94.32	94.32	94.32	94.32	124.47	124.47	124.47	124.47	135.57	135.57	135.57	135.57	178.3	178.3	178.3	178.3
211410	45.02	45.01	45.01	45.01	95.48	95.48	95.48	95.48	125.47	125.47	125.47	125.47	136.53	136.53	136.53	136.53	179.34	179.34	179.34	179.34
211420	46.22	46.22	46.22	46.22	96.58	96.58	96.58	96.58	126.46	126.46	126.46	126.46	137.44	137.44	137.44	137.44	180.27	180.27	180.27	180.27
211430	31.28	31.28	31.28	31.28	65.5	65.5	65.5	65.5	76.56	76.56	76.56	76.56	80.9	80.9	80.9	80.9	109.19	109.19	109.19	109.19
211440	8.75	8.75	8.75	8.75	8.85	8.85	8.85	8.85	8.78	8.78	8.78	8.78	8.6	8.6	8.6	8.6	8.29	8.29	8.29	8.29
211450	46.73	46.73	46.73	46.73	90.88	90.88	90.88	90.88	115.79	115.79	115.79	115.79	128.18	128.18	128.18	128.18	193.38	193.38	193.38	193.38
211460	16.92	16.99	16.99	16.99	40.26	40.34	40.34	40.34	47.57	47.61	47.57	47.6	48.67	48.71	48.67	48.71	57.72	57.8	57.76	57.81
211470	11.94	11.94	11.94	11.94	26.69	26.75	26.75	26.75	32.58	32.59	32.58	32.59	34.53	34.55	34.53	34.55	35.34	35.44	35.35	35.44
211475	19.75	19.75	19.75	19.75	38.56	38.56	38.56	38.56	49.17	49.17	49.17	49.17	54.44	54.44	54.44	54.44	82.2	82.2	82.2	82.2
211480	11.48	11.48	11.48	11.48	26.23	26.23	26.23	26.23	33.67	33.68	33.67	33.68	37.07	37.07	37.07	37.07	67.73	67.73	67.73	67.73

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Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
211490	3.96	3.96	3.96	3.96	4.51	4.51	4.51	4.51	5.24	5.24	5.24	5.24	5.53	5.53	5.53	5.53	6.67	6.67	6.67	6.67
211500	4.76	4.76	4.76	4.76	8.98	8.98	8.98	8.98	11.35	11.35	11.35	11.35	12.53	12.53	12.53	12.53	18.77	18.77	18.77	18.77
211510	1.15	1.15	1.15	1.15	2.2	2.2	2.2	2.2	2.71	2.71	2.71	2.71	2.94	2.94	2.94	2.94	5.92	5.92	5.92	5.92
211520	3.11	3.11	3.11	3.11	5.85	5.85	5.85	5.85	7.39	7.39	7.39	7.39	8.16	8.16	8.16	8.16	12.21	12.21	12.21	12.21
211530	4.13	4.13	4.13	4.13	7.76	7.76	7.76	7.76	9.8	9.8	9.8	9.8	10.82	10.82	10.82	10.82	16.2	16.2	16.2	16.2
211540	25.61	25.72	25.72	25.72	34.39	34.52	34.51	34.51	39.27	39.27	39.27	39.27	41.67	41.69	41.66	41.69	40.45	40.63	40.48	40.62
211550	26.14	26.21	26.21	26.21	35.48	35.54	35.53	35.54	40.41	40.42	40.41	40.41	43.09	43.09	43.09	43.09	58.13	58.16	58.14	58.16
211560	14.71	14.75	14.75	14.75	14.38	14.36	14.35	14.35	14.94	14.94	14.94	14.94	16.46	16.46	16.46	16.46	24.49	24.49	24.49	24.49
211570	12.16	12.18	12.18	12.18	12.41	12.39	12.38	12.39	12.23	12.23	12.22	12.22	12.41	12.41	12.4	12.41	9.05	9.09	9.04	9.09
211580	2.76	2.77	2.77	2.77	7.54	7.54	7.54	7.54	9.03	9.03	9.02	9.03	8.79	8.79	8.79	8.79	6.63	6.66	6.62	6.66
211590	2.43	2.43	2.43	2.43	5.12	5.1	5.1	5.1	14.78	14.74	14.76	14.74	17	16.96	16.98	16.96	22.77	22.74	22.75	22.74
211600	7.48	7.48	7.48	7.48	30.22	30.26	30.26	30.26	70.97	70.95	70.96	70.95	84.93	84.92	84.93	84.92	137.07	137.08	137.07	137.08
211605	9.71	9.71	9.71	9.71	22.58	22.64	22.64	22.64	52.24	52.24	52.25	52.24	62.37	62.37	62.37	62.37	108.43	108.42	108.43	108.42
211610	11.26	11.26	11.26	11.26	21.99	21.99	21.99	21.99	28.04	28.04	28.04	28.04	31.05	31.05	31.05	31.05	52.27	52.26	52.27	52.26
211620	5.57	5.57	5.57	5.57	13.68	13.68	13.68	13.68	17.46	17.48	17.46	17.48	18.11	18.13	18.11	18.13	18.28	18.35	18.29	18.35
211630	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	60.62	69.02	69.03	69.02	69.03
211640	24.89	24.89	24.89	24.89	36.83	36.83	36.83	36.83	40.16	40.16	40.16	40.16	41.43	41.43	41.43	41.43	43.49	43.49	43.49	43.49
211650	27.86	27.86	27.86	27.86	52.3	52.3	52.3	52.3	66.09	66.09	66.09	66.09	72.96	72.96	72.96	72.96	109.18	109.18	109.18	109.18
211660	16.78	16.78	16.78	16.78	66.36	66.21	66.32	66.22	105.19	104.91	104.98	104.9	121.94	121.67	121.74	121.66	206.13	205.88	205.98	205.87
211670	26.01	26	26.01	25.99	30.16	30.08	30.11	30.08	29.04	28.97	28.98	28.96	27.68	27.63	27.62	27.61	15.36	15.45	15.34	15.44
211680	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211690	24.52	24.52	24.52	24.51	37.1	36.52	36.75	36.53	50.78	50.38	50.51	50.36	54.55	54.21	54.3	54.18	67.57	67.54	67.42	67.51
211700	25.5	25.5	25.5	25.5	50.38	50.38	50.38	50.38	64.12	64.12	64.12	64.12	70.9	70.9	70.9	70.9	108.33	108.34	108.34	108.34
211710	14.49	14.49	14.49	14.49	27.2	27.2	27.2	27.2	35.27	35.27	35.27	35.27	39.42	39.42	39.42	39.42	61.05	61.05	61.05	61.05
211720	9.08	9.08	9.08	9.08	20.25	20.25	20.25	20.25	26.77	26.77	26.77	26.77	30.03	30.03	30.03	30.03	47.24	47.24	47.24	47.24
211730	6.87	6.87	6.87	6.87	15.02	15.02	15.02	15.02	19.71	19.71	19.71	19.71	22.04	22.04	22.04	22.04	34.32	34.32	34.32	34.32
211740	17.74	17.74	17.74	17.74	38.33	38.33	38.33	38.33	50.1	50.1	50.1	50.1	55.96	55.96	55.96	55.96	86.71	86.71	86.71	86.71
211750	26.09	26.09	26.09	26.09	59.02	59.02	59.02	59.02	80.83	80.83	80.83	80.83	92.18	92.18	92.18	92.18	147.87	147.87	147.87	147.87
211760	25.95	25.95	25.95	25.95	67.86	67.86	67.86	67.86	108.22	108.22	108.22	108.22	131.48	131.48	131.48	131.48	223.3	223.3	223.3	223.3
211770	4.87	4.86	4.86	4.86	8.6	8.6	8.6	8.6	10.81	10.81	10.81	10.81	11.24	11.24	11.24	11.24	11.38	11.4	11.4	11.4
211780	3.99	3.99	3.99	3.99	8.14	8.14	8.14	8.14	10.33	10.33	10.33	10.33	10.72	10.72	10.72	10.72	10.75	10.76	10.76	10.76
211790	3.61	3.61	3.61	3.61	8.36	8.36	8.36	8.36	9.93	9.93	9.93	9.93	10.49	10.49	10.49	10.49	12.06	12.06	12.06	12.06
211800	3.34	3.34	3.34	3.34	9.2	9.2	9.2	9.2	11.48	11.48	11.48	11.48	12.42	12.42	12.42	12.42	14.28	14.28	14.28	14.28
211810	6.28	6.28	6.28	6.28	12.87	12.87	12.87	12.87	14.53	14.53	14.53	14.53	14.94	14.94	14.94	14.94	20.5	20.5	20.5	20.5
211820	23.24	23.24	23.24	23.24	53.21	53.22	53.22	53.22	73.62	73.62	73.62	73.62	83.62	83.62	83.62	83.62	135.05	135.05	135.05	135.05
211840	4.29	4.29	4.29	4.29	8.05	8.05	8.05	8.05	9.09	9.09	9.09	9.09	9.37	9.37	9.37	9.37	9.71	9.71	9.71	9.71
211850	5.86	5.86	5.86	5.86	10.77	10.77	10.77	10.77	12.14	12.14	12.14	12.14	12.53	12.53	12.53	12.53	12.57	12.57	12.57	12.57
211860	10.28	10.28	10.28	10.28	22.6	22.6	22.6	22.6	29.68	29.68	29.68	29.68	33.22	33.22	33.22	33.22	51.76	51.76	51.76	51.76
211870	8.74	8.74	8.74	8.74	18.67	18.67	18.67	18.67	24.34	24.34	24.34	24.34	27.16	27.16	27.16	27.16	41.95	41.95	41.95	41.95
211880	10	10	10	10	21.09	21.09	21.09	21.09	27.4	27.4	27.4	27.4	30.54	30.54	30.54	30.54	47	47	47	47
211890	13.37	13.37	13.37	13.37	29.32	29.32	29.32	29.32	38.49	38.49	38.49	38.49	43.07	43.07	43.07	43.07	67.43	67.43	67.43	67.43
211900	31.36	31.36	31.36	31.36	60.83	60.83	60.83	60.83	77.45	77.45	77.45	77.45	85.71	85.71	85.71	85.71	129.21	129.21	129.21	129.21
211910	24.65	24.65	24.65	24.65	50.54	50.54	50.54	50.54	64.32	64.32	64.32	64.32	70.55	70.55	70.55	70.55	100.77	100.77	100.77	100.77
211920	2.91	2.91	2.91	2.91	6.42	6.42	6.42	6.42	9.11	9.11	9.11	9.11	10.35	10.35	10.35	10.35	13.02	13.02	13.02	13.02
211930	9.24	9.24	9.24	9.24	19.01	19.01	19.01	19.01	24.54	24.54	24.54	24.54	27.28	27.28	27.28	27.28	41.72	41.72	41.72	41.72
211940	39.95	39.95	39.95	39.95	90.06	90.06	90.06	90.06	119.09	119.09	119.09	119.09	133.58	133.58	133.58	133.58	209.9	209.9	209.9	209.9
211950	7.67	7.67	7.67	7.67	14.58	14.58	14.58	14.58	18.48	18.48	18.48	18.48	20.42	20.42	20.42	20.42	30.63	30.63	30.63	30.63
212000	40.39	40.1	40.05	40.17	51.62	51.62	51.6	51.61	52.49	52.52	52.47	52.51	50.91	50.97	50.88	50.95	34.3	34.56	34.32	34.55
212010	27.13	27.13	27.13	27.13	56.93	56.93	56.93	56.93	74	74	74	74	82.5	82.5	82.5	82.5	136.45	136.01	136.2	136
212020	16.88	16.89	16.89	16.89	34.69	34.69	34.68	34.69	39.26	39.29	39.26	39.29	39.97	40.02	39.96	40.01	51.85	51.92	51.95	51.92
212030	22.88	22.88	22.88	22.88	43.72	43.72	43.71	43.72	49.2	49.23	49.19	49.22	50.28	50.33	50.27	50.32	60.08	60.18	60.21	60.18
212040	52.8	52.8	52.8	52.8	115.3	115.3	115.3	115.3	151.12	151.12	151.12	151.12	168.97	168.97	168.97	168.97	262.7	262.7	262.7	262.7
212050	4.38	4.38	4.38	4.38	11.18	11.18	11.17	11.18	12.51	12.52	12.51	12.52	12.78	12.79	12.78	12.79	15.06	15.06	15.06	15.06
212060	15.85	15.85	15.85	15.85	31.56	31.56	31.56	31.56	40.43	40.43	40.43	40.43	44.84	44.84	44.84	44.84	74.66	74.61	74.65	74.61
212100	18.83	18.83	18.83	18.83	24.79	24.79	24.79	24.79	26.01	26.01	26.01	26.01	26.15	26.15	26.14	26.15	25.83	25.85	25.83	25.85
212110	68.14	68.16	68.16	68.16	175.22	175.23	175.23	175.23	237.03	237.03	237.03	237.03	265.15	265.15	265.15	265.15	404.44	404.44	404.44	404.44
212120	19.27	19.26	19.26	19.26	65.9	65.9	65.9	65.9	91.54	91.54	91.54	91.54	103.77	103.77	103.77	103.77	162.18	162.18	162.18	162.18
212130	40.75	40.75	40.75	40.75	98.07	98.07	98.07	98.07	142.5	142.5	142.5	142.5	164.32	164.32	164.32	164.32	274.3	274.3	274.3	274.3
212140	42.48	42.56	42.56	42.56	81.07	81.1	81.09	81.1	82.9	82.91	82.9	82.91	84.96	84.98	84.97	84.98	87.9	87.94	87.93	87.95
212150	30.72	30.76	30.76	30.76	52.45	52.47	52.47	52.47	55.64	55.65	55.64	55.65	58.03	58.05	58.04	58.05	62.41	62.45	62.44	62.45
212160	20.67	20.69	20.69	20.69	24.59	24.6	24.6	24.6	23.79	23.79	23.79	23.79	23.18	23.18	23.18	23.18	19.85	19.91	19.91	19.92
212170	23.08	23.11	23.11	23.11	28.58	28.58	28.58	28.58	28.14	28.14	28.14	28.14	27.68	27.68	27.68	27.68	23.52	23.54	23.52	23.54
212180	25.83	25.89	25.89	25.89	36.05	36.05	36.05	36.05	38.41	38.41	38.41	38.41	38.65	38.65	38.65	38.65	37.7	37.71	37.7	37.71
212190	6.65	6.66	6.66	6.66	8.94	8.91	8.91	8.91	11.5	11.5	11.5	11.5	12.88	12.88	12.88	12.88	18.03	18.03	18.03	18.02
212200	6.95	6.95	6.95	6.95	12.71	12.74	12.74	12.74	18.35	18.35	18.35	18.35	21.18	21.18	21.18	21.18	33.79	33.79	33.79	33.79
212210	14.49	14.49	14.49	14.49	40.21	40.22	40.22	40.22	65.51	65.51	65.51	65.51	78.25	78.24	78.25	78.24	121.58	121.58	121.58	121.58
212220	5.05	5.05	5.05	5.05	10.39	10.39	10.39	10.39	25.61	25.61	25.61	25.61	35.71	35.7	35.71	35.7	84.62	84.6	84.61	84.6
212230	24.13	24.13	24.13	24.13	36.66	36.6	36.6	36.6	44.93	44.93	44.93	44.93	55.6	55.6	55.6	55.6	112.75	112.74	112.75	112.74
212240	14.43	14.43	14.43	14.43	28.5	28.5	28.5	28.5	36.72	36.72	36.72	36.72	46.66	46.66	46.66	46.66	77.92	77.92	77.92	77.92
212250	16.79	16.85	16.85	16.85	37.6	37.58	37.58	37.58	38.29	38.29	38.29	38.29	38.47	38.47	38.47	38.47	37.83	37.84	37.83	37.84
212260	16.8	16.86	16.86	16.86	60.14	60.15	60.15	60.15	74.85	74.85	74.85	74.85	81.23	81.23	81.23	81.23	113.32	113.32	113.32	113.32
212270	4.64	4.64	4.64	4.64	5.12	5.12	5.12	5.12	6.07	6.07	6.07	6.07	7.18	7.18	7.18	7.18	10.88	10.92	10.91	10.92
212280	24.41	24.42	24.42	24.42	45.8	45.83	45.83	45.83	57.88	57.88	57.88	57.88	63.84	63.84	63.84	63.84	84.39	84.39	84.39	84.39
212290	14.55	14.56	14.56	14.56	27.27	27.3	27.3	27.3	34.48	34.48	34.48	34.48	38.05	38.05	38.05	38.05	44.87	44.87	44.87	44.87
212300	14.7	14.7	14.7	14.7	27.6	27.6	27.6	27.6	34.88	34.88	34.88	34.88	38.5	38.5	38.5	38.5	57.62	57.62	57.62	57.62
212320	5.97	5.97	5.97	5.97	6.05	6.04	6.04	6.04	5.87	5.87	5.87	5.87	5.97	5.98	5.98	5.98	6.42	6.42	6.43	6.42
212330	8.68	8.68	8.68	8.68	16.14	16.14	16.14	16.14	20.36	20.36	20.36	20.36	22.46	22.46	22.46	22.46	33.56	33.56	33.56	33.56
212400	184.99	185.13	185.13	185.13	242.57	242.61	242.61	242.61	260.04	260.04	260.04	260.04	266.45	266.45	266.45	266.45	291.64	291.65	291.64	291.65
212410	157.08	157.23	157.23	157.23	220.87	220.92	220.92	220.92	244.36	244.36	244.36	244.36	253.89	253.89	253.89	253.89	307.57	307.57	307.57	307.57
212420	116.5	116.61	116.61	116.61	172.93	172.98	172.98	172.98	193.55	193.56	193.55	193.56	202.14	202.14	202.14	202.14	233.47	233.51	233.5	233.51
212430	138.12	138.35	138.35	138.35	234.93	235.04	235.04	235.04	280.63	280.63	280.63	280.63	303.09	303.09	303.09	303.09	411.67	411.67	411.67	411.67
212440	146.97	147.18	147.18	147.18	242.9	242.94	242.94	242.94	279.18	279.18	279.18	279.18	294.7	294.7	294.7	294.7	380.18	380.18	380.18	380.18
212450	100.27	100.46	100.46	100.46	146.45	146.47	146.47	146.47	156.99	156.99	156.99	156.99	162.85	162.85	162.85	162.85	182.09	182.09	182.09	182.09
212460	87.76	87.97	87.97	87.97	127.51	127.58	127.58	127.58	137.67	137.67	137.67	137.67	141.46	141.46	141.46	141.46	159.09	159.09	159.09	159.09
212470	51.43	51.45	51.45	51.45	58.9	58.9	58.9	58.9	61.82	61.82	61.82	61.82	62.68	62.68	62.68	62.68	64.69	64.69	64.69	64.69
212480	58.73	58.76	58.76	58.76	82.34	82.37	82.37	82.37	96.27	96.27	96.27	96.27	101.96	101.96	101.96	101.96	122.95	122.95	122.95	122.95
212490	47.47	47.43	47.43	47.43	60.36	60.34	60.34	60.34	70.38	70.38	70.38	70.38	75.2	75.2	75.2	75.2	102.1	102.1	102.1	102.1
212500	33.18	33.18	33.18	33.18	63.87	63.87	63.87	63.87	81.18	81.18	81.18	81.18	89.79	89.79	89.79	89.79	135.14	135.14	135.14	135.14
212510	27.02	27.02	27.02	27.02	29.31	29.29	29.29	29.29	28.97	28.97	28.97	28.97	28.54	28.54	28.54	28.54	24.68	24.68	24.68	24.68
212520	42.55	42.56	42.56	42.56	54.29	54.23	54.23	54.23	62.78	62.78	62.78	62.78	69.44	69.44	69.44	69.44	104.51	104.51	104.51	104.51
212530	31.79	31.79	31.79	31.79	72.95	72.97	72.97	72.97	102.29	102.29	102.29	102.29	116.02	116.02	116.02	116.02	183.4	183.4	183.4	183.4
212540	17.2	17.2	17.2	17.2	33.1	33.1	33.1	33.1	42.07	42.07	42.07	42.07	46.53	46.53	46.53	46.53	70.04	70.04	70.04	70.04
212550	40.08	40.04	40.04	40.04	74.79	74.79	74.79	74.79	95.1	95.1	95.1	95.1	107.2	107.2	107.2	107.2	170.26	170.26	170.26	170.26
212560	19.43	19.39	19.39	19.39	21.18	21.16	21.16	21.16	20.74	20.74	20.74	20.74	20.12	20.12	20.12	20.12	27.61	27.61	27.61	27.61
212570	29.72	29.72	29.72	29.72	58.43	58.43	58.43	58.43	78.89	78.89	78.89	78.89	89.76	89.76	89.76	89.76	141.63	141.63	141.63	141.63
212580	32.13	32.17	32.17	32.17	57.88	57.87	57.87	57.87	68.7	68.7	68.7	68.7	73.75	73.75	73.75	73.75	104.81	104.81	104.81	104.81

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
212590	8.36	8.36	8.36	8.36	16.1	16.1	16.1	16.1	20.47	20.47	20.47	20.47	22.64	22.64	22.64	22.64	34.09	34.09	34.09	34.09
212600	30.83	30.83	30.83	30.83	58.51	58.51	58.51	58.51	74.11	74.11	74.11	74.11	81.88	81.88	81.88	81.88	122.81	122.81	122.81	122.81
212610	67.38	67.47	67.47	67.47	110.15	110.14	110.14	110.14	122.95	122.95	122.95	122.95	128.98	128.98	128.98	128.98	156.29	156.29	156.29	156.29
212620	36.7	36.74	36.74	36.74	61.91	61.87	61.87	61.87	67.71	67.71	67.71	67.71	70	70	70	70	79.71	79.71	79.71	79.71
212630	17.92	17.92	17.92	17.92	33.98	33.98	33.98	33.98	43.04	43.04	43.04	43.04	47.55	47.55	47.55	47.55	74	74	74	74
212640	12.51	12.51	12.51	12.51	24.2	24.2	24.2	24.2	30.78	30.78	30.78	30.78	34.06	34.06	34.06	34.06	51.31	51.31	51.31	51.31
212650	8.1	8.1	8.1	8.1	15.78	15.78	15.78	15.78	20.12	20.12	20.12	20.12	22.28	22.28	22.28	22.28	33.66	33.66	33.66	33.66
212660	16.69	16.69	16.69	16.69	36.9	36.9	36.9	36.9	49.59	49.59	49.59	49.59	56.02	56.02	56.02	56.02	86.75	86.75	86.75	86.75
212670	8.42	8.4	8.4	8.4	5.86	5.84	5.84	5.84	4.65	4.65	4.65	4.65	4.33	4.33	4.33	4.33	4.39	4.39	4.39	4.39
212680	6.34	6.34	6.34	6.34	12.36	12.36	12.36	12.36	16.7	16.7	16.7	16.7	18.67	18.67	18.67	18.67	27.24	27.24	27.24	27.24
212690	10.98	10.98	10.98	10.98	21.4	21.4	21.4	21.4	27.27	27.27	27.27	27.27	30.2	30.2	30.2	30.2	45.56	45.56	45.56	45.56
212700	3.83	3.83	3.83	3.83	6.62	6.62	6.62	6.62	8.58	8.58	8.58	8.58	9.48	9.48	9.48	9.48	12.35	12.35	12.35	12.35
212710	5.47	5.47	5.47	5.47	9.98	9.98	9.98	9.98	12.53	12.53	12.53	12.53	13.8	13.8	13.8	13.8	20.53	20.53	20.53	20.53
212720	1.91	1.91	1.91	1.91	4.02	4.02	4.02	4.02	5.28	5.28	5.28	5.28	5.9	5.9	5.9	5.9	9	9	9	9
212730	5.18	5.18	5.18	5.18	9.43	9.43	9.43	9.43	11.85	11.85	11.85	11.85	13.05	13.05	13.05	13.05	19.42	19.42	19.42	19.42
212740	22.89	23.08	23.08	23.08	29.86	29.87	29.87	29.87	33.75	33.75	33.75	33.75	36.1	36.1	36.1	36.1	43.57	43.57	43.57	43.57
212750	23.03	23.21	23.21	23.21	29.94	29.94	29.94	29.94	33.83	33.83	33.83	33.83	35.82	35.82	35.82	35.82	44.76	44.76	44.76	44.76
212760	16.07	16.2	16.2	16.2	28.8	28.82	28.82	28.82	35.76	35.76	35.76	35.76	39.17	39.17	39.17	39.17	56.83	56.83	56.83	56.83
212770	3.29	3.29	3.29	3.29	6	6	6	6	7.54	7.54	7.54	7.54	8.31	8.31	8.31	8.31	12.37	12.37	12.37	12.37
212780	7.58	7.58	7.58	7.58	14.54	14.54	14.54	14.54	18.47	18.47	18.47	18.47	20.42	20.42	20.42	20.42	30.7	30.7	30.7	30.7
212790	9.23	9.23	9.23	9.23	16.77	16.77	16.77	16.77	21.05	21.05	21.05	21.05	23.25	23.25	23.25	23.25	43.18	43.18	43.18	43.18
212900	175.12	175.23	175.23	175.23	316.16	316.19	316.19	316.19	383.82	383.82	383.82	383.82	412.87	412.87	412.87	412.87	548.05	548.05	548.05	548.05
212910	129.64	129.7	129.7	129.7	272.98	273.01	273.01	273.01	340.26	340.26	340.26	340.26	371.08	371.08	371.08	371.08	525.23	525.23	525.23	525.23
212920	59.28	59.32	59.32	59.32	123.3	123.32	123.32	123.32	146.64	146.64	146.64	146.64	155.08	155.08	155.08	155.08	192.73	192.73	192.73	192.73
212930	70.04	70.06	70.06	70.06	177.83	177.85	177.85	177.85	232.21	232.21	232.21	232.21	257.17	257.17	257.17	257.17	376.96	376.96	376.96	376.96
212940	41.27	41.29	41.29	41.29	97.96	97.97	97.97	97.97	119.37	119.37	119.37	119.37	127.18	127.18	127.18	127.18	149.6	149.6	149.6	149.6
212950	48.31	48.31	48.31	48.31	90.19	90.19	90.19	90.19	113.75	113.75	113.75	113.75	125.09	125.09	125.09	125.09	179.99	179.99	179.99	179.99
212960	36.32	36.32	36.32	36.32	72.3	72.3	72.3	72.3	96.84	96.84	96.84	96.84	108.44	108.44	108.44	108.44	166.76	166.76	166.76	166.76
212970	20.07	20.07	20.07	20.07	43.68	43.67	43.67	43.67	57.11	57.11	57.11	57.11	63.45	63.45	63.45	63.45	92.02	92.02	92.02	92.02
212980	2.92	2.92	2.92	2.92	7.14	7.14	7.14	7.14	7.57	7.57	7.57	7.57	7.52	7.52	7.52	7.52	10.65	10.65	10.65	10.65
212990	10.34	10.34	10.34	10.34	20.52	20.52	20.52	20.52	26.26	26.26	26.26	26.26	29.12	29.12	29.12	29.12	44.13	44.13	44.13	44.13
213100	0.55	0.55	0.55	0.55	4.48	4.49	4.49	4.49	6.14	6.14	6.14	6.14	6.71	6.71	6.71	6.71	14.43	14.43	14.43	14.43
213110	5.99	5.99	5.99	5.99	12.31	12.31	12.31	12.31	11.31	11.31	11.31	11.31	12.43	12.43	12.43	12.43	18.57	18.57	18.57	18.57
213120	5.84	5.84	5.84	5.84	11.25	11.25	11.25	11.25	12.86	12.86	12.86	12.86	14.18	14.18	14.18	14.18	21.13	21.13	21.13	21.13
213130	6.93	6.93	6.93	6.93	12.9	12.9	12.9	12.9	16.27	16.27	16.27	16.27	17.95	17.95	17.95	17.95	26.81	26.81	26.81	26.81
213140	5.49	5.48	5.48	5.48	10.52	10.52	10.52	10.52	18.28	18.28	18.28	18.28	22.76	22.76	22.76	22.76	41.42	41.42	41.42	41.42
213150	18.46	18.46	18.46	18.46	34.42	34.42	34.42	34.42	43.43	43.43	43.43	43.43	47.92	47.92	47.92	47.92	71.61	71.61	71.61	71.61
213160	44.66	44.68	44.68	44.68	85.55	85.58	85.58	85.58	102.15	102.15	102.15	102.15	108.11	108.11	108.11	108.11	134.75	134.75	134.75	134.75
213170	46.69	46.7	46.7	46.7	91.65	91.65	91.65	91.65	110.74	110.74	110.74	110.74	117.86	117.86	117.86	117.86	164.3	164.3	164.3	164.3
213180	25.12	25.12	25.12	25.12	52.08	52.08	52.08	52.08	65.96	65.96	65.96	65.96	70.84	70.84	70.84	70.84	93.84	93.84	93.84	93.84
213190	25.59	25.59	25.59	25.59	53.19	53.19	53.19	53.19	69.03	69.03	69.03	69.03	76.93	76.93	76.93	76.93	118.43	118.43	118.43	118.43
213200	27.45	27.45	27.45	27.45	56.91	56.91	56.91	56.91	73.66	73.66	73.66	73.66	82	82	82	82	125.81	125.81	125.81	125.81
213210	41.69	41.69	41.69	41.69	75.74	75.74	75.74	75.74	95.06	95.06	95.06	95.06	104.7	104.7	104.7	104.7	155.7	155.7	155.7	155.7
213220	96.3	96.3	96.3	96.3	218.27	218.27	218.27	218.27	287.15	287.15	287.15	287.15	321.3	321.3	321.3	321.3	501.68	501.68	501.68	501.68
213230	9.6	9.6	9.6	9.6	20.27	20.27	20.27	20.27	26.42	26.42	26.42	26.42	29.49	29.49	29.49	29.49	45.62	45.62	45.62	45.62
213240	4.5	4.5	4.5	4.5	19.33	19.33	19.33	19.33	21.63	21.63	21.63	21.63	22.37	22.37	22.37	22.37	21.81	21.81	21.81	21.81
213250	26.58	26.58	26.58	26.58	58.83	58.83	58.83	58.83	77.42	77.42	77.42	77.42	86.68	86.68	86.68	86.68	135.43	135.43	135.43	135.43
213260	3.77	3.77	3.77	3.77	11.6	11.6	11.6	11.6	11.82	11.82	11.82	11.82	11.78	11.78	11.78	11.78	9.91	9.91	9.91	9.91
213270	16.02	16.02	16.02	16.02	29.93	29.93	29.93	29.93	37.79	37.79	37.79	37.79	41.7	41.7	41.7	41.7	67.01	67.01	67.01	67.01
213300	3.51	3.52	3.52	3.52	5.77	5.78	5.78	5.78	7.45	7.45	7.45	7.45	8.18	8.18	8.18	8.18	11.01	11.01	11.01	11.01
213310	16.54	16.54	16.54	16.54	26.77	26.77	26.77	26.77	31.8	31.8	31.8	31.8	34.2	34.2	34.2	34.2	46.44	46.44	46.44	46.44
213320	8.59	8.59	8.59	8.59	16.14	16.14	16.14	16.14	20.4	20.4	20.4	20.4	22.52	22.52	22.52	22.52	33.7	33.7	33.7	33.7
213330	9.22	9.22	9.22	9.22	16.91	16.91	16.91	16.91	21.26	21.26	21.26	21.26	23.43	23.43	23.43	23.43	34.89	34.89	34.89	34.89
213340	16.5	16.5	16.5	16.5	30.39	30.39	30.39	30.39	38.25	38.25	38.25	38.25	42.17	42.17	42.17	42.17	62.86	62.86	62.86	62.86
213350	12.54	12.54	12.54	12.54	39.61	39.61	39.61	39.61	63.82	63.82	63.82	63.82	75.34	75.34	75.34	75.34	132.54	132.54	132.54	132.54
213360	46.46	46.46	46.46	46.46	88.65	88.65	88.65	88.65	112.45	112.45	112.45	112.45	124.29	124.29	124.29	124.29	186.68	186.68	186.68	186.68
213370	13.52	13.52	13.52	13.52	25.54	25.54	25.54	25.54	32.32	32.32	32.32	32.32	35.69	35.69	35.69	35.69	53.48	53.48	53.48	53.48
213380	12.18	12.18	12.18	12.18	22.84	22.84	22.84	22.84	30	30	30	30	35.37	35.37	35.37	35.37	63.93	63.93	63.93	63.93
213390	9.11	9.11	9.11	9.11	17.11	17.11	17.11	17.11	21.63	21.63	21.63	21.63	23.88	23.88	23.88	23.88	35.73	35.73	35.73	35.73
213500	98.59	98.68	98.68	98.68	181.47	181.48	181.48	181.48	223.56	223.56	223.56	223.56	243.9	243.9	243.9	243.9	402.71	402.71	402.71	402.71
213510	44.36	44.37	44.37	44.37	69.94	69.94	69.94	69.94	103.59	103.59	103.59	103.59	120.09	120.09	120.09	120.09	206.36	206.36	206.36	206.36
213520	44.65	44.67	44.67	44.67	86.64	86.65	86.65	86.65	108.99	108.99	108.99	108.99	125.89	125.89	125.89	125.89	212.88	212.88	212.88	212.88
213530	35.85	35.86	35.86	35.86	70.36	70.37	70.37	70.37	92.26	92.26	92.26	92.26	100.97	100.97	100.97	100.97	137.5	137.5	137.5	137.5
213540	43.29	43.3	43.3	43.3	79.58	79.58	79.58	79.58	102.49	102.49	102.49	102.49	115.71	115.71	115.71	115.71	178.24	178.24	178.24	178.24
213550	47.93	47.92	47.92	47.92	64.78	64.78	64.78	64.78	75.81	75.81	75.81	75.81	79.86	79.86	79.86	79.86	102.7	102.7	102.7	102.7
213560	16.26	29.69	29.44	29.97	30.74	33.42	34.72	34.34	46.12	46.12	46.12	46.12	52.6	52.6	52.6	52.6	79.83	79.83	79.83	79.83
213570	31.24	31.22	31.22	31.22	46.78	46.77	46.77	46.77	48.13	48.13	48.13	48.13	49.86	49.86	49.86	49.86	81.09	81.09	81.09	81.09
213580	14.14	14.14	14.14	14.14	16.11	16.11	16.11	16.11	18.02	18.02	18.02	18.02	19.22	19.22	19.22	19.22	24.7	24.7	24.7	24.7
213590	17.79	17.79	17.79	17.79	26.3	26.3	26.3	26.3	30.79	30.79	30.79	30.79	33.03	33.03	33.03	33.03	47.62	47.62	47.62	47.62
213600	9.07	9.08	9.08	9.08	18.16	18.16	18.16	18.16	22.68	22.68	22.68	22.68	24.49	24.49	24.49	24.49	32.79	32.79	32.79	32.79
213610	32.2	32.2	32.2	32.2	50.31	50.31	50.31	50.31	63.22	63.22	63.22	63.22	69.67	69.67	69.67	69.67	103.72	103.72	103.72	103.72
213620	1.16	1.16	1.16	1.16	3.9	3.9	3.9	3.9	6.13	6.13	6.13	6.13	7.01	7.01	7.01	7.01	10.24	10.24	10.24	10.24
213630	3.73	3.73	3.73	3.73	6.77	6.77	6.77	6.77	8.49	8.49	8.49	8.49	9.35	9.35	9.35	9.35	13.9	13.9	13.9	13.9
213640	6.93	6.93	6.93	6.93	12.37	12.37	12.37	12.37	13.96	13.96	13.96	13.96	14.95	14.95	14.95	14.95	19.22	19.22	19.22	19.22
213650	39.13	39.13	39.13	39.13	71.27	71.27	71.27	71.27	89.5	89.5	89.5	89.5	98.6	98.6	98.6	98.6	146.68	146.68	146.68	146.68
213660	4.77	4.77	4.77	4.77	9.29	9.29	9.29	9.29	11.84	11.84	11.84	11.84	13.11	13.11	13.11	13.11	19.78	19.78	19.78	19.78
213670	6.48	6.49	6.49	6.49	9.04	9.04	9.04	9.04	5.93	5.93	5.93	5.93	5.05	5.05	5.05	5.05	9.54	9.54	9.54	9.54
213680	34.22	34.22	34.22	34.22	65.08	65.08	65.08	65.08	79.78	79.78	79.78	79.78	86.89	86.89	86.89	86.89	133.44	133.44	133.44	133.44
213690	15.6	15.6	15.6	15.6	31.36	31.36	31.36	31.36	40.35	40.35	40.35	40.35	44.81	44.81	44.81	44.81	68.29	68.29	68.29	68.29
213700	18.93	18.93	18.93	18.93	31.84	31.84	31.84	31.84	36.19	36.19	36.19	36.19	37.66	37.66	37.66	37.66	56	56	56	56
213710	63.67	63.67	63.67	63.67	122.98	122.98	122.98	122.98	159.63	159.63	159.63	159.63	177.43	177.43	177.43	177.43	260.69	260.69	260.69	260.69
213720	16.36	16.36	16.36	16.36	30.97	30.97	30.97	30.97	39.21	39.21	39.21	39.21	43.31	43.31	43.31	43.31	64.93	64.93	64.93	64.93
213730	22.39	22.39	22.39	22.39	41.01	41.01	41.01	41.01	51.57	51.57	51.57	51.57	56.83	56.83	56.83	56.83	84.64	84.64	84.64	84.64
213740	8.32	8.32	8.32	8.32	15.03	15.03	15.03	15.03	18.85	18.85	18.85	18.85	20.75	20.75	20.75	20.75	30.83	30.83	30.83	30.83
213750	7.89	7.89	7.89	7.89	14.41	14.41	14.41	14.41	18.11	18.11	18.11	18.11	19.95	19.95	19.95	19.95	29.7	29.7	29.7	29.7
213760	12.41	12.41	12.41	12.41	22.64	22.64	22.64	22.64	28.44	28.44	28.44	28.44	31.33	31.33	31.33	31.33	46.63	46.63	46.63	46.63
213800	55.74	55.74	55.74	55.74	73.5	73.5	73.5	73.5	76.6	76.6	76.6	76.6	76.63	76.63	76.63	76.63	72.04	72.04	72.04	72.04
213810	105.6	105.68	105.68	105.68	201.51	201.52	201.52	201.52	247.01	247.01	247.01	247.01	269.36	269.36	269.36	269.36	384.37	384.37	384.37	384.37
213820	43.69	43.69	43.69	43.69	83.14	83.15	83.15	83.15	102.28	102.28	102.28	102.28	111.08	111.08	111.08	111.08	143.88	143.88	143.88	143.88
213830	76.84	76.87	76.87	76.87	154.85	154.89	154.89	154.89	190.72	190.72	190.72	190.72	205.56	205.56	205.56	205.56	275.96	275.96	275.96	275.96
213840	69.05	69.06	69.06	69.06	133.11	133.13	133.13	133.13	160.25	160.25	160.25	160.25	172.41	172.41	172.41	172.41	233.17	233.17	233.17	233.17
213850	17.17	17.17	17.17	17.17	33.66	33.66	33.66	33.66	42.99	42.99	42.99	42.99	47.64	47.64	47.64	47.64	72.09	72.09	72.09	72.09
213860	19.28	19.29	19.29	19.29	31.84	31.84	31.84	31.84	35.92	35.92	35.92	35.92	37.08	37.08	37.08	37.08	44.72	44.72	44.72	44.72
213870	14.66	14.67	14.67	14.67	30.51	30.53	30.53	30.53	41.38	41.38	41.38	41.38	46.64	46.64	46.64	46.64	67.22	67.22	67.22	67.22
213875	9.46	9.46	9.46	9.46	11.82	11.81	11.81	11.81	11.99	11.99	11.99	11.99	11.89	11.89	11.89	11.89	9.57	9.57	9.57	9.57
213880	14.35	14.35	14.35	14.35	35.27	35.27	35.27	35.27	47.75	47.75	47.75	47.75	54.03	54.03	54.03	54.03	87.42	87.42	87.42	87.42

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
213890	14.84	14.84	14.84	14.84	29.32	29.32	29.32	29.32	37.5	37.5	37.5	37.5	41.57	41.57	41.57	41.57	62.95	62.95	62.95	62.95
213900	22.54	22.54	22.54	22.54	43.93	43.93	43.93	43.93	56.01	56.01	56.01	56.01	62.02	62.02	62.02	62.02	93.65	93.65	93.65	93.65
214000	57.51	57.51	57.51	57.51	87.66	87.66	87.66	87.66	100.03	100.03	100.03	100.03	105.14	105.14	105.14	105.14	128.68	128.68	128.68	128.68
214010	57.16	57.17	57.17	57.17	87.82	87.82	87.82	87.82	100.59	100.59	100.59	100.59	106.46	106.46	106.46	106.46	134.78	134.78	134.78	134.78
214020	56.29	56.3	56.3	56.3	86.95	86.96	86.96	86.96	100.41	100.41	100.41	100.41	106.92	106.92	106.92	106.92	146.17	146.17	146.17	146.17
214030	41.73	41.73	41.73	41.73	54.46	54.46	54.46	54.46	60.15	60.15	60.15	60.15	63.54	63.54	63.54	63.54	78.6	78.6	78.6	78.6
214040	51.18	51.18	51.18	51.18	54.54	54.53	54.53	54.53	54.89	54.89	54.89	54.89	56.07	56.07	56.07	56.07	64.08	64.08	64.08	64.08
214050	33.31	33.31	33.31	33.31	33.31	33.31	33.31	33.31	33.36	33.36	33.36	33.36	34.16	34.16	34.16	34.16	38.39	38.39	38.39	38.39
214060	47.65	47.65	47.65	47.65	90.47	90.47	90.47	90.47	115.94	115.94	115.94	115.94	142.31	142.31	142.31	142.31	296.56	296.56	296.56	296.56
214070	1.45	1.45	1.45	1.45	1.95	1.95	1.95	1.95	2.16	2.16	2.16	2.16	2.24	2.24	2.24	2.24	7.13	7.13	7.13	7.13
214080	1.45	1.45	1.45	1.45	1.95	1.95	1.95	1.95	2.14	2.14	2.14	2.14	2.22	2.22	2.22	2.22	8.09	8.09	8.09	8.09
214090	35.34	35.34	35.34	35.34	66.14	66.14	66.14	66.14	83.54	83.54	83.54	83.54	92.2	92.2	92.2	92.2	137.89	137.89	137.89	137.89
214100	6.36	6.36	6.36	6.36	11.95	11.95	11.95	11.95	15.11	15.11	15.11	15.11	16.68	16.68	16.68	16.68	24.97	24.97	24.97	24.97
214110	26.41	26.41	26.41	26.41	45.09	45.08	45.08	45.08	54.98	54.98	54.98	54.98	59.73	59.73	59.73	59.73	82.28	82.28	82.28	82.28
214120	17.25	17.25	17.25	17.25	42.81	42.81	42.81	42.81	56.82	56.82	56.82	56.82	63.38	63.38	63.38	63.38	82.44	82.44	82.44	82.44
214130	12.07	12.07	12.07	12.07	22.01	22.01	22.01	22.01	27.64	27.64	27.64	27.64	30.45	30.45	30.45	30.45	45.3	45.3	45.3	45.3
214140	3.74	3.74	3.74	3.74	8.25	8.25	8.25	8.25	9.68	9.68	9.68	9.68	10.18	10.18	10.18	10.18	11.5	11.5	11.5	11.5
214150	11.62	11.62	11.62	11.62	21.17	21.17	21.17	21.17	26.59	26.59	26.59	26.59	29.3	29.3	29.3	29.3	43.59	43.59	43.59	43.59
214160	3.81	3.81	3.81	3.81	5.94	5.94	5.94	5.94	6.81	6.81	6.81	6.81	7.24	7.24	7.24	7.24	8.91	8.91	8.91	8.91
214170	8.14	8.14	8.14	8.14	14.84	14.84	14.84	14.84	18.63	18.63	18.63	18.63	20.52	20.52	20.52	20.52	30.54	30.54	30.54	30.54
214180	4.92	4.92	4.92	4.92	5.92	5.93	5.93	5.93	8.61	8.61	8.61	8.61	10.14	10.14	10.14	10.14	20.57	20.57	20.57	20.57
214190	40.06	40.08	40.08	40.08	72.62	72.67	72.67	72.67	91.18	91.18	91.18	91.18	100.42	100.42	100.42	100.42	133.89	133.89	133.89	133.89
214200	30.68	30.68	30.68	30.68	55.89	55.89	55.89	55.89	70.19	70.19	70.19	70.19	77.33	77.33	77.33	77.33	115.05	115.05	115.05	115.05
214210	10.45	10.45	10.45	10.45	10.01	10.01	10.01	10.01	9.5	9.5	9.5	9.5	9.22	9.22	9.22	9.22	9.61	9.61	9.61	9.61
214220	45.11	45.11	45.11	45.11	81.99	81.99	81.99	81.99	98.91	98.91	98.91	98.91	106.66	106.66	106.66	106.66	145.3	145.3	145.3	145.3
214230	27.12	27.12	27.12	27.12	38.7	38.7	38.7	38.7	43.68	43.68	43.68	43.68	46.02	46.02	46.02	46.02	59.13	59.13	59.13	59.13
214240	28.99	28.99	28.99	28.99	32.85	32.85	32.85	32.85	34.16	34.16	34.16	34.16	34.63	34.63	34.63	34.63	41.52	41.52	41.52	41.52
214250	28.62	28.62	28.62	28.62	54.84	54.84	54.84	54.84	71.8	71.8	71.8	71.8	79.53	79.53	79.53	79.53	129.55	129.55	129.54	129.54
214260	24.2	24.2	24.2	24.2	42.55	42.55	42.55	42.55	59.7	59.7	59.7	59.7	68.29	68.29	68.29	68.29	106.13	106.13	106.13	106.13
214270	68.03	68.03	68.03	68.03	113.14	113.14	113.14	113.14	140.92	140.92	140.92	140.92	154.92	154.92	154.92	154.92	222.48	222.48	222.48	222.48
214280	55.93	55.93	55.93	55.93	92.21	92.21	92.21	92.21	109.03	109.03	109.03	109.03	117.46	117.46	117.46	117.46	159	159	159	159
214290	26.45	26.45	26.45	26.45	48.21	48.21	48.21	48.21	60.55	60.55	60.55	60.55	66.7	66.7	66.7	66.7	99.25	99.25	99.25	99.25
214300	4.04	4.04	4.04	4.04	8.17	8.17	8.17	8.17	10.56	10.56	10.56	10.56	11.39	11.39	11.39	11.39	12.78	12.78	12.78	12.78
214310	11.28	11.28	11.28	11.28	20.41	20.41	20.41	20.41	25.6	25.6	25.6	25.6	28.19	28.19	28.19	28.19	41.89	41.89	41.89	41.89
214320	5.2	5.2	5.2	5.2	15.93	15.93	15.93	15.93	20.11	20.11	20.11	20.11	21.86	21.86	21.86	21.86	31.5	31.5	31.5	31.5
214330	4.68	4.68	4.68	4.68	15.42	15.42	15.42	15.42	19.69	19.69	19.69	19.69	21.33	21.33	21.33	21.33	25.78	25.78	25.78	25.78
214340	11.06	11.06	11.06	11.06	20.06	20.06	20.06	20.06	25.16	25.16	25.16	25.16	27.71	27.71	27.71	27.71	41.19	41.19	41.19	41.19
214350	1.72	1.72	1.72	1.72	4.28	4.28	4.28	4.28	5.82	5.82	5.82	5.82	6.55	6.55	6.55	6.55	10.17	10.17	10.17	10.17
214360	5.39	5.39	5.39	5.39	9.82	9.82	9.82	9.82	12.34	12.34	12.34	12.34	13.59	13.59	13.59	13.59	20.22	20.22	20.22	20.22
214370	18.49	18.49	18.49	18.49	20.29	20.29	20.29	20.29	19.42	19.42	19.42	19.42	18.92	18.92	18.92	18.92	20.01	20.01	20.01	20.01
214380	20.28	20.28	20.28	20.28	36.85	36.85	36.85	36.85	46.25	46.25	46.25	46.25	50.94	50.94	50.94	50.94	75.75	75.75	75.75	75.75
214390	7.39	7.39	7.39	7.39	8.11	8.11	8.11	8.11	7.59	7.59	7.59	7.59	7.4	7.4	7.4	7.4	6.96	6.96	6.96	6.96
214400	12.05	12.05	12.05	12.05	21.96	21.96	21.96	21.96	27.58	27.58	27.58	27.58	30.39	30.39	30.39	30.39	45.22	45.22	45.22	45.22
214410	27.96	27.96	27.96	27.96	28.12	28.12	28.12	28.12	25.37	25.37	25.37	25.37	23.74	23.74	23.74	23.74	22.74	22.74	22.74	22.74
214420	41.39	41.39	41.39	41.39	73.73	73.73	73.73	73.73	91.48	91.48	91.48	91.48	100.26	100.26	100.26	100.26	146.29	146.29	146.29	146.29
214430	19.81	19.81	19.81	19.81	35.9	35.9	35.9	35.9	45.04	45.04	45.04	45.04	49.6	49.6	49.6	49.6	73.72	73.72	73.72	73.72
214440	3.42	3.42	3.42	3.42	12.4	12.4	12.4	12.4	16.54	16.54	16.54	16.54	18.12	18.12	18.12	18.12	21.91	21.91	21.91	21.91
214450	10.46	10.46	10.46	10.46	19.6	19.6	19.6	19.6	24.76	24.76	24.76	24.76	27.34	27.34	27.34	27.34	40.9	40.9	40.9	40.9
214455	46.91	46.91	46.91	46.91	89.23	89.23	89.23	89.23	111.02	111.02	111.02	111.02	121.72	121.72	121.72	121.72	176.22	176.22	176.22	176.22
214460	32.67	32.67	32.67	32.67	61.42	61.42	61.42	61.42	77.65	77.65	77.65	77.65	85.74	85.74	85.74	85.74	128.38	128.38	128.38	128.38
214500	42.23	42.24	42.24	42.24	67.95	67.96	67.96	67.96	82.26	82.26	82.26	82.26	88.51	88.51	88.51	88.51	118.49	118.49	118.49	118.49
214510	42.45	42.46	42.46	42.46	68.61	68.62	68.62	68.62	83.08	83.08	83.08	83.08	89.53	89.53	89.53	89.53	120.36	120.36	120.36	120.36
214520	37.49	37.5	37.5	37.5	50.57	50.58	50.58	50.58	58.3	58.3	58.3	58.3	60.82	60.82	60.82	60.82	72.03	72.03	72.03	72.03
214530	37.49	37.49	37.49	37.49	50.47	50.47	50.47	50.47	58.18	58.18	58.18	58.18	60.68	60.68	60.68	60.68	71.61	71.61	71.61	71.61
214540	77.9	77.94	77.94	77.94	151.88	151.9	151.9	151.9	196.91	196.91	196.91	196.91	222.29	222.29	222.29	222.29	337.13	337.13	337.13	337.13
214550	42.19	42.2	42.2	42.2	91.41	91.42	91.42	91.42	128.53	128.53	128.53	128.53	139.3	139.3	139.3	139.3	177.36	177.36	177.36	177.36
214560	42.41	42.41	42.41	42.41	91.51	91.52	91.52	91.52	128.62	128.62	128.62	128.62	139.38	139.38	139.38	139.38	177.36	177.36	177.36	177.36
214570	45.01	45.03	45.03	45.03	95.43	95.44	95.44	95.44	141.82	141.82	141.82	141.82	166.74	166.74	166.74	166.74	287.3	287.3	287.3	287.3
214580	30.75	30.77	30.77	30.77	48.54	48.54	48.54	48.54	64.45	64.45	64.45	64.45	74.96	74.96	74.96	74.96	124.97	124.97	124.97	124.97
214590	34.53	34.56	34.56	34.56	49.12	49.13	49.13	49.13	65.56	65.56	65.56	65.56	75.84	75.84	75.84	75.84	126.01	126.01	126.01	126.01
214600	5.17	5.17	5.17	5.17	18.76	18.77	18.77	18.77	40.29	40.29	40.29	40.29	52.36	52.36	52.36	52.36	109.17	109.17	109.17	109.17
214610	83.75	83.75	83.75	83.75	152.05	152.05	152.05	152.05	195.53	195.53	195.53	195.53	221.56	221.56	221.56	221.56	357.2	357.2	357.2	357.2
214620	41.68	41.68	41.68	41.68	73.16	73.16	73.16	73.16	86.64	86.64	86.64	86.64	92.66	92.66	92.66	92.66	121.37	121.37	121.37	121.37
214630	20.74	20.75	20.75	20.75	42.48	42.5	42.5	42.5	55.21	55.21	55.21	55.21	61.59	61.59	61.59	61.59	93.16	93.16	93.16	93.16
214640	20.79	20.79	20.79	20.79	42.59	42.59	42.59	42.59	55.35	55.35	55.35	55.35	61.76	61.76	61.76	61.76	93.49	93.49	93.49	93.49
214650	15.49	15.49	15.49	15.49	31.57	31.57	31.57	31.57	39.45	39.45	39.45	39.45	43.63	43.63	43.63	43.63	61.94	61.94	61.94	61.94
214660	68.86	68.86	68.86	68.86	129.8	129.8	129.8	129.8	163.22	163.22	163.22	163.22	179.09	179.09	179.09	179.09	253.55	253.55	253.55	253.55
214670	12.56	12.56	12.56	12.56	25.38	25.38	25.38	25.38	32.79	32.79	32.79	32.79	37.75	37.75	37.75	37.75	49.95	49.95	49.95	49.95
214680	153.65	153.65	153.65	153.65	310.61	310.62	310.62	310.62	408.41	408.41	408.41	408.41	454.88	454.88	454.88	454.88	698.35	698.35	698.35	698.35
214690	22.35	22.35	22.35	22.35	27.17	27.18	27.18	27.18	27.44	27.44	27.44	27.44	27.48	27.48	27.48	27.48	26.45	26.45	26.45	26.45
214700	49.44	49.45	49.45	49.45	96.77	96.82	96.82	96.82	122.74	122.74	122.74	122.74	135.28	135.28	135.28	135.28	202.32	202.32	202.32	202.32
214710	3.8	3.8	3.8	3.8	5.51	5.51	5.51	5.51	7.71	7.71	7.71	7.71	11.67	11.67	11.67	11.67	37.51	37.51	37.51	37.51
214720	31.98	31.98	31.98	31.98	34.97	34.97	34.97	34.97	35.81	35.81	35.81	35.81	35.97	35.97	35.97	35.97	36.79	36.79	36.79	36.79
214730	42.53	42.53	42.53	42.53	57.01	57	57	57	70.28	70.28	70.28	70.28	78.1	78.1	78.1	78.1	112.49	112.49	112.49	112.49
214740	32.34	32.34	32.34	32.34	61.72	61.72	61.72	61.72	84.91	84.91	84.91	84.91	102.39	102.39	102.39	102.39	175.31	175.31	175.31	175.31
214750	8.63	8.63	8.63	8.63	12.26	12.26	12.26	12.26	13.46	13.46	13.46	13.46	13.55	13.55	13.55	13.55	13.53	13.53	13.53	13.53
214760	10.82	10.82	10.82	10.82	23.1	23.1	23.1	23.1	44.34	44.34	44.34	44.34	52.08	52.08	52.08	52.08	86.19	86.19	86.19	86.19
214770	7.88	7.89	7.89	7.89	22.17	22.17	22.17	22.17	41.19	41.19	41.19	41.19	47.87	47.87	47.87	47.87	76.55	76.55	76.55	76.55
214780	5.28	5.28	5.28	5.28	16.53	16.54	16.54	16.54	36.4	36.4	36.4	36.4	43.23	43.23	43.23	43.23	72.46	72.46	72.46	72.46
214790	32.08	32.12	32.12	32.12	40.53	40.53	40.53	40.53	39.35	39.35	39.35	39.35	38.66	38.66	38.66	38.66	34.71	34.71	34.71	34.71
214800	41.3	41.35	41.35	41.35	57.81	57.8	57.8	57.8	60.25	60.25	60.25	60.25	60.54	60.54	60.54	60.54	80.73	80.73	80.73	80.73
214810	39.54	39.54	39.54	39.54	74.98	74.98	74.98	74.98	95.04	95.04	95.04	95.04	107.35	107.35	107.35	107.35	172.5	172.5	172.5	172.5
214820	0.93	0.93	0.93	0.93	1.8	1.8	1.8	1.8	2.28	2.28	2.28	2.28	2.53	2.53	2.53	2.53	4.52	4.52	4.52	4.52
214830	17.78	17.78	17.78	17.78	33.17	33.17	33.17	33.17	41.86	41.86	41.86	41.86	46.19	46.19	46.19	46.19	82.66	82.66	82.66	82.66
214840	20.62	20.62	20.62	20.62	40.1	40.1	40.1	40.1	48.78	48.78	48.78	48.78	52.77	52.77	52.77	52.77	72.4	72.4	72.4	72.4
214850	0	0	0	0	1.88	1.88	1.88	1.88	5.11	5.11	5.11	5.11	6.43	6.43	6.43	6.43	12.45	12.45	12.45	12.45
214860	20.94	20.94	20.94	20.94	38.52	38.52	38.52	38.52	48.47	48.47	48.47	48.47	53.44	53.44	53.44	53.44	79.66	79.66	79.66	79.66
214870	7	7	7	7	13.66	13.66	13.66	13.66	17.21	17.21	17.21	17.21	18.44	18.44	18.44	18.44	20.95	20.95	20.95	20.95
214880	8.39	8.39	8.39	8.39	16.11	16.11	16.11	16.11	20.45	20.45	20.45	20.45	22.61	22.61	22.61	22.61	34	34	34	34
214890	2.8	2.8	2.8	2.8	5.64	5.64	5.64	5.64	6.11	6.11	6.11	6.11	6.12	6.12	6.12	6.12	5.13	5.13	5.13	5.13
214900	7.45	7.45	7.45	7.45	13.66	13.66	13.66	13.66	17.18	17.18	17.18	17.18	18.93	18.93	18.93	18.93	28.2	28.2	28.2	28.2
214910	15.08	15.08	15.08	15.08	57.97	57.97	57.97	57.97	93.03	93.03	93.03	93.03	108.41	108.41	108.41	108.41	198.02	198.02	198.02	198.02
214920	14.22	14.22	14.22	14.22	34.17	34.17	34.17	34.17	45.9	45.9	45.9	45.9	51.76	51.76	51.76	51.76	82.7	82.7	82.7	82.7
214930	46.68	46.68	46.68	46.68	119.04	119.04	119.04	119.04	187.18	187.18	187.18	187.18	216.5	216.5	216.5	216.5	363.09	363.09	363.09	363.09
214940	1.66	1.66	1.66	1.66	3.22	3.22	3.22	3.22	12.76	12.76	12.76	12.76	19.14	19.14	19.14	19.14	43.74	43.74	43.74	43.74
214950	16.04	16.04	16.04	16.04	29.68	29.68	29.68	29.68	37.4	37.4	37.4	37.4	41.24	41.24	41.24	41.24	75.29	75.29	75.29	75.29

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
214960	3.28	3.28	3.28	3.28	5.8	5.8	5.8	5.8	10.7	10.7	10.7	10.7	13.9	13.9	13.9	13.9	23.88	23.88	23.88	23.88
214970	19.78	19.78	19.78	19.78	36.1	36.1	36.1	36.1	45.35	45.35	45.35	45.35	49.97	49.97	49.97	49.97	74.37	74.37	74.37	74.37
214980	4.67	4.67	4.67	4.67	7.54	7.54	7.54	7.54	11.92	11.92	11.92	11.92	13.64	13.64	13.64	13.64	25.12	25.12	25.12	25.12
214990	18.61	18.61	18.61	18.61	33.73	33.73	33.73	33.73	42.12	42.12	42.12	42.12	49.02	49.02	49.02	49.02	81.29	81.29	81.29	81.29
215000	5.9	5.9	5.9	5.9	10.91	10.91	10.91	10.91	12.65	12.65	12.65	12.65	12.88	12.88	12.88	12.88	11.68	11.68	11.68	11.68
215010	8.27	8.27	8.27	8.27	16.55	16.55	16.55	16.55	21.21	21.21	21.21	21.21	23.53	23.53	23.53	23.53	35.73	35.73	35.73	35.73
215020	19.89	19.89	19.89	19.89	41.71	41.71	41.71	41.71	52.23	52.23	52.23	52.23	57.44	57.44	57.44	57.44	74.04	74.04	74.04	74.04
215030	10.67	10.67	10.67	10.67	20.81	20.81	20.81	20.81	24.88	24.88	24.88	24.88	25.99	25.99	25.99	25.99	28.35	28.35	28.35	28.35
215040	5.18	5.18	5.18	5.18	10.22	10.22	10.22	10.22	12.89	12.89	12.89	12.89	14.07	14.07	14.07	14.07	18.17	18.17	18.17	18.17
215050	5.44	5.44	5.44	5.44	10.34	10.34	10.34	10.34	13.1	13.1	13.1	13.1	14.47	14.47	14.47	14.47	21.71	21.71	21.71	21.71
215060	10.58	10.58	10.58	10.58	19.38	19.38	19.38	19.38	24.36	24.36	24.36	24.36	26.85	26.85	26.85	26.85	39.98	39.98	39.98	39.98
215100	34.25	34.3	34.3	34.3	78.67	78.74	78.74	78.74	103.65	103.65	103.65	103.65	115.95	115.95	115.95	115.95	181.74	181.74	181.74	181.74
215110	34.54	34.59	34.59	34.59	76.66	76.72	76.72	76.72	100.28	100.28	100.28	100.28	111.89	111.89	111.89	111.89	173.44	173.44	173.44	173.44
215120	40.46	40.49	40.49	40.49	82.46	82.52	82.52	82.52	106.88	106.88	106.88	106.88	119.43	119.43	119.43	119.43	183.67	183.67	183.67	183.67
215130	46.79	46.8	46.8	46.8	90.52	90.47	90.47	90.47	116.29	116.29	116.29	116.29	127.89	127.89	127.89	127.89	192.55	192.55	192.55	192.55
215140	37.79	37.79	37.79	37.79	72.97	72.97	72.97	72.97	91.59	91.59	91.59	91.59	100.73	100.73	100.73	100.73	146.4	146.4	146.4	146.4
215150	33.9	33.9	33.9	33.9	70.67	70.67	70.67	70.67	91.54	91.54	91.54	91.54	101.91	101.91	101.91	101.91	156.38	156.38	156.38	156.38
215160	23.4	23.4	23.4	23.4	46.24	46.24	46.24	46.24	56.82	56.82	56.82	56.82	61.87	61.87	61.87	61.87	95.35	95.35	95.35	95.35
215190	2.46	2.46	2.46	2.46	15.09	15.09	15.09	15.09	20.19	20.19	20.19	20.19	22.04	22.04	22.04	22.04	27.3	27.3	27.3	27.3
215200	23.54	23.55	23.55	23.55	37.05	37.05	37.05	37.05	46.44	46.44	46.44	46.44	51.12	51.12	51.12	51.12	76.26	76.26	76.26	76.26
215210	15.65	15.65	15.65	15.65	35.75	35.76	35.76	35.76	46.2	46.2	46.2	46.2	51.13	51.13	51.13	51.13	74.07	74.07	74.07	74.07
215220	2.85	2.84	2.84	2.84	9.24	9.24	9.24	9.24	12.76	12.76	12.76	12.76	13.73	13.73	13.73	13.73	21.32	21.32	21.32	21.32
215230	13.62	13.62	13.62	13.62	25.59	25.59	25.59	25.59	32.34	32.34	32.34	32.34	35.7	35.7	35.7	35.7	53.44	53.44	53.44	53.44
215240	20.14	20.14	20.14	20.14	38.82	38.83	38.83	38.83	49.38	49.38	49.38	49.38	54.64	54.64	54.64	54.64	82.31	82.31	82.31	82.31
215250	2.04	2.04	2.04	2.04	3.11	3.11	3.11	3.11	1.7	1.7	1.7	1.7	1.72	1.72	1.72	1.72	2.19	2.19	2.19	2.19
215260	1.06	1.06	1.06	1.06	2.3	2.3	2.3	2.3	3.38	3.38	3.38	3.38	4.01	4.01	4.01	4.01	7.61	7.61	7.61	7.61
215270	10.31	10.31	10.31	10.31	20.09	20.09	20.09	20.09	25.27	25.27	25.27	25.27	27.83	27.83	27.83	27.83	41.35	41.35	41.35	41.35
215280	3.13	3.13	3.13	3.13	3.92	3.92	3.92	3.92	5.15	5.15	5.15	5.15	5.6	5.6	5.6	5.6	7.69	7.69	7.69	7.69
215290	12	12.01	12.01	12.01	22.54	22.57	22.57	22.57	28.53	28.53	28.53	28.53	31.42	31.42	31.42	31.42	39.74	39.74	39.74	39.74
215300	7.47	7.47	7.47	7.47	14.02	14.02	14.02	14.02	17.73	17.73	17.73	17.73	19.57	19.57	19.57	19.57	29.29	29.29	29.29	29.29
215310	8.67	8.67	8.67	8.67	14.2	14.2	14.2	14.2	14.26	14.26	14.26	14.26	13.46	13.46	13.46	13.46	9.63	9.63	9.63	9.63
215320	20.78	20.78	20.78	20.78	31.54	31.54	31.54	31.54	36.6	36.6	36.6	36.6	38.65	38.65	38.65	38.65	47.58	47.58	47.58	47.58
215330	35.53	35.53	35.53	35.53	68.36	68.36	68.36	68.36	86.88	86.88	86.88	86.88	96.08	96.08	96.08	96.08	144.57	144.57	144.57	144.57
215400	35.54	35.54	35.54	35.54	67.5	67.5	67.5	67.5	86.86	86.86	86.86	86.86	101.21	101.21	101.21	101.21	191.58	191.58	191.58	191.58
215410	21.36	21.36	21.36	21.36	40.84	40.84	40.84	40.84	51.84	51.84	51.84	51.84	57.31	57.31	57.31	57.31	86.12	86.12	86.12	86.12
215420	4.86	4.86	4.86	4.86	7.66	7.66	7.66	7.66	9.18	9.18	9.18	9.18	9.92	9.92	9.92	9.92	13.26	13.26	13.26	13.26
215430	14.84	14.84	14.84	14.84	26.95	26.95	26.95	26.95	33.82	33.82	33.82	33.82	37.25	37.25	37.25	37.25	55.38	55.38	55.38	55.38
215440	9.3	9.3	9.3	9.3	12.96	12.96	12.96	12.96	13.91	13.91	13.91	13.91	16.28	16.28	16.28	16.28	35.15	35.15	35.15	35.15
215450	46.52	46.52	46.52	46.52	87.96	87.96	87.96	87.96	109.17	109.17	109.17	109.17	118.68	118.68	118.68	118.68	164.62	164.62	164.62	164.62
215460	50.04	50.04	50.04	50.04	93.65	93.65	93.65	93.65	118.26	118.26	118.26	118.26	130.52	130.52	130.52	130.52	195.2	195.2	195.2	195.2
215500	59.24	59.27	59.27	59.27	102.44	102.45	102.45	102.45	125.26	125.26	125.26	125.26	136.54	136.54	136.54	136.54	189.58	189.58	189.58	189.58
215510	74.51	74.51	74.51	74.51	134.02	134.02	134.02	134.02	165.67	165.67	165.67	165.67	181.16	181.16	181.16	181.16	262.13	262.13	262.13	262.13
215520	33.93	33.93	33.93	33.93	64.89	64.86	64.86	64.86	86.97	86.97	86.97	86.97	97.39	97.39	97.39	97.39	150.65	150.65	150.65	150.65
215530	14.99	15	15	15	38.39	38.39	38.39	38.39	57.12	57.12	57.12	57.12	67.83	67.83	67.83	67.83	78.24	78.24	78.24	78.24
215540	85.64	85.69	85.69	85.69	155.46	155.44	155.44	155.44	186.51	186.51	186.51	186.51	193.78	193.78	193.78	193.78	218	218	218	218
215550	51.79	51.82	51.82	51.82	116.29	116.29	116.29	116.29	144.34	144.34	144.34	144.34	157.02	157.02	157.02	157.02	209.83	209.83	209.83	209.83
215560	37.47	37.47	37.47	37.47	85.46	85.46	85.46	85.46	109.41	109.41	109.41	109.41	121.6	121.6	121.6	121.6	195.21	195.21	195.21	195.21
215570	18.97	18.97	18.97	18.97	36.08	36.08	36.08	36.08	40.71	40.71	40.71	40.71	42.26	42.26	42.26	42.26	48.28	48.28	48.28	48.28
215580	7.2	7.2	7.2	7.2	18.88	18.88	18.88	18.88	26.61	26.61	26.61	26.61	29.15	29.15	29.15	29.15	33.5	33.5	33.5	33.5
215590	13.63	13.63	13.63	13.63	26.66	26.66	26.66	26.66	35.45	35.45	35.45	35.45	39.79	39.79	39.79	39.79	59.86	59.86	59.86	59.86
215600	10.75	10.75	10.75	10.75	20.95	20.95	20.95	20.95	26.69	26.69	26.69	26.69	29.56	29.56	29.56	29.56	44.6	44.6	44.6	44.6
215610	7.67	7.67	7.67	7.67	9.87	9.87	9.87	9.87	11.99	11.99	11.99	11.99	13.04	13.04	13.04	13.04	16.9	16.9	16.9	16.9
215620	3.68	3.68	3.68	3.68	5.09	5.09	5.09	5.09	5.65	5.65	5.65	5.65	5.89	5.89	5.89	5.89	6.37	6.37	6.37	6.37
215630	6.84	6.84	6.84	6.84	12.49	12.49	12.49	12.49	15.69	15.69	15.69	15.69	17.29	17.29	17.29	17.29	25.74	25.74	25.74	25.74
215640	3.27	3.27	3.27	3.27	4.84	4.84	4.84	4.84	5.5	5.5	5.5	5.5	5.79	5.79	5.79	5.79	6.9	6.9	6.9	6.9
215650	5.41	5.41	5.41	5.41	9.93	9.93	9.93	9.93	12.49	12.49	12.49	12.49	13.77	13.77	13.77	13.77	20.51	20.51	20.51	20.51
215660	14.21	14.21	14.21	14.21	23.6	23.6	23.6	23.6	25.03	25.03	25.03	25.03	25.91	25.91	25.91	25.91	29.34	29.34	29.34	29.34
215670	23.48	23.48	23.48	23.48	43.49	43.49	43.49	43.49	54.81	54.81	54.81	54.81	60.44	60.44	60.44	60.44	90.21	90.21	90.21	90.21
215680	15.52	15.52	15.52	15.52	35	35	35	35	46.24	46.24	46.24	46.24	52.16	52.16	52.16	52.16	95.95	95.95	95.95	95.95
215690	0.23	0.23	0.23	0.23	2.57	2.57	2.57	2.57	3.77	3.77	3.77	3.77	4.09	4.09	4.09	4.09	4.04	4.04	4.04	4.04
215700	7.47	7.47	7.47	7.47	13.61	13.61	13.61	13.61	17.1	17.1	17.1	17.1	18.84	18.84	18.84	18.84	28.03	28.03	28.03	28.03
215710	147.07	147.07	147.07	147.07	275.54	275.54	275.54	275.54	344.77	344.77	344.77	344.77	378.47	378.47	378.47	378.47	638.81	638.81	638.81	638.81
215720	41.55	41.55	41.55	41.55	66.3	66.3	66.3	66.3	73.65	73.65	73.65	73.65	76.08	76.08	76.08	76.08	77.46	77.46	77.46	77.46
215730	131.69	131.69	131.69	131.69	250.75	250.75	250.75	250.75	317.9	317.9	317.9	317.9	351.33	351.33	351.33	351.33	527.42	527.42	527.42	527.42
215740	12.19	12.19	12.19	12.19	26.02	26.02	26.02	26.02	33.92	33.92	33.92	33.92	37.85	37.85	37.85	37.85	58.5	58.5	58.5	58.5
215750	10.13	10.13	10.13	10.13	20.65	20.65	20.65	20.65	26.6	26.6	26.6	26.6	29.56	29.56	29.56	29.56	45.1	45.1	45.1	45.1
215800	47.61	47.62	47.62	47.62	81.81	81.83	81.83	81.83	97.96	97.96	97.96	97.96	104.93	104.93	104.93	104.93	126.5	126.5	126.5	126.5
215810	47.57	47.58	47.58	47.58	82.27	82.28	82.28	82.28	98.87	98.87	98.87	98.87	106.42	106.42	106.42	106.42	131.28	131.28	131.28	131.28
215820	36.6	36.61	36.61	36.61	59.37	59.38	59.38	59.38	67.92	67.92	67.92	67.92	71.75	71.75	71.75	71.75	90.02	90.02	90.02	90.02
215830	33.14	33.15	33.15	33.15	54.31	54.31	54.31	54.31	62.75	62.75	62.75	62.75	66.25	66.25	66.25	66.25	73.77	73.77	73.77	73.77
215840	33.11	33.11	33.11	33.11	54.41	54.42	54.42	54.42	62.91	62.91	62.91	62.91	66.4	66.4	66.4	66.4	73.9	73.9	73.9	73.9
215850	53.7	53.79	53.79	53.79	54.56	54.57	54.57	54.57	63.82	63.82	63.82	63.82	68.12	68.12	68.12	68.12	78.47	78.47	78.47	78.47
215860	73.96	73.92	73.92	73.92	73.96	73.92	73.92	73.92	73.92	73.92	73.92	73.92	76.96	76.96	76.96	76.96	101.83	101.83	101.83	101.83
215870	17.7	17.7	17.7	17.7	25.14	25.14	25.14	25.14	26.88	26.83	26.83	26.83	27.97	27.97	27.97	27.97	37.8	37.8	37.8	37.8
215880	18.41	18.48	18.48	18.48	25.07	25.07	25.07	25.07	26.82	26.75	26.75	26.75	27.89	27.89	27.89	27.89	37.73	37.73	37.73	37.73
215890	18.36	18.35	18.35	18.35	24.99	24.99	24.99	24.99	26.76	26.68	26.68	26.68	27.81	27.81	27.81	27.81	37.66	37.66	37.66	37.66
215900	20.72	20.7	20.7	20.7	41.2	41.18	41.18	41.18	48.95	48.95	48.95	48.95	52.3	52.3	52.3	52.3	78.78	78.78	78.78	78.78
215910	19.75	19.75	19.75	19.75	38.4	38.38	38.38	38.38	44.53	44.53	44.53	44.53	47.05	47.05	47.05	47.05	57.39	57.39	57.39	57.39
215920	18.1	18.1	18.1	18.1	34.18	34.17	34.17	34.17	39.19	39.19	39.19	39.19	41.03	41.03	41.03	41.03	50.12	50.12	50.12	50.12
215930	16.53	16.52	16.52	16.52	30.41	30.39	30.39	30.39	34.19	34.19	34.19	34.19	35.66	35.66	35.66	35.66	43.98	43.98	43.98	43.98
215940	14.96	14.95	14.95	14.95	26.84	26.82	26.82	26.82	29.49	29.49	29.49	29.49	31.04	31.04	31.04	31.04	38.48	38.48	38.48	38.48
215950	13.27	13.27	13.27	13.27	21.28	21.28	21.28	21.28	24.28	23.58	23.58	23.58	24.77	23.43	23.43	23.43	28.34	28.34	28.34	28.34
215960	20.56	20.56	20.56	20.56	38.48	38.48	38.48	38.48	49.29	49.29	49.29	49.29	54.07	54.07	54.07	54.07	85.49	85.49	85.49	85.49
215970	17.35	17.34	17.34	17.34	35.49	35.51	35.51	35.51	48.12	48.12	48.12	48.12	53.01	53.01	53.01	53.01	77.01	77.01	77.01	77.01
215980	18.84	18.84	18.84	18.84	39.92	39.93	39.93	39.93	53.79	53.79	53.79	53.79	59.87	59.87	59.87	59.87	86.82	86.82	86.82	86.82
215990	22.51	22.51	22.51	22.51	43.02	43.03	43.03	43.03	56.28	56.28	56.28	56.28	62.5	62.5	62.5	62.5	87.82	87.82	87.82	87.82
216000	26.19	26.2	26.2	26.2	74.69	74.72	74.72	74.72	101.76	101.76	101.76	101.76	115.68	115.68	115.68	115.68	177.17	177.17	177.17	177.17
216010	25.65	25.67	25.67	25.67	73.13	73.15	73.15	73.15	99.11	99.11	99.11	99.11	112.21	112.21	112.21	112.21	156.75	156.75	156.75	156.75
216020	26.89	26.9	26.9	26.9	74.95	74.98	74.98	74.98	101.68	101.68	101.68	101.68	114.19	114.19	114.19	114.19	159.35	159.35	159.35	159.35
216030	25.4	25.41	25.41	25.41	74.04	74.07	74.07	74.07	102.57	102.57	102.57	102.57	113.01	113.01	113.01	113.01	148.08	148.08	148.08	148.08
216040	28.05	28.06	28.06	28.06	75.26	75.29	75.29	75.29	103.11	103.11	103.11	103.11	113.44	113.44	113.44	113.44	148.84	148.84	148.84	148.84
216050	28.96	28.97	28.97	28.97	84.24	84.27	84.27	84.27	97.37	97.37	97.37	97.37	106.49	106.49	106.49	106.49	147.14	147.14	147.14	147.14
216060	14.83	14.83	14.83	14.83	70.99	71.03	71.03	71.03	88.45	88.45	88.45	88.45	96.31	96.31	96.31	96.31	132.49	132.49	132.49	132.49
216070	31.03	31.04	31.04	31.04	60.81	60.8	60.8	60.8	70.5	70.5	70.5	70.5	88.37	88.37	88.37	88.37	192.1	192.1	192.1	192.1
216080	21.62	21.62	21.62	21.62	53.61	53.64	53.64	53.64	113.25	113.25	113.25	113.25	134.94	134.94	134.94	134.94	249.29	249.29	249.29	249.29
216090	0.24	0.24	0.24	0.24	9.97	9.97	9.97	9.97	13.84	13.84	13.84	13.84	14.73	14.73	14.73	14.73	16.83	16.83	16.83	16.83

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
216100	86.51	86.51	86.51	86.51	152.22	152.24	152.24	152.24	223.32	223.32	223.32	223.32	275.57	275.57	275.57	275.57	714.94	714.94	714.94	714.94
216110	104.5	104.51	104.51	104.51	369.46	369.49	369.49	369.49	542.47	542.47	542.47	542.47	627.59	627.59	627.59	627.59	1096.89	1096.89	1096.89	1096.89
216120	0.24	0.24	0.24	0.24	3.45	3.45	3.45	3.45	16.87	16.87	16.87	16.87	21.97	21.97	21.97	21.97	50.64	50.64	50.64	50.64
216130	56.09	56.17	56.17	56.17	157.38	157.37	157.37	157.37	204.98	204.98	204.98	204.98	228.71	228.71	228.71	228.71	331.29	331.29	331.29	331.29
216140	17.63	17.64	17.64	17.64	60.53	60.53	60.53	60.53	80.89	80.89	80.89	80.89	84.76	84.76	84.76	84.76	87.09	87.09	87.09	87.09
216150	8.96	8.96	8.96	8.96	37.49	37.49	37.49	37.49	57.89	57.89	57.89	57.89	68.62	68.62	68.62	68.62	128.76	128.76	128.76	128.76
216160	39.45	39.45	39.45	39.45	72.29	72.29	72.29	72.29	90.9	90.9	90.9	90.9	100.17	100.17	100.17	100.17	149.2	149.2	149.2	149.2
216170	9.99	9.99	9.99	9.99	14.14	14.13	14.13	14.13	14.65	14.65	14.65	14.65	15.04	15.04	15.04	15.04	15.49	15.49	15.49	15.49
216180	72.23	72.26	72.26	72.26	117.52	117.51	117.51	117.51	139.33	139.33	139.33	139.33	149.92	149.92	149.92	149.92	206.87	206.87	206.87	206.87
216190	19.52	19.52	19.52	19.52	40.19	40.19	40.19	40.19	51.91	51.91	51.91	51.91	57.73	57.73	57.73	57.73	96.42	96.42	96.42	96.42
216200	17.11	17.11	17.11	17.11	41.6	40.79	40.79	40.79	54.75	54.75	54.75	54.75	61.41	61.41	61.42	61.42	81.37	81.37	80.85	80.85
216210	1.26	1.26	1.26	1.26	3.22	3.22	3.22	3.22	3.23	3.23	3.23	3.23	3.39	3.39	3.39	3.39	7.09	7.09	7.09	7.09
216220	46.3	46.3	46.3	46.3	84.5	84.5	84.5	84.5	106.15	106.15	106.15	106.15	116.96	116.96	116.96	116.96	174.07	174.07	174.07	174.07
216230	6.84	6.84	6.84	6.84	15.87	13.98	13.11	11.26	21.88	22.52	14.32	19.16	15.64	15.63	15.64	15.64	19.49	19.49	19.49	19.49
216240	7.35	7.35	7.35	7.35	12.47	12.47	12.47	12.47	13.45	13.45	13.45	13.45	13.66	13.66	13.66	13.66	14.79	14.79	14.79	14.79
216250	13.47	13.47	13.47	13.47	24.55	24.55	24.55	24.55	30.84	30.84	30.84	30.84	33.97	33.97	33.97	33.97	50.55	50.55	50.55	50.55
216260	10.62	10.62	10.62	10.62	19.9	19.9	19.9	19.9	25.14	25.14	25.14	25.14	27.74	27.74	27.74	27.74	41.5	41.5	41.5	41.5
216270	9.31	9.31	9.31	9.31	17.26	17.26	17.26	17.26	21.76	21.76	21.76	21.76	24	24	24	24	35.82	35.82	35.82	35.82
216280	7.93	7.93	7.93	7.93	14.9	14.9	14.9	14.9	18.83	18.83	18.83	18.83	20.79	20.79	20.79	20.79	31.12	31.12	31.12	31.12
216290	23.42	23.42	23.42	23.42	56.9	56.89	56.89	56.89	70.01	70.01	70.01	70.01	75	75	75	75	92.95	92.95	92.95	92.95
216300	193.27	193.27	193.27	193.27	357.18	357.18	357.18	357.18	465.27	465.27	465.27	465.27	524.22	524.22	524.22	524.22	817.89	817.89	817.89	817.89
216310	6.03	6.03	6.03	6.03	58.19	58.19	58.19	58.19	81.3	81.3	81.3	81.3	84.66	84.66	84.66	84.66	85.9	85.9	85.9	85.9
216320	62.63	62.63	62.63	62.63	117.19	117.19	117.19	117.19	148.01	148.01	148.01	148.01	163.41	163.41	163.41	163.41	256.55	256.55	256.55	256.55
216330	40.41	40.41	40.41	40.41	73.25	73.25	73.25	73.25	91.9	91.9	91.9	91.9	101.21	101.21	101.21	101.21	150.45	150.45	150.45	150.45
216340	8.99	8.99	8.99	8.99	12.88	12.87	12.87	12.87	11.98	11.98	11.98	11.98	11.3	11.3	11.3	11.3	9.19	9.19	9.19	9.19
216350	14.92	14.92	14.92	14.92	28.94	28.94	28.94	28.94	36.02	36.02	36.02	36.02	40.43	40.43	40.43	40.43	60.72	60.72	60.72	60.72
216360	3.43	3.43	3.43	3.43	7.47	7.47	7.47	7.47	10.27	10.27	10.27	10.27	12.54	12.54	12.54	12.54	13.59	13.59	13.59	13.59
216370	41.21	41.21	41.21	41.21	80.82	80.82	80.82	80.82	103.17	103.17	103.17	103.17	114.28	114.28	114.28	114.28	172.76	172.76	172.76	172.76
216380	37.73	37.73	37.73	37.73	145.86	145.89	145.89	145.89	227.24	227.24	227.24	227.24	264.04	264.04	264.04	264.04	432	432	432	432
216390	60.44	60.44	60.44	60.44	135.23	135.25	135.25	135.25	198.79	198.79	198.79	198.79	233.27	233.27	233.27	233.27	383.62	383.62	383.62	383.62
216400	5.2	5.2	5.2	5.2	12.26	12.26	12.26	12.26	16.38	16.38	16.38	16.38	18.44	18.44	18.44	18.44	29.29	29.29	29.29	29.29
216410	4.63	4.63	4.63	4.63	7.15	7.15	7.15	7.15	7.99	7.99	7.99	7.99	8.28	8.28	8.28	8.28	17.92	17.92	17.92	17.92
216420	14.75	14.75	14.75	14.75	27.86	27.86	27.86	27.86	35.25	35.25	35.25	35.25	38.93	38.93	38.93	38.93	58.34	58.34	58.34	58.34
216430	25.82	25.82	25.82	25.82	52.02	52.02	52.02	52.02	68.44	68.44	68.44	68.44	77.17	77.17	77.17	77.17	117.36	117.36	117.36	117.36
216440	1.88	1.88	1.88	1.88	8.85	8.85	8.85	8.85	11.65	11.65	11.65	11.65	12.4	12.4	12.4	12.4	14.14	14.14	14.14	14.14
216450	7.6	7.6	7.6	7.6	18.48	18.48	18.48	18.48	24.91	24.91	24.91	24.91	28.14	28.14	28.14	28.14	45.19	45.19	45.19	45.19
216460	3.41	3.41	3.41	3.41	15.16	15.16	15.16	15.16	23.42	23.42	23.42	23.42	27.76	27.76	27.76	27.76	52.1	52.1	52.1	52.1
216470	3.46	3.46	3.46	3.46	15.56	15.56	15.56	15.56	20.84	20.84	20.84	20.84	22.02	22.02	22.02	22.02	26.41	26.41	26.41	26.41
216480	13.23	13.23	13.23	13.23	25.74	25.74	25.74	25.74	32.78	32.78	32.78	32.78	36.29	36.29	36.29	36.29	54.73	54.73	54.73	54.73
216490	0.95	0.95	0.95	0.95	4.86	4.86	4.86	4.86	6.28	6.28	6.28	6.28	7.26	7.26	7.26	7.26	12.53	12.53	12.53	12.53
216500	16.97	16.97	16.97	16.97	31.74	31.74	31.74	31.74	40.08	40.08	40.08	40.08	44.24	44.24	44.24	44.24	66.15	66.15	66.15	66.15
216510	18.4	18.39	18.39	18.39	24.32	24.33	24.33	24.33	25.99	25.99	25.99	25.99	25.94	25.94	25.94	25.94	22.32	22.32	22.32	22.32
216520	56.25	56.23	56.23	56.23	105.95	105.94	105.94	105.94	125.47	125.47	125.47	125.47	134.83	134.83	134.83	134.83	203.18	203.18	203.18	203.18
216530	41.5	41.5	41.5	41.5	93.87	93.87	93.87	93.87	124.18	124.18	124.18	124.18	139.31	139.31	139.31	139.31	218.9	218.9	218.9	218.9
216540	2.26	2.26	2.26	2.26	15.66	15.67	15.67	15.67	17.07	17.07	17.07	17.07	17.56	17.56	17.56	17.56	18.26	18.26	18.26	18.26
216550	31.59	31.02	31.02	31.02	74.83	74.92	74.92	74.92	85.21	85.21	85.21	85.21	85.32	85.32	85.32	85.32	78.62	78.62	78.62	78.62
216560	14.76	14.76	14.76	14.76	74.01	74.01	74.01	74.01	107.72	107.72	107.72	107.72	123.16	123.16	123.16	123.16	201.74	201.74	201.74	201.74
216570	5.76	5.76	5.76	5.76	14.06	14.06	14.06	14.06	18.97	18.97	18.97	18.97	21.43	21.43	21.43	21.43	34.45	34.45	34.45	34.45
216580	12.94	12.94	12.94	12.94	31.47	31.47	31.47	31.47	42.51	42.51	42.51	42.51	48.06	48.06	48.06	48.06	77.4	77.4	77.4	77.4
216590	8.64	8.64	8.64	8.64	22.93	22.93	22.93	22.93	31.57	31.57	31.57	31.57	35.92	35.92	35.92	35.92	59.08	59.08	59.08	59.08
216600	20.08	20.08	20.08	20.08	42.52	42.54	42.54	42.54	101.13	101.13	101.13	101.13	131.9	131.9	131.9	131.9	289.1	289.1	289.1	289.1
216610	8.58	8.58	8.58	8.58	15.53	15.53	15.53	15.53	19.46	19.46	19.46	19.46	21.42	21.42	21.42	21.42	51.33	51.33	51.33	51.33
216620	0.35	0.35	0.35	0.35	9.37	9.37	9.37	9.37	18.68	18.68	18.68	18.68	21.61	21.61	21.61	21.61	27.26	27.26	27.26	27.26
216630	11.51	11.51	11.51	11.51	25.3	25.3	25.3	25.3	33.22	33.22	33.22	33.22	37.17	37.17	37.17	37.17	57.91	57.91	57.91	57.91
216640	18.82	18.82	18.82	18.82	58.47	58.47	58.47	58.47	84.2	84.2	84.2	84.2	97.41	97.41	97.41	97.41	239.25	239.25	239.25	239.25
216650	3	3	3	3	13.07	13.07	13.07	13.07	19.89	19.89	19.89	19.89	23.47	23.47	23.47	23.47	43.32	43.32	43.32	43.32
216660	6.74	6.74	6.74	6.74	29.19	29.19	29.19	29.19	45.19	45.19	45.19	45.19	53.61	53.61	53.61	53.61	108.49	108.49	108.49	108.49
216670	3.6	3.6	3.6	3.6	17.73	17.73	17.73	17.73	32.36	32.36	32.36	32.36	39.07	39.07	39.07	39.07	73.95	73.95	73.95	73.95
216680	4.6	4.6	4.6	4.6	19.11	19.11	19.11	19.11	29.4	29.4	29.4	29.4	34.98	34.98	34.98	34.98	66.37	66.37	66.37	66.37
216690	19.71	19.71	19.71	19.71	36.94	36.94	36.94	36.94	46.67	46.67	46.67	46.67	51.52	51.52	51.52	51.52	77.08	77.08	77.08	77.08
216700	0	0	0	0	2.42	2.42	2.42	2.42	11.91	11.91	11.91	11.91	17.34	17.34	17.34	17.34	35.43	35.43	35.43	35.43
216710	3.42	3.42	3.42	3.42	14.64	14.64	14.64	14.64	22.43	22.43	22.43	22.43	26.59	26.59	26.59	26.59	49.95	49.95	49.95	49.95
216720	4.77	4.77	4.77	4.77	9.24	9.24	9.24	9.24	11.47	11.47	11.47	11.47	12.55	12.55	12.55	12.55	17.54	17.54	17.54	17.54
216730	6.21	6.21	6.21	6.21	25.43	25.43	25.43	25.43	38.57	38.57	38.57	38.57	45.65	45.65	45.65	45.65	85.3	85.3	85.3	85.3
216740	3.14	3.14	3.14	3.14	12.25	12.25	12.25	12.25	18.82	18.82	18.82	18.82	20.83	20.83	20.83	20.83	22.83	22.83	22.83	22.83
216750	23.09	23.09	23.09	23.09	47.01	47.01	47.01	47.01	60.54	60.54	60.54	60.54	67.27	67.27	67.27	67.27	102.6	102.6	102.6	102.6
216760	145.12	145.29	145.29	145.29	145.12	145.29	145.29	145.29	191.57	191.57	191.57	191.57	238.82	238.82	238.82	238.82	528.58	528.58	528.58	528.58
216770	3.06	3.06	3.06	3.06	16.55	16.55	16.55	16.55	42.63	42.63	42.63	42.63	55.09	55.09	55.09	55.09	119.07	119.07	119.07	119.07
216780	5.08	5.08	5.08	5.08	21.74	21.74	21.74	21.74	33.34	33.34	33.34	33.34	39.43	39.43	39.43	39.43	74.03	74.03	74.03	74.03
216790	0.21	0.21	0.21	0.21	4.24	4.24	4.24	4.24	15.08	15.08	15.08	15.08	21.3	21.3	21.3	21.3	57.61	57.61	57.61	57.61
216800	5.81	5.81	5.81	5.81	26.99	26.99	26.99	26.99	42.78	42.78	42.78	42.78	51.15	51.15	51.15	51.15	98.56	98.56	98.56	98.56
216810	19.86	19.86	19.86	19.86	85.73	85.73	85.73	85.73	131.3	131.3	131.3	131.3	155.25	155.25	155.25	155.25	293.91	293.91	293.91	293.91
216820	0.37	0.37	0.37	0.37	8.66	8.66	8.66	8.66	13.9	13.9	13.9	13.9	16.25	16.25	16.25	16.25	22.19	22.19	22.19	22.19
216830	5.99	5.99	5.99	5.99	13.36	13.36	13.36	13.36	17.6	17.6	17.6	17.6	19.72	19.72	19.72	19.72	46.68	46.68	46.68	46.68
216840	9.77	9.77	9.77	9.77	40.7	40.7	40.7	40.7	62.37	62.37	62.37	62.37	73.9	73.9	73.9	73.9	138.49	138.49	138.49	138.49
216900	13.85	13.85	13.85	13.85	59.39	59.39	59.39	59.39	91.02	91.02	91.02	91.02	107.68	107.68	107.68	107.68	204.3	204.3	204.3	204.3
216910	4.95	4.95	4.95	4.95	21.21	21.21	21.21	21.21	32.65	32.65	32.65	32.65	38.67	38.67	38.67	38.67	76.75	76.75	76.75	76.75
216920	2.11	2.11	2.11	2.11	9.39	9.39	9.39	9.39	14.35	14.35	14.35	14.35	16.95	16.95	16.95	16.95	32.38	32.38	32.38	32.38
217000	15.71	15.71	15.71	15.71	24.39	24.39	24.39	24.39	29.7	29.7	29.7	29.7	31.88	31.88	31.88	31.88	40.82	40.82	40.82	40.82
217010	15.79	15.79	15.79	15.79	25.26	25.26	25.26	25.26	31.04	31.04	31.04	31.04	33.54	33.54	33.54	33.54	44.38	44.38	44.38	44.38
217020	16.02	16.02	16.02	16.02	25.33	25.33	25.33	25.33	31.11	31.11	31.11	31.11	33.63	33.63	33.63	33.63	44.54	44.54	44.54	44.54
217030	130.98	130.98	130.98	130.98	246.9	246.9	246.9	246.9	312.33	312.33	312.33	312.33	344.91	344.91	344.91	344.91	516.67	516.67	516.67	516.67
217040	7.96	7.96	7.96	7.96	17.97	17.97	17.97	17.97	23.75	23.75	23.75	23.75	26.64	26.64	26.64	26.64	41.79	41.79	41.79	41.79
217050	18.47	18.47	18.47	18.47	39.97	39.97	39.97	39.97	50.78	50.78	50.78	50.78	55.79	55.79	55.79	55.79	80.69	80.69	80.69	80.69
217060	5.93	5.93	5.93	5.93	10.29	10.29	10.29	10.29	11.08	11.08	11.08	11.08	11.31	11.31	11.31	11.31	12.13	12.13	12.13	12.13
217070	6.66	6.66	6.66	6.66	14	14	14	14	15.39	15.39	15.39	15.39	15.61	15.61	15.61	15.61	16.07	16.07	16.07	16.07
217080	26.39	26.39	26.39	26.39	54.57	54.57	54.57	54.57	70.6	70.6	70.6	70.6	78.58	78.58	78.58	78.58	120.67	120.67	120.67	120.67
217090	0	0	0	0	3.08	3.08	3.08	3.08	6.56	6.56	6.56	6.56	8.66	8.66	8.66	8.66	22.45	22.45	22.45	22.45
217100	14.46	14.46	14.46	14.46	36.02	36.02	36.02	36.02	50	50	50	50	56.73	56.73	56.73	56.73	89.92	89.92	89.92	89.92
217110	2.18	2.18	2.18	2.18	8.72	8.72	8.72	8.72	12.14	12.14	12.14	12.14	13.56	13.56	13.56	13.56	19.09	19.09	19.09	19.09
217120	2.2	2.2	2.2	2.2	8.87	8.87	8.87	8.87	12.29	12.29	12.29	12.29	13.74	13.74	13.74	13.74	19.32	19.32	19.32	19.32
217122	6.69	6.69	6.69	6.69	8.41	8.41	8.41	8.41	11.68	11.68	11.68	11.68	13.18	13.18	13.18	13.18	19.54	19.54	19.54	19.54
217125	13.59	13.59	13.59	13.59	28.91	28.91	28.91	28.91	37.63	37.63	37.63	37.63	41.97	41.97	41.97	41.97	64.76	64.76	64.76	64.76
217130	2.49	2.49	2.49	2.49	5.02	5.02	5.02	5.02	6.09	6.09	6.09	6.09	6.56	6.56	6.56	6.56	7.93	7.93	7.93	7.93
217140	8.38	8.38	8.38	8.38	12.59	12.59	12.59	12.59	16.74	16.74	16.74	16.74	18.81	18.81	18.81	18.81	29.72	29.72	29.72	29.72
217150	5.01	5.01	5.01	5.01	11.71	11.71	11.71	11.71	15.61	15.61	15.61	15.61	17.57	17.57	17.57	17.57	27.99	27.99	27.99	27.99

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
217160	10.36	10.37	10.37	10.37	18.6	18.61	18.61	18.61	18.4	18.4	18.4	18.4	19.26	19.26	19.26	19.26	23.37	23.37	23.37	23.37
217170	3.4	3.4	3.4	3.4	2.2	2.2	2.2	2.2	2.06	2.06	2.06	2.06	2.2	2.2	2.2	2.2	5.72	5.72	5.72	5.72
217180	1.77	1.77	1.77	1.77	3.14	3.14	3.14	3.14	5.35	5.35	5.35	5.35	7.77	7.77	7.77	7.77	21.43	21.43	21.43	21.43
217190	9.09	9.09	9.09	9.09	16.66	16.66	16.66	16.66	20.96	20.96	20.96	20.96	23.07	23.07	23.07	23.07	34.03	34.03	34.03	34.03
217200	4.31	4.31	4.31	4.31	7.68	7.68	7.68	7.68	9.6	9.6	9.6	9.6	10.56	10.56	10.56	10.56	15.71	15.71	15.71	15.71
217210	58.47	58.48	58.48	58.48	135.9	135.9	135.9	135.9	180.64	180.64	180.64	180.64	203.16	203.16	203.16	203.16	324.05	324.05	324.05	324.05
217220	0.11	0.11	0.11	0.11	1.92	1.92	1.92	1.92	3.02	3.02	3.02	3.02	3.5	3.5	3.5	3.5	4.44	4.44	4.44	4.44
217230	2.58	2.58	2.58	2.58	4.59	4.59	4.59	4.59	9.07	9.07	9.07	9.07	11.39	11.39	11.39	11.39	21.37	21.37	21.37	21.37
217240	4.05	4.05	4.05	4.05	7.21	7.21	7.21	7.21	9.02	9.02	9.02	9.02	9.92	9.92	9.92	9.92	14.7	14.7	14.7	14.7
217250	35.83	35.83	35.83	35.83	70.64	70.64	70.64	70.64	90.28	90.28	90.28	90.28	100.09	100.09	100.09	100.09	157.14	157.14	157.13	157.13
217260	25.15	25.15	25.15	25.15	57	57	57	57	68.58	68.58	68.58	68.58	73.63	73.63	73.63	73.63	86	86	86	86
217270	33.83	33.83	33.83	33.83	68.93	68.93	68.93	68.93	88.47	88.47	88.47	88.47	98.13	98.13	98.13	98.13	148.64	148.64	148.64	148.64
217280	9.49	9.49	9.49	9.49	18.46	18.46	18.46	18.46	23.24	23.24	23.24	23.24	25.57	25.57	25.57	25.57	37.64	37.64	37.64	37.64
217290	13.59	13.59	13.59	13.59	24.35	24.35	24.35	24.35	29.95	29.95	29.95	29.95	32.69	32.69	32.69	32.69	46.82	46.82	46.82	46.82
217300	8.71	8.71	8.71	8.71	16.99	16.99	16.99	16.99	21.65	21.65	21.65	21.65	23.97	23.97	23.97	23.97	36.16	36.16	36.16	36.16
217310	4.36	4.36	4.36	4.36	8.5	8.5	8.5	8.5	10.83	10.83	10.83	10.83	11.99	11.99	11.99	11.99	18.09	18.09	18.09	18.09
217320	4.11	4.11	4.11	4.11	8.5	8.5	8.5	8.5	10.98	10.98	10.98	10.98	12.22	12.22	12.22	12.22	18.72	18.72	18.72	18.72
217330	1.61	1.62	1.62	1.62	7.24	7.24	7.24	7.24	9.45	9.45	9.45	9.45	9.58	9.58	9.58	9.58	17.6	17.6	17.6	17.6
217340	6.31	6.31	6.31	6.31	11.62	11.62	11.62	11.62	14.62	14.62	14.62	14.62	16.11	16.11	16.11	16.11	35.98	35.98	35.98	35.98
217350	7.78	7.78	7.78	7.78	17.8	17.8	17.8	17.8	22.5	22.5	22.5	22.5	24.31	24.31	24.31	24.31	29.11	29.11	29.11	29.11
217360	12.77	12.77	12.77	12.77	24.74	24.74	24.74	24.74	31.49	31.49	31.49	31.49	34.84	34.84	34.84	34.84	52.5	52.5	52.5	52.5
217370	14.57	14.57	14.57	14.57	28.45	28.45	28.45	28.45	36.28	36.28	36.28	36.28	40.17	40.17	40.17	40.17	60.63	60.63	60.63	60.63
217380	4.82	4.82	4.82	4.82	10.94	10.94	10.94	10.94	14.48	14.48	14.48	14.48	16.04	16.04	16.04	16.04	19.27	19.27	19.27	19.27
217390	8.27	8.27	8.27	8.27	16.77	16.77	16.77	16.77	21.57	21.57	21.57	21.57	23.96	23.96	23.96	23.96	36.49	36.49	36.49	36.49
217400	4.59	4.59	4.59	4.59	19.67	19.67	19.67	19.67	30.67	30.67	30.67	30.67	36.58	36.58	36.58	36.58	69.92	69.92	69.92	69.92
217410	0.43	0.43	0.43	0.43	3	3	3	3	11.09	11.09	11.09	11.09	20.97	20.97	20.97	20.97	61.91	61.91	61.91	61.91
217420	26.36	26.36	26.36	26.36	62.15	62.15	62.15	62.15	83.1	83.1	83.1	83.1	93.58	93.58	93.58	93.58	148.88	148.88	148.88	148.88
217430	22.2	22.2	22.2	22.2	65.9	65.9	65.9	65.9	91.91	91.91	91.91	91.91	105.44	105.44	105.44	105.44	174.78	174.78	174.78	174.78
217440	9.87	9.87	9.87	9.87	37.15	37.15	37.15	37.15	58.44	58.44	58.44	58.44	69.19	69.19	69.19	69.19	124.27	124.27	124.27	124.27
217450	7.2	7.2	7.2	7.2	29.79	29.79	29.79	29.79	45.55	45.55	45.55	45.55	53.54	53.54	53.54	53.54	96.35	96.35	96.35	96.35
217460	1.96	1.96	1.96	1.96	8.23	8.23	8.23	8.23	12.66	12.66	12.66	12.66	15.01	15.01	15.01	15.01	28.57	28.57	28.57	28.57
217470	5.75	5.75	5.75	5.75	13.8	13.8	13.8	13.8	18.52	18.52	18.52	18.52	20.88	20.88	20.88	20.88	33.33	33.33	33.33	33.33
217480	3.23	3.23	3.23	3.23	12.32	12.32	12.32	12.32	18.55	18.55	18.55	18.55	21.89	21.89	21.89	21.89	40.67	40.67	40.67	40.67
217490	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.98	4.98	4.98	4.98
217500	10.1	10.1	10.1	10.1	30.7	30.7	30.7	30.7	43.67	43.67	43.67	43.67	50.29	50.29	50.29	50.29	86.03	86.03	86.03	86.03
217510	40.18	40.2	40.2	40.2	132.88	132.96	132.96	132.96	185.7	185.7	185.7	185.7	212.39	212.39	212.39	212.39	381.65	381.65	381.65	381.65
217520	3.13	3.13	3.13	3.13	13.64	13.65	13.65	13.65	16.18	16.18	16.18	16.18	17.91	17.91	17.91	17.91	47.5	47.5	47.5	47.5
217530	3.14	3.14	3.14	3.14	16.51	16.51	16.51	16.51	26.3	26.3	26.3	26.3	31.5	31.5	31.5	31.5	62.05	62.05	62.05	62.05
217540	41.16	41.16	41.16	41.16	89.1	89.1	89.1	89.1	117.39	117.39	117.39	117.39	131.68	131.68	131.68	131.68	245.46	245.46	245.46	245.46
217550	5.3	5.3	5.3	5.3	8.16	8.16	8.16	8.16	9.24	9.24	9.24	9.24	9.56	9.56	9.56	9.56	16.78	16.78	16.78	16.78
217560	26.15	26.15	26.15	26.15	52.59	52.59	52.59	52.59	67.54	67.54	67.54	67.54	74.98	74.98	74.98	74.98	116.02	116.02	116.02	116.02
217570	4.98	4.98	4.98	4.98	17.48	17.48	17.48	17.48	25.8	25.8	25.8	25.8	30.15	30.15	30.15	30.15	54.06	54.06	54.06	54.06
217580	5.92	5.92	5.92	5.92	9.95	9.95	9.95	9.95	11.35	11.35	11.35	11.35	11.61	11.61	11.61	11.61	19.13	19.13	19.13	19.13
217590	16.14	16.14	16.14	16.14	34.97	34.97	34.97	34.97	45.78	45.78	45.78	45.78	51.17	51.17	51.17	51.17	79.52	79.52	79.52	79.52
217600	9.57	9.57	9.57	9.57	19.95	19.95	19.95	19.95	25.86	25.86	25.86	25.86	28.81	28.81	28.81	28.81	49.18	49.18	49.18	49.18
217610	52.34	52.34	52.34	52.34	96.31	96.31	96.31	96.31	119.83	119.83	119.83	119.83	129.95	129.95	129.95	129.95	152.4	152.4	152.4	152.4
217620	10.68	10.68	10.68	10.68	20.1	20.1	20.1	20.1	21.77	21.77	21.77	21.77	22.26	22.26	22.26	22.26	22.36	22.36	22.36	22.36
217630	25.15	25.15	25.15	25.15	47.83	47.83	47.83	47.83	60.62	60.62	60.62	60.62	66.99	66.99	66.99	66.99	100.53	100.53	100.53	100.53
217640	40.04	40.04	40.04	40.04	73.01	73.01	73.01	73.01	91.7	91.7	91.7	91.7	101.02	101.02	101.02	101.02	150.33	150.33	150.33	150.33
220000	62.43	62.45	62.45	62.45	118.63	118.63	118.63	118.63	145.61	145.61	145.61	145.61	160.25	160.25	160.25	160.25	203.65	203.65	203.65	203.65
220010	40.94	40.95	40.95	40.95	86.29	86.31	86.31	86.31	116.04	116.04	116.04	116.04	130.3	130.3	130.3	130.3	190.47	190.47	190.47	190.47
220020	40.61	40.62	40.62	40.62	85.35	85.37	85.37	85.37	113.61	113.61	113.61	113.61	126.39	126.39	126.39	126.39	180.52	180.52	180.52	180.52
220030	22.44	22.43	22.43	22.43	47.78	47.78	47.78	47.78	60.66	60.66	60.66	60.66	68.53	68.53	68.53	68.53	92.68	92.68	92.68	92.68
220040	46.22	46.23	46.23	46.23	138.97	138.98	138.98	138.98	194.46	194.46	194.46	194.46	216.33	216.33	216.33	216.33	357.76	357.76	357.76	357.76
220050	44.14	44.16	44.16	44.16	51.68	51.68	51.68	51.68	69.86	69.86	69.86	69.86	75.94	75.94	75.94	75.94	94.41	94.41	94.41	94.41
220060	91.45	91.34	91.34	91.34	138.76	138.78	138.78	138.78	190.1	190.1	190.1	190.1	210.81	210.81	210.81	210.81	326.09	326.09	326.09	326.09
220070	57.39	57.4	57.4	57.4	146.96	146.99	146.99	146.99	214.93	214.93	214.93	214.93	249.19	249.19	249.19	249.19	426.67	426.67	426.67	426.67
220080	70.64	70.67	70.67	70.67	181.05	181.1	181.1	181.1	257.73	257.73	257.73	257.73	297.36	297.36	297.36	297.36	491.4	491.4	491.4	491.4
220090	54.28	54.31	54.31	54.31	101.68	101.71	101.71	101.71	140.19	140.19	140.19	140.19	167.05	167.05	167.05	167.05	263.59	263.59	263.59	263.59
220100	50.65	50.69	50.69	50.69	80.7	80.73	80.73	80.73	90.53	90.53	90.53	90.53	93.86	93.86	93.86	93.86	113.2	113.2	113.2	113.2
220110	43.76	43.78	43.78	43.78	61.13	61.13	61.13	61.13	70.07	70.07	70.07	70.07	72.92	72.92	72.92	72.92	78.84	78.84	78.84	78.84
220120	58.68	58.73	58.73	58.73	139.01	139.12	139.12	139.12	187.95	187.95	187.95	187.95	212.82	212.82	212.82	212.82	332.38	332.38	332.38	332.38
220130	50.21	50.26	50.26	50.26	115.25	115.26	115.26	115.26	152.36	152.36	152.36	152.36	169.62	169.62	169.62	169.62	261.41	261.41	261.41	261.41
220140	66.24	66.24	66.24	66.24	131.07	131.07	131.07	131.07	167.65	167.65	167.65	167.65	185.83	185.83	185.83	185.83	281.41	281.41	281.41	281.41
220150	16.63	16.66	16.66	16.66	30.5	30.51	30.51	30.51	32.9	32.9	32.9	32.9	31.77	31.77	31.77	31.77	23.16	23.16	23.16	23.16
220160	13.08	13.08	13.08	13.08	31.53	31.53	31.53	31.53	42.39	42.39	42.39	42.39	47.84	47.84	47.84	47.84	77.02	77.02	77.02	77.02
220165	17.82	17.82	17.82	17.82	18.04	18.04	18.04	18.04	20.19	20.19	20.19	20.19	20.95	20.95	20.95	20.95	22.96	22.96	22.96	22.96
220170	12.05	12.05	12.05	12.05	16.66	16.66	16.66	16.66	18.78	18.78	18.78	18.78	19.64	19.64	19.64	19.64	51.73	51.75	51.75	51.76
220180	155.11	155.06	155.06	155.06	298.65	298.6	298.6	298.6	366.07	366.07	366.07	366.07	398.14	398.14	398.14	398.14	542.41	542.41	542.41	542.41
220190	99.86	99.87	99.87	99.87	235.84	235.85	235.85	235.85	321.35	321.35	321.35	321.35	366.15	366.15	366.15	366.15	595.13	595.13	595.13	595.13
220195	25.35	25.35	25.35	25.35	34.06	34.07	34.07	34.07	40.75	40.75	40.75	40.75	44.16	44.16	44.16	44.16	54.94	54.94	54.94	54.94
220200	85.06	85.07	85.07	85.07	204.66	204.68	204.68	204.68	272.54	272.54	272.54	272.54	307.76	307.76	307.76	307.76	499.61	499.61	499.61	499.61
220210	99.6	99.62	99.62	99.62	185.81	185.85	185.85	185.85	231.39	231.39	231.39	231.39	254.95	254.95	254.95	254.95	387.73	387.73	387.73	387.73
220220	74.28	74.37	74.37	74.37	150.48	150.58	150.58	150.58	189.24	189.24	189.24	189.24	203.64	203.64	203.64	203.64	268.82	268.82	268.82	268.82
220230	33.01	33.01	33.01	33.01	67.27	67.27	67.27	67.27	86.65	86.65	86.65	86.65	96.28	96.28	96.28	96.28	146.87	146.87	146.87	146.87
220300	5.53	5.54	5.54	5.54	14.17	14.17	14.17	14.17	23.31	23.31	23.31	23.31	27.3	27.3	27.3	27.3	42.46	42.46	42.46	42.46
220310	5.55	5.55	5.55	5.55	12.58	12.58	12.58	12.58	17.36	17.36	17.36	17.36	19.21	19.21	19.21	19.21	22.08	22.08	22.08	22.08
220320	5.36	5.36	5.36	5.36	8.89	8.59	8.59	8.59	8.96	7.85	7.85	7.85	8.94	8.24	8.24	8.24	10.95	10.95	10.95	10.95
220330	32.64	32.63	32.63	32.63	59.7	59.7	59.7	59.7	75.25	75.25	75.25	75.25	83	83	83	83	123.9	123.9	123.9	123.9
220340	13.45	13.45	13.45	13.45	16.6	16.6	16.6	16.6	19.28	19.28	19.28	19.28	20.12	20.12	20.12	20.12	21.19	21.19	21.19	21.19
220350	13.43	13.43	13.43	13.43	17	17.01	17.01	17.01	19.68	19.68	19.68	19.68	25.3	28.03	28.22	28.03	52.38	52.38	52.39	52.36
220360	3.83	3.83	3.83	3.83	14.56	14.56	14.56	14.56	19.89	19.89	19.89	19.89	22.16	22.16	22.16	22.16	26.27	26.27	26.27	26.27
220370	15.27	15.27	15.27	15.27	29.37	29.37	29.37	29.37	38.96	38.96	38.96	38.96	43.34	43.34	43.34	43.34	62.51	62.51	62.51	62.51
220380	16.18	16.18	16.18	16.18	30.07	30.07	30.07	30.07	37.92	37.92	37.92	37.92	41.83	41.83	41.83	41.83	62.47	62.47	62.47	62.47
220390	10.2	10.2	10.2	10.2	20.98	20.98	20.98	20.98	26.22	26.22	26.22	26.22	27.63	27.63	27.63	27.63	31.24	31.24	31.24	31.24
220400	16.31	16.31	16.31	16.31	30.74	30.74	30.74	30.74	38.88	38.88	38.88	38.88	42.93	42.93	42.93	42.93	64.3	64.3	64.3	64.3
220500	31.97	32	32	32	69.15	69.16	69.16	69.16	82.91	82.91	82.91	82.91	89	89	89	89	99.41	99.41	99.41	99.41
220510	83.42	83.43	83.43	83.43	153.54	153.56	153.56	153.56	194.72	194.72	194.72	194.72	214.13	214.13	214.13	214.13	342.18	342.18	342.17	342.17
220530	28.43	28.44	28.44	28.44	44.82	44.83	44.83	44.83	52.24	52.24	52.24	52.24	56.61	56.61	56.61	56.61	87.84	87.84	87.84	87.84
220540	72.08	72.1	72.1	72.1	146.22	146.24	146.24	146.24	187.72	187.72	187.72	187.72	222.31	222.31	222.31	222.31	347.61	347.61	347.61	347.61
220550	38.57	38.57	38.57	38.57	76.12	76.13	76.13	76.13	97.18	97.18	97.18	97.18	105.43	105.43	105.43	105.43	119.99	119.99	119.99	119.99
220560	7.19	7.2	7.2	7.2	11.72	11.72	11.72	11.72	13.08	13.08	13.08	13.08	12.95	12.95	12.95	12.95	11.64	10.67	10.67	10.67
220570	4.65	4.65	4.65	4.65	8.1	8.16	8.16	8.16	9.17	9.17	9.17	9.17	9.46	9.2	9.2	9.2	11.61	10.65	10.65	10.65
220580	134.24	134.51	134.51	134.51	279.03	279.42	279.42	279.42	341.82	341.82	341.82	341.82	367.71	367.71	367.71	367.71	530.08	530.08	530.08	530.08
220590	82.05	82.22	82.22	82.22	164.84	165.18	165.18	165.18	187.69	187.69	187.69	187.69	189.76	189.76	189.76	189.76	269.01	269.01	269.01	269.01
220600	39.78	39.86	39.86	39.86	82.36	82.49	82.49	82.49	102.43	102.43	102.43	102.43	118.72	118.72	118.72	118.72	193.61	193.61	193.61	193.61

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
220610	26.92	26.93	26.93	26.93	36.4	36.42	36.42	36.42	35.99	35.99	35.99	35.99	35.33	35.33	35.33	35.33	30.22	30.22	30.22	30.22
220620	26.65	26.66	26.66	26.66	44.43	44.33	44.33	44.33	62.73	62.73	62.73	62.73	71.82	71.82	71.82	71.82	113.87	113.87	113.87	113.87
220630	18.2	18.2	18.2	18.2	24.07	24.07	24.07	24.07	24.24	24.24	24.24	24.24	24.25	24.25	24.25	24.25	24.25	24.25	24.25	24.25
220640	23.45	23.46	23.46	23.46	47.43	47.42	47.42	47.42	60.51	60.51	60.51	60.51	67.19	67.19	67.19	67.19	101.94	101.94	101.94	101.94
220650	3.4	3.4	3.4	3.4	4.12	4.12	4.12	4.12	5.06	5.06	5.06	5.06	5.57	5.57	5.57	5.57	10.24	10.24	10.24	10.24
220660	3.79	3.79	3.79	3.79	7.39	7.39	7.39	7.39	9.42	9.42	9.42	9.42	10.43	10.43	10.43	10.43	15.74	15.74	15.74	15.74
220670	0.95	0.95	0.95	0.95	2.94	2.94	2.94	2.94	3.58	3.58	3.58	3.58	4	4	4	4	11.04	11.04	11.04	11.04
220680	6.5	6.5	6.5	6.5	13.27	13.27	13.27	13.27	17.1	17.1	17.1	17.1	19.01	19.01	19.01	19.01	29.01	29.01	29.01	29.01
220690	3.66	3.67	3.67	3.67	20.34	20.36	20.36	20.36	24	24	24	24	24.45	24.45	24.45	24.45	21.79	21.79	21.79	21.79
220700	58.45	58.46	58.46	58.46	58.45	58.46	58.46	58.46	58.46	58.46	58.46	58.46	58.46	58.46	58.46	58.46	70.79	70.79	70.79	70.79
220710	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95	85.95
220720	12.97	12.88	12.88	12.88	18.7	18.71	18.71	18.71	21.95	21.95	21.95	21.95	24.27	24.27	24.27	24.27	34.56	34.56	34.56	34.56
220730	44.21	43.37	43.37	43.37	46.57	46.57	46.57	46.57	52.55	52.55	52.55	52.55	54.1	54.1	54.1	54.1	61.22	61.22	61.22	61.22
220740	16	16.08	16.08	16.08	22.02	22.02	22.02	22.02	30	30	30	30	32.28	32.28	32.28	32.28	43.45	43.45	43.45	43.45
220750	69.72	69.09	69.09	69.09	69.72	69.09	69.09	69.09	69.09	69.09	69.09	69.09	69.09	69.09	69.09	69.09	71.94	71.94	71.94	71.94
220760	22.78	23.62	23.62	23.62	33.76	33.76	33.76	33.76	41.59	41.59	41.59	41.59	47.19	47.19	47.19	47.19	77.93	77.93	77.93	77.93
220770	17.09	16.9	16.9	16.9	26.59	26.59	26.59	26.59	39.34	39.34	39.34	39.34	47.65	47.65	47.65	47.65	85.39	85.39	85.39	85.39
220780	0.76	0.76	0.76	0.76	9.12	9.12	9.12	9.12	17.67	17.67	17.67	17.67	21.76	21.76	21.76	21.76	33.7	33.7	33.7	33.7
220790	10.99	10.99	10.99	10.99	21.43	21.43	21.43	21.43	27.31	27.31	27.31	27.31	30.24	30.24	30.24	30.24	45.62	45.62	45.62	45.62
220800	2.73	2.73	2.73	2.73	6.73	6.73	6.73	6.73	7.31	7.31	7.31	7.31	7.15	7.15	7.15	7.15	6.05	6.05	6.05	6.05
220810	1.82	1.82	1.82	1.82	3.22	3.22	3.22	3.22	3.65	3.65	3.65	3.65	3.92	3.92	3.92	3.92	3.87	3.87	3.87	3.87
220820	3.69	3.69	3.69	3.69	6.81	6.81	6.81	6.81	8.57	8.57	8.57	8.57	9.45	9.45	9.45	9.45	14.5	14.5	14.5	14.5
220830	1.91	1.92	1.92	1.92	3.75	3.74	3.74	3.74	4.26	4.26	4.26	4.26	4.2	4.2	4.2	4.2	11.62	11.62	11.62	11.62
220840	3.64	3.64	3.64	3.64	7.97	7.97	7.97	7.97	10.45	10.45	10.45	10.45	11.68	11.68	11.68	11.68	24.92	24.92	24.92	24.92
220850	4.11	4.11	4.11	4.11	13.93	13.93	13.93	13.93	18.25	18.25	18.25	18.25	20.36	20.36	20.36	20.36	24.75	24.75	24.75	24.75
220860	17.88	17.88	17.88	17.88	36.81	36.81	36.81	36.81	47.53	47.53	47.53	47.53	52.86	52.86	52.86	52.86	80.85	80.85	80.85	80.85
220870	4.35	4.35	4.35	4.35	8.88	8.89	8.89	8.89	10.91	10.91	10.91	10.91	11.72	11.72	11.72	11.72	13.13	13.13	13.13	13.13
220880	12.66	12.66	12.66	12.66	22.02	22.06	22.06	22.06	33.12	33.12	33.12	33.12	39.75	39.75	39.75	39.75	59	59	59	59
220890	0	0	0	0	3.45	3.45	3.45	3.45	11.23	11.23	11.23	11.23	15.89	15.89	15.89	15.89	41.28	41.28	41.28	41.28
220900	10.91	10.91	10.91	10.91	21.26	21.26	21.26	21.26	27.09	27.09	27.09	27.09	33.17	33.17	33.17	33.17	71.69	71.69	71.69	71.69
220910	8.69	8.69	8.69	8.69	16.95	16.95	16.95	16.95	21.6	21.6	21.6	21.6	23.91	23.91	23.91	23.91	36.09	36.09	36.09	36.09
220920	0.42	0.42	0.42	0.42	3.03	3.03	3.03	3.03	8.91	8.91	8.91	8.91	12.87	12.87	12.87	12.87	17.98	17.98	17.98	17.98
220930	2.56	2.56	2.56	2.56	5.4	5.4	5.4	5.4	12.28	12.28	12.28	12.28	18.95	18.95	18.95	18.95	45.3	45.3	45.3	45.3
220940	8.89	8.89	8.89	8.89	25.75	25.75	25.75	25.75	36.2	36.2	36.2	36.2	41.52	41.52	41.52	41.52	73.18	73.18	73.18	73.18
220950	1.29	1.29	1.29	1.29	5.5	5.5	5.5	5.5	8.34	8.34	8.34	8.34	9.82	9.82	9.82	9.82	19.3	19.3	19.3	19.3
220960	1.17	1.17	1.17	1.17	5.1	5.1	5.1	5.1	7.76	7.76	7.76	7.76	9.16	9.16	9.16	9.16	16.91	16.91	16.91	16.91
220970	6.2	6.2	6.2	6.2	13.29	13.29	13.29	13.29	17.33	17.33	17.33	17.33	19.34	19.34	19.34	19.34	29.91	29.91	29.91	29.91
220980	39.35	39.35	39.35	39.35	76.76	76.77	76.77	76.77	98.22	98.22	98.22	98.22	107.09	107.09	107.09	107.09	125.5	125.5	125.5	125.5
220990	39.5	39.5	39.5	39.5	77.15	77.15	77.15	77.15	98.38	98.38	98.38	98.38	108.93	108.93	108.93	108.93	164.46	164.46	164.46	164.46
221000	25.04	25.14	25.14	25.14	53.26	53.55	53.55	53.55	66.26	66.26	66.26	66.26	68.61	68.61	68.61	68.61	86.31	86.31	86.3	86.3
221020	3.52	3.52	3.52	3.52	6.87	6.87	6.87	6.87	8.75	8.75	8.75	8.75	10.16	10.16	10.16	10.16	25.4	25.4	25.4	25.4
221030	22.39	22.44	22.44	22.44	47.9	48.12	48.12	48.12	58.94	58.94	58.94	58.94	60	60	60	60	79.63	79.63	79.63	79.63
221040	13.09	13.09	13.09	13.09	28.07	28.07	28.07	28.07	36.63	36.63	36.63	36.63	40.89	40.89	40.89	40.89	63.28	63.28	63.28	63.28
221050	6.44	6.44	6.44	6.44	14.59	14.59	14.59	14.59	17.81	17.81	17.81	17.81	18.42	18.42	18.42	18.42	23.1	23.1	23.1	23.1
221060	33.3	33.44	33.44	33.44	50.4	50.52	50.52	50.52	65.78	65.78	65.78	65.78	73.83	73.83	73.83	73.83	127.01	127.01	127.01	127.01
221070	21.33	21.4	21.4	21.4	37.72	37.72	37.72	37.72	63	63	63	63	70.02	70.02	70.02	70.02	129.39	129.39	129.39	129.39
221080	3.36	3.36	3.36	3.36	17	17.07	17.07	17.07	25.95	25.95	25.95	25.95	31.12	31.12	31.12	31.12	56.66	56.66	56.66	56.66
221090	2.73	2.73	2.73	2.73	11.41	11.41	11.41	11.41	17.56	17.56	17.56	17.56	20.79	20.79	20.79	20.79	38.91	38.91	38.91	38.91
221100	12.24	12.24	12.24	12.24	24.83	24.83	24.83	24.83	31.95	31.95	31.95	31.95	35.48	35.48	35.48	35.48	54.06	54.06	54.06	54.06
221110	10.11	10.11	10.11	10.11	32.99	33.02	33.02	33.02	51.51	51.51	51.51	51.51	60.57	60.57	60.57	60.57	110.14	110.14	110.14	110.14
221120	144.69	140.5	140.5	140.5	144.69	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5	140.5
221130	38.44	38.49	38.49	38.49	82.58	82.46	82.46	82.46	94.3	94.3	94.3	94.3	105.26	105.26	105.26	105.26	152.73	152.73	152.73	152.73
221140	24.23	24.24	24.24	24.24	54.55	54.56	54.56	54.56	68.64	68.64	68.64	68.64	73.99	73.99	73.99	73.99	91.46	91.46	91.46	91.46
221150	24.36	24.36	24.36	24.36	54.16	54.16	54.16	54.16	71.6	71.6	71.6	71.6	80.41	80.41	80.41	80.41	126.73	126.73	126.73	126.73
221160	20.16	20.16	20.16	20.16	39.79	39.79	39.79	39.79	50.86	50.86	50.86	50.86	56.37	56.37	56.37	56.37	85.31	85.31	85.31	85.31
221200	4.35	4.35	4.35	4.35	10.15	10.15	10.15	10.15	12.77	12.77	12.77	12.77	13.89	13.89	13.89	13.89	25.85	25.85	25.85	25.85
221210	30.49	30.49	30.49	30.49	56.71	56.71	56.71	56.71	71.52	71.52	71.52	71.52	78.9	78.9	78.9	78.9	117.86	117.86	117.86	117.86
221220	27.76	27.76	27.76	27.76	50.87	50.87	50.87	50.87	63.95	63.95	63.95	63.95	70.48	70.48	70.48	70.48	104.97	104.97	104.97	104.97
221230	8	8	8	8	18.52	18.52	18.52	18.52	24.63	24.63	24.63	24.63	28.55	28.55	28.55	28.55	67.98	67.98	67.98	67.98
221240	4.62	4.62	4.62	4.62	12.89	12.89	12.89	12.89	17.97	17.97	17.97	17.97	20.54	20.54	20.54	20.54	34.27	34.27	34.27	34.27
221250	5.95	5.95	5.95	5.95	11.67	11.67	11.67	11.67	14.9	14.9	14.9	14.9	16.5	16.5	16.5	16.5	24.94	24.94	24.94	24.94
221260	8.19	8.19	8.19	8.19	15.96	15.96	15.96	15.96	20.35	20.35	20.35	20.35	22.53	22.53	22.53	22.53	33.99	33.99	33.99	33.99
221270	23.78	23.78	23.78	23.78	75.45	75.45	75.45	75.45	118.01	118.01	118.01	118.01	140.96	140.96	140.96	140.96	265.19	265.19	265.19	265.19
221280	5.55	5.55	5.55	5.55	10.81	10.81	10.81	10.81	13.78	13.78	13.78	13.78	15.26	15.26	15.26	15.26	23.02	23.02	23.02	23.02
221290	18.6	18.6	18.6	18.6	56.68	56.68	56.68	56.68	81.6	81.6	81.6	81.6	94.4	94.4	94.4	94.4	163.83	163.83	163.83	163.83
221300	9.38	9.38	9.38	9.38	26.05	26.05	26.05	26.05	36.47	36.47	36.47	36.47	41.79	41.79	41.79	41.79	70.36	70.36	70.36	70.36
221310	19.1	19.1	19.1	19.1	56.09	56.09	56.09	56.09	79.15	79.15	79.15	79.15	90.89	90.89	90.89	90.89	153.94	153.94	153.94	153.94
221320	0	0	0	0	20.12	20.12	20.12	20.12	38.17	38.17	38.17	38.17	44.34	44.34	44.34	44.34	54.22	54.22	54.22	54.22
221330	17.98	17.98	17.98	17.98	51.45	51.45	51.45	51.45	72.63	72.63	72.63	72.63	83.54	83.54	83.54	83.54	142.33	142.33	142.33	142.33
221340	0	0	0	0	33.94	33.94	33.94	33.94	57.88	57.88	57.88	57.88	69.08	69.08	69.08	69.08	85.52	85.52	85.52	85.52
221350	60.15	60.15	60.15	60.15	251.06	252.19	252.19	252.19	536.59	536.59	536.59	536.59	654.64	654.64	654.64	654.64	1077.07	1077.07	1077.07	1077.07
221400	1.4	1.44	1.44	1.44	5.47	5.48	5.48	5.48	7.98	7.98	7.98	7.98	13.2	13.2	13.2	13.2	45.5	45.5	45.5	45.5
221410	179.66	179.65	179.65	179.65	298.92	298.91	298.91	298.91	363.47	363.47	363.47	363.47	393.47	393.47	393.47	393.47	540.59	540.59	540.59	540.59
221420	103.57	103.59	103.59	103.59	196.46	196.47	196.47	196.47	241.83	241.83	241.83	241.83	264.95	264.95	264.95	264.95	384.46	384.46	384.46	384.46
221430	75.71	75.71	75.71	75.71	154.14	154.17	154.17	154.17	193.53	193.53	193.53	193.53	212.79	212.79	212.79	212.79	336.34	336.34	336.34	336.34
221440	214.23	214.28	214.28	214.28	382.72	382.69	382.69	382.69	469.5	469.5	469.5	469.5	512.22	512.22	512.22	512.22	724.69	724.69	724.69	724.69
221450	31.26	31.26	31.26	31.26	37.25	37.25	37.25	37.25	37.16	37.16	37.16	37.16	37.01	37.01	37.01	37.01	31.72	31.72	31.72	31.72
221460	31.93	31.93	31.93	31.93	38.48	38.48	38.48	38.48	39.15	39.15	39.15	39.15	38.92	38.92	38.92	38.92	33.43	33.43	33.43	33.43
221470	124.68	124.69	124.69	124.69	227.91	227.93	227.93	227.93	286.58	286.58	286.58	286.58	316.69	316.69	316.69	316.69	475.33	475.33	475.33	475.33
221480	26.64	26.64	26.64	26.64	30.86	30.86	30.86	30.86	30.69	30.69	30.69	30.69	30.42	30.42	30.42	30.42	27.92	27.92	27.92	27.92
221490	113.07	113.07	113.07	113.07	216.31	216.31	216.31	216.31	274.55	274.55	274.55	274.55	303.54	303.54	303.54	303.54	456.19	456.19	456.19	456.19
221500	28.86	28.86	28.86	28.86	55.6	55.6	55.6	55.6	70.68	70.68	70.68	70.68	78.18	78.18	78.18	78.18	117.67	117.67	117.67	117.67
221510	14.24	14.24	14.24	14.24	28.43	28.43	28.43	28.43	36.44	36.44	36.44	36.44	40.42	40.42	40.42	40.42	61.35	61.35	61.35	61.35
221520	32.7	32.7	32.7	32.7	59.62	59.62	59.62	59.62	74.88	74.88	74.88	74.88	82.5	82.5	82.5	82.5	122.75	122.75	122.75	122.75
221530	17.55	17.55	17.55	17.55	26.1	26.1	26.1	26.1	27.52	27.52	27.52	27.52	27.19	27.19	27.19	27.19	26.18	26.18	26.18	26.18
221540	17.88	17.89	17.89	17.89	26.65	26.65	26.65	26.65	28.07	28.07	28.07	28.07	27.62	27.62	27.62	27.62	26.54	26.54	26.54	26.54
221550	17.97	17.97	17.97	17.97	26.81	26.8	26.8	26.8	33.25	33.25	33.25	33.25	36.78	36.78	36.78	36.78	55.36	55.36	55.36	55.36
221560	47.09	47.13	47.13	47.13	91.84	91.9	91.9	91.9	116.78	116.78	116.78	116.78	128.58	128.58	128.58	128.58	174.82	174.82	174.82	174.82
221570	91.89	91.91	91.91	91.91	178.47	178.51	178.51	178.51	225.04	225.04	225.04	225.04	246.11	246.11	246.11	246.11	299.59	299.59	299.59	299.59
221580	3.96	3.96	3.96	3.96	5.5	5.5	5.5	5.5	7.19	7.19	7.19	7.19	7.7	7.7	7.7	7.7	7.81	7.81	7.81	7.81
221590	4.25	4.25	4.25	4.25	4.34	4.34	4.34	4.34	4.33	4.33	4.33	4.33	4.65	4.65	4.65	4.65	6.06	5.07	5.07	5.07
221600	5.37	5.37	5.37	5.37	5.23	5.23	5.23	5.23	4.89	4.89	4.89	4.89	4.72	4.72	4.72	4.72	6.03	5.05	5.05	5.05
221610	100.67	100.67	100.67	100.67	189.18	189.18	189.18	189.18	239.16	239.16	239.16	239.16	264.05	264.05	264.05	264.05	395.3	395.3	395.3	395.3
221620	4.9	4.91	4.91	4.91	8.88	8.88	8.88	8.88	10.27	10.27	10.27	10.27	10.87	10.87	10.87	10.87	15.2	15.2	15.2	15.2
221630	18.9	18.89	18.89	18.89	26.28	26.28	26.28	26.28	28.35	28.35	28.35	28.35	29.06	29.06	29.06	29.06	33.26	33.26	33.26	33.26
221635	16.43	16.43	16.43	16.43	30.59	30.59	30.59	30.59	38.59	38.59	38.59	38.59	42.58	42.58	42.58	42.58	63.61	63.61	63.61	63.61

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
221680	20.6	20.39	20.39	20.39	21.66	21.66	21.66	21.66	33.33	33.33	33.33	33.33	37.98	37.98	37.98	37.98	57.21	57.21	57.21	57.21
221690	18.95	18.95	18.95	18.95	16.09	16.09	16.09	16.09	25.06	25.06	25.06	25.06	29.91	29.91	29.91	29.91	46.52	46.52	46.52	46.52
221700	4.96	4.96	4.96	4.96	16.78	16.78	16.78	16.78	25.68	25.68	25.68	25.68	30.55	30.55	30.55	30.55	43.64	43.64	43.64	43.64
221710	5.66	5.67	5.67	5.67	19.89	19.9	19.9	19.9	31.37	31.36	31.36	31.37	38.38	38.38	38.38	38.38	63.07	63.07	63.07	63.07
221720	12.33	12.35	12.35	12.35	36.48	36.51	36.51	36.51	45.02	45.02	45.02	45.02	46.34	46.34	46.34	46.34	65.97	65.97	65.97	65.97
221730	17.36	17.39	17.39	17.39	56.48	56.53	56.53	56.53	75.84	75.84	75.84	75.84	82.9	82.9	82.9	82.9	112.58	112.58	112.58	112.58
221740	13.8	13.82	13.82	13.82	42.52	42.55	42.55	42.55	53.67	53.67	53.67	53.67	56.45	56.45	56.45	56.45	73.94	73.94	73.94	73.94
221750	13.93	13.94	13.94	13.94	42.8	42.81	42.81	42.81	55.7	55.7	55.7	55.7	61.18	61.18	61.18	61.18	95.28	95.28	95.28	95.28
221760	5.44	5.44	5.44	5.44	15.13	15.13	15.13	15.13	15.23	15.23	15.23	15.23	15.02	15.02	15.02	15.02	14.95	14.95	14.95	14.95
221770	9.6	9.6	9.6	9.6	23.2	23.2	23.2	23.2	24.04	24.04	24.04	24.04	24.23	24.23	24.23	24.23	24.52	24.52	24.52	24.52
221780	23.43	23.29	23.29	23.29	27.41	27.4	27.4	27.4	48.58	48.58	48.58	48.58	58.78	58.78	58.78	58.78	114.72	114.72	114.72	114.72
221790	11.61	11.61	11.61	11.61	17.9	17.9	17.9	17.9	22.66	22.66	22.66	22.66	24.5	24.5	24.5	24.5	30.32	30.32	30.32	30.32
221800	0	0	0	0	1.23	1.23	1.23	1.23	1.82	1.82	1.82	1.82	2.02	2.02	2.02	2.02	2.45	2.45	2.45	2.45
221810	23.78	23.78	23.78	23.78	44.44	44.44	44.44	44.44	56.11	56.11	56.11	56.11	61.92	61.92	61.92	61.92	92.57	92.57	92.57	92.57
221820	1.86	1.86	1.86	1.86	8.58	8.58	8.58	8.58	13.31	13.31	13.31	13.31	15.8	15.8	15.8	15.8	29.76	29.76	29.76	29.76
221830	9.66	9.66	9.66	9.66	23.17	23.17	23.17	23.17	24.2	24.2	24.2	24.2	24.61	24.61	24.61	24.61	25.61	25.61	25.61	25.61
221840	10.42	10.42	10.42	10.42	34.58	34.58	34.58	34.58	50.53	50.53	50.53	50.53	58.76	58.76	58.76	58.76	105.01	105.01	105.01	105.01
221900	4.72	4.72	4.72	4.72	9.79	9.79	9.79	9.79	11.94	11.94	11.94	11.94	12.74	12.74	12.74	12.74	15.77	15.77	15.77	15.77
221910	13.31	13.31	13.31	13.31	28.82	28.82	28.82	28.82	37.68	37.68	37.68	37.68	42.09	42.09	42.09	42.09	65.25	65.25	65.25	65.25
221920	11.13	11.13	11.13	11.13	23.38	23.38	23.38	23.38	29.49	29.49	29.49	29.49	33.22	33.22	33.22	33.22	53.46	53.46	53.46	53.46
221930	3.23	3.23	3.23	3.23	5.14	5.14	5.14	5.14	6.25	6.25	6.25	6.25	7.02	7.02	7.02	7.02	11.12	11.12	11.12	11.12
221940	12.19	12.19	12.19	12.19	22.51	22.51	22.51	22.51	28.36	28.36	28.36	28.36	31.27	31.27	31.27	31.27	46.64	46.64	46.64	46.64
221950	12.17	12.17	12.17	12.17	26.22	26.22	26.22	26.22	40.1	40.1	40.1	40.1	46.88	46.88	46.88	46.88	71.14	71.14	71.14	71.14
221960	10.45	10.45	10.45	10.45	24.73	24.74	24.74	24.74	29.92	29.92	29.92	29.92	32.51	32.51	32.51	32.51	45.75	45.75	45.75	45.75
221970	10.39	10.4	10.4	10.4	15.11	15.11	15.11	15.11	18.98	18.98	18.98	18.98	20.9	20.9	20.9	20.9	31.09	31.09	31.09	31.09
221980	2.28	2.28	2.28	2.28	6.57	6.57	6.57	6.57	10.25	10.25	10.25	10.25	12.93	12.93	12.93	12.93	23.05	23.05	23.05	23.05
221990	20.15	20.15	20.15	20.15	38.32	38.32	38.32	38.32	48.57	48.57	48.57	48.57	53.67	53.67	53.67	53.67	80.55	80.55	80.55	80.55
222000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.92	0.92	0.92	0.92
222010	0.42	0.42	0.42	0.42	3.46	3.46	3.46	3.46	5.76	5.76	5.76	5.76	7	7	7	7	14.13	14.13	14.13	14.13
222020	10.38	10.38	10.38	10.38	25.92	25.92	25.92	25.92	35.15	35.15	35.15	35.15	39.78	39.78	39.78	39.78	64.26	64.26	64.26	64.26
222030	10.83	10.84	10.84	10.84	13.93	13.94	13.94	13.94	13.53	13.53	13.53	13.53	13.22	13.22	13.22	13.22	16.35	16.35	16.39	16.39
222040	46.41	46.43	46.43	46.43	153.23	153.4	153.4	153.4	213.9	213.9	213.9	213.9	241.8	241.8	241.8	241.8	375.25	375.25	375.25	375.25
222050	7.85	7.85	7.85	7.85	15.32	15.32	15.32	15.32	19.54	19.54	19.54	19.54	21.64	21.64	21.64	21.64	32.66	32.66	32.66	32.66
222060	17.63	17.64	17.64	17.64	29.78	29.78	29.78	29.78	32.03	32.03	32.03	32.03	32.78	32.78	32.78	32.78	37.04	37.04	37.04	37.04
222070	17.79	17.79	17.79	17.79	30.95	30.95	30.95	30.95	36.3	36.3	36.3	36.3	38.49	38.49	38.49	38.49	49.13	49.13	49.13	49.13
222080	4.04	4.06	4.06	4.06	14.6	14.62	14.62	14.62	21.36	21.36	21.36	21.36	22.53	22.53	22.53	22.53	29.86	29.86	29.86	29.86
222090	13.84	13.84	13.84	13.84	27.02	27.02	27.02	27.02	34.45	34.45	34.45	34.45	38.15	38.15	38.15	38.15	57.59	57.59	57.59	57.59
222100	0.5	0.5	0.5	0.5	5.4	5.4	5.4	5.4	10.45	10.45	10.45	10.45	13.31	13.31	13.31	13.31	17.99	17.99	17.99	17.99
222110	4.13	4.13	4.13	4.13	11.36	11.36	11.36	11.36	15.78	15.78	15.78	15.78	18.01	18.01	18.01	18.01	29.94	29.94	29.94	29.94
222130	1	1	1	1	4.14	4.14	4.14	4.14	6.25	6.25	6.25	6.25	7.35	7.35	7.35	7.35	22.45	22.45	22.45	22.45
222140	2.35	2.35	2.35	2.35	9.39	9.39	9.39	9.39	14.09	14.09	14.09	14.09	16.54	16.54	16.54	16.54	30.07	30.07	30.07	30.07
222150	17.02	17.02	17.02	17.02	31.79	31.77	31.77	31.77	40.14	40.14	40.14	40.14	43.58	43.58	43.58	43.58	56.04	56.04	56.04	56.04
222160	41.85	41.85	41.85	41.85	81.38	81.38	81.38	81.38	103.68	103.68	103.68	103.68	114.77	114.77	114.77	114.77	173.14	173.14	173.14	173.14
222170	17.65	17.65	17.65	17.65	39.88	39.88	39.88	39.88	52.72	52.72	52.72	52.72	59.12	59.12	59.12	59.12	92.77	92.77	92.77	92.77
222180	7.37	7.4	7.4	7.4	25.57	25.61	25.61	25.61	34.37	34.37	34.37	34.37	34.12	34.12	34.12	34.12	35.63	35.63	35.63	35.63
222190	4.61	4.61	4.61	4.61	8.71	8.71	8.71	8.71	11.03	11.03	11.03	11.03	12.18	12.18	12.18	12.18	18.25	18.25	18.25	18.25
222200	17.33	17.38	17.38	17.38	39.79	39.93	39.93	39.93	57	57	57	57	68.41	68.41	68.41	68.41	100.75	100.75	100.75	100.75
222300	1.2	1.2	1.2	1.2	2.84	2.84	2.84	2.84	7.71	7.71	7.71	7.71	10.78	10.78	10.78	10.78	24.87	24.87	24.87	24.87
222310	7.61	7.61	7.61	7.61	14.61	14.61	14.61	14.61	18.55	18.55	18.55	18.55	20.51	20.51	20.51	20.51	30.85	30.85	30.85	30.85
222320	7.22	7.22	7.22	7.22	17.75	17.75	17.75	17.75	19.89	19.89	19.89	19.89	20.37	20.37	20.37	20.37	18.78	18.78	18.78	18.78
222330	7.26	7.26	7.26	7.26	20.78	20.78	20.78	20.78	29.27	29.27	29.27	29.27	33.6	33.6	33.6	33.6	56.84	56.84	56.84	56.84
222340	1.03	1.03	1.03	1.03	3.02	3.02	3.02	3.02	4.41	4.41	4.41	4.41	5.6	5.6	5.6	5.6	10.23	10.23	10.23	10.23
222350	3.56	3.56	3.56	3.56	6.49	6.49	6.49	6.49	8.15	8.15	8.15	8.15	8.98	8.98	8.98	8.98	13.36	13.36	13.36	13.36
222360	12.05	12.05	12.05	12.05	24.91	24.91	24.91	24.91	31.3	31.3	31.3	31.3	34.19	34.19	34.19	34.19	48.85	48.85	48.85	48.85
222370	7.92	7.92	7.92	7.92	15.37	15.37	15.37	15.37	17.52	17.52	17.52	17.52	18.2	18.2	18.2	18.2	26.29	26.29	26.29	26.29
222380	19.77	19.77	19.77	19.77	41.63	41.63	41.63	41.63	54.06	54.06	54.06	54.06	60.24	60.24	60.24	60.24	97.8	97.8	97.8	97.8
222390	3.87	3.87	3.87	3.87	18.25	18.25	18.25	18.25	28.17	28.17	28.17	28.17	33.4	33.4	33.4	33.4	62.62	62.62	62.62	62.62
222400	7.56	7.56	7.56	7.56	16.09	16.09	16.09	16.09	22.81	22.81	22.81	22.81	28.57	28.57	28.57	28.57	54.95	54.95	54.95	54.95
222410	7.68	7.68	7.68	7.68	35.56	35.56	35.56	35.56	53.38	53.38	53.38	53.38	61.9	61.9	61.9	61.9	112.18	112.18	112.18	112.18
222420	5.93	5.93	5.93	5.93	26.65	26.65	26.65	26.65	40.97	40.97	40.97	40.97	48.49	48.49	48.49	48.49	90.52	90.52	90.52	90.52
222430	86.59	86.62	86.62	86.62	163.17	163.4	163.4	163.4	206.99	206.99	206.99	206.99	226.39	226.39	226.39	226.39	263.42	263.42	263.42	263.42
222440	39.11	39.11	39.11	39.11	74.56	74.56	74.56	74.56	94.56	94.56	94.56	94.56	104.5	104.5	104.5	104.5	156.91	156.91	156.91	156.91
222450	31.03	31.03	31.03	31.03	59.74	59.74	59.74	59.74	75.94	75.94	75.94	75.94	84	84	84	84	126.42	126.42	126.42	126.42
222460	41.49	41.52	41.52	41.52	76.72	76.84	76.84	76.84	97.56	97.56	97.56	97.56	107.12	107.12	107.12	107.12	159.92	159.92	159.92	159.92
222470	4.01	4.01	4.01	4.01	4.01	4.01	4.01	4.01	4.47	4.47	4.47	4.47	12.24	12.24	12.24	12.24	24.59	24.59	24.59	24.59
222480	35.4	35.4	35.4	35.4	81.39	81.39	81.39	81.39	108.43	108.43	108.43	108.43	122	122	122	122	193.8	193.8	193.8	193.8
222485	40.43	40.43	40.43	40.43	86.46	86.46	86.46	86.46	112.97	112.97	112.97	112.97	126.19	126.19	126.19	126.19	195.65	195.65	195.65	195.65
222490	0	0	0	0	3.29	3.29	3.29	3.29	7.27	7.27	7.27	7.27	9.3	9.3	9.3	9.3	19.29	19.29	19.29	19.29
222495	10.41	10.41	10.41	10.41	21.99	21.99	21.99	21.99	28.6	28.6	28.6	28.6	31.89	31.89	31.89	31.89	49.16	49.16	49.16	49.16
222500	13.42	13.42	13.42	13.42	24.87	24.87	24.87	24.87	31.34	31.34	31.34	31.34	34.57	34.57	34.57	34.57	51.6	51.6	51.6	51.6
222505	14.1	14.1	14.1	14.1	39.37	39.37	39.37	39.37	54.95	54.95	54.95	54.95	62.88	62.88	62.88	62.88	106.03	106.03	106.03	106.03
222510	3.88	3.88	3.88	3.88	7.87	7.87	7.87	7.87	9.98	9.98	9.98	9.98	11.02	11.02	11.02	11.02	15.92	15.92	15.92	15.92
222520	4.46	4.46	4.46	4.46	8.15	8.15	8.15	8.15	10.25	10.25	10.25	10.25	11.29	11.29	11.29	11.29	16.81	16.81	16.81	16.81
222530	15.53	15.53	15.53	15.53	32.96	32.96	32.96	32.96	35.29	35.29	35.29	35.29	36.08	36.08	36.08	36.08	38.73	38.77	38.3	38.39
222540	92.04	92.04	92.04	92.04	270.45	270.45	270.45	270.45	383.73	383.73	383.73	383.73	444.65	444.65	444.65	444.65	767.74	767.74	767.74	767.74
222550	1.39	1.39	1.39	1.39	5.09	5.09	5.09	5.09	9.67	9.67	9.67	9.67	11.63	11.63	11.63	11.63	15.8	15.8	15.8	15.8
222560	2.49	2.49	2.49	2.49	10.23	10.23	10.23	10.23	15.41	15.41	15.41	15.41	18.12	18.12	18.12	18.12	33.1	33.1	33.1	33.1
222570	4.88	4.88	4.88	4.88	13.5	13.5	13.5	13.5	17.71	17.71	17.71	17.71	18.73	18.73	18.73	18.73	13.79	13.79	13.79	13.79
222580	29.35	29.35	29.35	29.35	54.07	54.07	54.07	54.07	68.06	68.06	68.06	68.06	75.04	75.04	75.04	75.04	152.24	152.24	152.24	152.24
222590	1.86	1.86	1.86	1.86	1.94	1.94	1.94	1.94	2.01	2.01	2.01	2.01	2.05	2.05	2.05	2.05	6.79	6.79	6.79	6.79
222600	13.56	13.56	13.56	13.56	24.94	24.94	24.94	24.94	31.38	31.38	31.38	31.38	34.59	34.59	34.59	34.59	51.9	51.9	51.9	51.9
222610	4.58	4.58	4.58	4.58	9.34	9.34	9.34	9.34	12.03	12.03	12.03	12.03	13.37	13.37	13.37	13.37	26.28	26.28	26.28	26.28
222620	2.49	2.49	2.49	2.49	8.15	8.15	8.15	8.15	11.76	11.76	11.76	11.76	13.62	13.62	13.62	13.62	23.7	23.7	23.7	23.7
222630	9.71	9.71	9.71	9.71	43.37	43.37	43.37	43.37	67.57	67.57	67.57	67.57	79.21	79.21	79.21	79.21	175.01	175.01	175.01	175.01
222640	21.98	21.98	21.98	21.98	43.61	43.61	43.61	43.61	55.82	55.82	55.82	55.82	61.89	61.89	61.89	61.89	93.79	93.79	93.79	93.79
222650	3.1	3.1	3.1	3.1	57.39	57.39	57.39	57.39	104.59	104.59	104.59	104.59	125.38	125.38	125.38	125.38	243.86	243.86	243.86	243.86
222660	1.75	1.75	1.75	1.75	10.7	10.7	10.7	10.7	17.04	17.04	17.04	17.04	20.4	20.4	20.4	20.4	39.47	39.47	39.47	39.47
222700	18.42	18.47	18.47	18.47	115.98	115.89	115.89	115.89	178.58	178.58	178.58	178.58	199.52	199.52	199.52	199.52	277.03	277.03	277.03	277.03
222710	3.39	3.39	3.39	3.39	22.32	22.36	22.36	22.36	45.32	45.32	45.32	45.32	53.59	53.59	53.59	53.59	91.2	91.2	91.2	91.2
222720	20.77	20.81	20.81	20.81	82.56	82.52	82.52	82.52	119.95	119.95	119.95	119.95	138.39	138.39	138.39	138.39	239.01	239.01	239.01	239.01
222730	12.63	12.63	12.63	12.63	58.22	58.22	58.22	58.22	91.17	91.17	91.17	91.17	108.6	108.6	108.6	108.6	206.95	206.95	206.95	206.95
222740	2.14	2.14	2.14	2.14	17.4	17.44	17.44	17.44	18.99	18.99	18.99	18.99	20.52	20.52	20.52	20.52	30.95	30.95	30.95	30.95
222750	13.81	13.83	13.83	13.83	93.5	93.44	93.44	93.44	108.71	108.71	108.71	108.71	109.24	109.24	109.24	109.24	108.33	108.33	108.33	108.33
222760	9.27	9.27	9.27	9.27	143.94	143.98	143.98	143.98	228.75	228.75	228.75	228.75	253.24	253.24	253.24	253.24	366.45	366.45	366.45	366.45
222770	5.04	5.04	5.04	5.04	21.98	21.98	21.98	21.98	33.48	33.48	33.48	33.48	39.5	39.5	39.5	39.5	72.95	72.95	72.95	72.95
222780	15.93	15.93	15.93	15.93	60.61	60.61	60.61	60.61	91.38	91.38	91.38	91.38	107.95	107.95	107.95	107.95	245.72	245.72	245.72	245.72

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
222800	40.29	40.36	40.36	40.36	148.38	148.46	148.46	148.46	218	218	218	218	262.11	262.11	262.11	262.11	464.78	464.78	464.78	464.78
222810	21.95	21.97	21.97	21.97	84.36	84.38	84.38	84.38	116.63	116.63	116.63	116.63	125.75	125.75	125.75	125.75	149.85	149.85	149.85	149.85
222820	8.11	8.11	8.11	8.11	58.03	58.05	58.05	58.05	87.43	87.43	87.43	87.43	93.2	93.2	93.2	93.2	107.35	107.35	107.35	107.35
222830	8.37	8.37	8.37	8.37	58.52	58.53	58.53	58.53	92.06	92.06	92.06	92.06	101.63	101.63	101.63	101.63	112.06	112.06	112.06	112.06
222840	2.64	2.64	2.64	2.64	11.89	11.89	11.89	11.89	31.69	31.69	31.69	31.69	35.36	35.36	35.36	35.36	74.56	74.56	74.56	74.56
222850	11.85	11.85	11.85	11.85	49.35	49.36	49.36	49.36	94.86	94.86	94.86	94.86	124.13	124.13	124.13	124.13	297.54	297.54	297.54	297.54
222860	20.21	20.21	20.21	20.21	57.8	57.8	57.8	57.8	86.46	86.46	86.46	86.46	107.49	107.49	107.49	107.49	212.89	212.89	212.89	212.89
222870	13.19	13.19	13.19	13.19	58.58	58.58	58.58	58.58	90.32	90.32	90.32	90.32	107.01	107.01	107.01	107.01	203.36	203.36	203.36	203.36
222880	4.02	4.01	4.01	4.01	8.98	8.98	8.98	8.98	11.2	11.2	11.2	11.2	11.45	11.45	11.45	11.45	11.26	11.26	11.26	11.26
222890	5.17	5.17	5.17	5.17	14.55	14.55	14.55	14.55	21.61	21.61	21.61	21.61	26.77	26.77	26.77	26.77	48.98	48.98	48.98	48.98
222900	10.68	10.68	10.68	10.68	50.63	50.63	50.63	50.63	78.16	78.16	78.16	78.16	92.64	92.64	92.64	92.64	173.67	173.67	173.67	173.67
222910	39.75	39.75	39.75	39.75	247.92	247.92	247.92	247.92	392.98	392.98	392.98	392.98	466.57	466.57	466.57	466.57	888.99	888.99	888.99	888.99
222920	7.93	7.92	7.92	7.92	32.88	32.86	32.86	32.86	49.58	49.58	49.58	49.58	62.82	62.82	62.82	62.82	152.13	152.13	152.13	152.13
222930	6.24	6.23	6.23	6.23	25.94	25.93	25.93	25.93	40.78	40.78	40.78	40.78	54.01	54.01	54.01	54.01	150.82	150.82	150.82	150.82
222940	3.86	3.86	3.86	3.86	16.15	16.15	16.15	16.15	24.85	24.85	24.85	24.85	29.42	29.42	29.42	29.42	55.42	55.42	55.42	55.42
222950	2.4	2.4	2.4	2.4	10.27	10.27	10.27	10.27	15.7	15.7	15.7	15.7	18.56	18.56	18.56	18.56	34.94	34.94	34.94	34.94
222960	1.34	1.34	1.34	1.34	5.84	5.84	5.84	5.84	8.9	8.9	8.9	8.9	10.49	10.49	10.49	10.49	19.38	19.38	19.38	19.38
222970	13.73	13.73	13.73	13.73	139.87	139.87	139.87	139.87	233.16	233.16	233.16	233.16	281.27	281.27	281.27	281.27	542.61	542.61	542.61	542.61
222980	4.56	4.56	4.56	4.56	31.79	31.79	31.79	31.79	55.07	55.07	55.07	55.07	67.71	67.71	67.71	67.71	141.58	141.58	141.58	141.58
222990	30.03	30.03	30.03	30.03	105.61	105.61	105.61	105.61	154.91	154.91	154.91	154.91	180.39	180.39	180.39	180.39	319.79	319.79	319.79	319.79
223000	1.88	1.88	1.88	1.88	8.2	8.2	8.2	8.2	12.49	12.49	12.49	12.49	14.73	14.73	14.73	14.73	27.22	27.22	27.22	27.22
223010	12.93	12.93	12.93	12.93	66.94	66.94	66.94	66.94	111.51	111.51	111.51	111.51	133.25	133.25	133.25	133.25	241.77	241.77	241.77	241.77
223020	11.74	11.74	11.74	11.74	33.57	33.57	33.57	33.57	47.07	47.07	47.07	47.07	53.92	53.92	53.92	53.92	90.6	90.6	90.6	90.6
223030	8.49	8.49	8.49	8.49	38.36	38.36	38.36	38.36	59.88	59.88	59.88	59.88	71.35	71.35	71.35	71.35	136.05	136.05	136.05	136.05
223040	8.09	8.09	8.09	8.09	15.77	15.77	15.77	15.77	20.1	20.1	20.1	20.1	22.26	22.26	22.26	22.26	33.58	33.58	33.58	33.58
223100	2.76	2.76	2.76	2.76	30.91	30.91	30.91	30.91	54.31	54.31	54.31	54.31	67.85	67.85	67.85	67.85	143.79	143.79	143.79	143.79
223110	0	0	0	0	1.85	1.86	1.86	1.86	5.33	5.33	5.33	5.33	7.38	7.38	7.38	7.38	22.22	22.22	22.22	22.22
223120	9.76	9.76	9.76	9.76	21.43	21.43	21.43	21.43	26.53	26.53	26.53	26.53	29.07	29.07	29.07	29.07	45.18	45.18	45.18	45.18
223130	0	0	0	0	0.19	0.19	0.19	0.19	0.78	0.78	0.78	0.78	1.05	1.05	1.05	1.05	2.36	2.36	2.36	2.36
223140	6.59	6.59	6.59	6.59	13.63	13.63	13.63	13.63	17.38	17.38	17.38	17.38	19.04	19.04	19.04	19.04	23.47	23.47	23.47	23.47
223150	2.63	2.63	2.63	2.63	5.12	5.12	5.12	5.12	6.52	6.52	6.52	6.52	7.22	7.22	7.22	7.22	10.9	10.9	10.9	10.9
223160	4.12	4.12	4.12	4.12	18.33	18.33	18.33	18.33	28.55	28.55	28.55	28.55	33.95	33.95	33.95	33.95	65.33	65.33	65.33	65.33
223170	0.23	0.23	0.23	0.23	3.52	3.52	3.52	3.52	5.21	5.21	5.21	5.21	6.2	6.2	6.2	6.2	7.95	7.95	7.95	7.95
223180	3.85	3.85	3.85	3.85	7.5	7.5	7.5	7.5	9.56	9.56	9.56	9.56	10.58	10.58	10.58	10.58	15.96	15.96	15.96	15.96
223200	6.12	6.12	6.12	6.12	46.72	46.74	46.74	46.74	73.33	73.33	73.33	73.33	85.08	85.08	85.08	85.08	100.27	100.27	100.27	100.27
223210	7.7	7.69	7.69	7.69	49.09	49.1	49.1	49.1	76.51	76.51	76.51	76.51	89.86	89.86	89.86	89.86	145.68	145.68	145.68	145.68
223220	0	0	0	0	4.35	4.35	4.35	4.35	13.37	13.37	13.37	13.37	17.93	17.93	17.93	17.93	29.91	29.91	29.91	29.91
223230	13.56	13.56	13.56	13.56	27	27	27	27	34.58	34.58	34.58	34.58	39.38	39.38	39.38	39.38	58.17	58.17	58.17	58.17
223240	15.69	15.44	15.44	15.44	54.37	54.36	54.36	54.36	62.69	62.69	62.69	62.69	64.24	64.24	64.24	64.24	71.54	71.54	71.54	71.54
223250	9.23	9.06	9.06	9.06	54.89	54.87	54.87	54.87	80.91	80.91	80.91	80.91	97.36	97.36	97.36	97.36	204.34	204.34	204.34	204.34
223260	7.97	7.97	7.97	7.97	32.38	32.38	32.38	32.38	48.64	48.64	48.64	48.64	61.18	61.18	61.18	61.18	134.72	134.72	134.72	134.72
223270	3.46	3.46	3.46	3.46	12.78	12.78	12.78	12.78	18.92	18.92	18.92	18.92	22.09	22.09	22.09	22.09	52.66	52.66	52.66	52.66
223280	3.57	3.57	3.57	3.57	16.13	16.12	16.12	16.12	24.74	24.74	24.74	24.74	29.27	29.27	29.27	29.27	54.54	54.54	54.54	54.54
223290	4.16	4.16	4.16	4.16	17.46	17.46	17.46	17.46	26.76	26.76	26.76	26.76	31.71	31.71	31.71	31.71	59.44	59.44	59.44	59.44
223300	3.55	3.55	3.55	3.55	15.2	15.2	15.2	15.2	23.38	23.38	23.38	23.38	27.69	27.69	27.69	27.69	51.81	51.81	51.81	51.81
223310	31.71	31.71	31.71	31.71	83.29	83.29	83.29	83.29	114.82	114.82	114.82	114.82	130.77	130.77	130.77	130.77	215.7	215.7	215.7	215.7
223320	3.89	3.89	3.89	3.89	9.37	9.38	9.38	9.38	33.17	33.17	33.17	33.17	46.45	46.45	46.45	46.45	138.11	138.11	138.11	138.11
223330	4.88	4.88	4.88	4.88	21.31	21.31	21.31	21.31	32.45	32.45	32.45	32.45	38.28	38.28	38.28	38.28	70.69	70.69	70.69	70.69
223340	5.7	5.7	5.7	5.7	24.82	24.82	24.82	24.82	37.79	37.79	37.79	37.79	44.58	44.58	44.58	44.58	82.31	82.31	82.31	82.31
223350	77.5	77.5	77.5	77.5	204.34	204.34	204.34	204.34	282.1	282.1	282.1	282.1	321.42	321.42	321.42	321.42	530.92	530.92	530.92	530.92
223358	4.13	4.13	4.13	4.13	9.3	9.3	9.3	9.3	12.18	12.18	12.18	12.18	13.59	13.59	13.59	13.59	20.39	20.39	20.39	20.39
223360	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63	233.63
223400	2.29	2.29	2.29	2.29	9.97	9.97	9.97	9.97	15.19	15.19	15.19	15.19	17.91	17.91	17.91	17.91	33.09	33.09	33.09	33.09
223410	36.38	36.38	36.38	36.38	98.87	98.87	98.87	98.87	137.87	137.87	137.87	137.87	158.03	158.03	158.03	158.03	266.11	266.11	266.11	266.11
223420	34.71	34.71	34.71	34.71	84.72	84.72	84.72	84.72	114.26	114.26	114.26	114.26	129.07	129.07	129.07	129.07	244.46	244.46	244.46	244.46
223430	13.06	13.06	13.06	13.06	37.65	37.65	37.65	37.65	52.91	52.91	52.91	52.91	60.67	60.67	60.67	60.67	102.33	102.33	102.33	102.33
223440	7.14	7.15	7.15	7.15	9.74	9.74	9.74	9.74	8.19	8.19	8.19	8.19	6.51	6.51	6.51	6.51	6.09	6.09	6.09	6.09
223450	13.47	13.47	13.47	13.47	28.31	28.31	28.31	28.31	36.74	36.74	36.74	36.74	40.94	40.94	40.94	40.94	62.96	62.96	62.96	62.96
223460	36.97	36.97	36.97	36.97	140.61	140.61	140.61	140.61	210.49	210.49	210.49	210.49	245.14	245.14	245.14	245.14	443.41	443.41	443.41	443.41
223470	22.71	22.71	22.71	22.71	103.26	103.26	103.26	103.26	157.15	157.15	157.15	157.15	185.07	185.07	185.07	185.07	370.41	370.41	370.41	370.41
223480	16.16	16.16	16.16	16.16	45.6	45.6	45.6	45.6	63.81	63.81	63.81	63.81	73.18	73.18	73.18	73.18	123.78	123.78	123.78	123.78
223490	36.72	36.72	36.72	36.72	84.61	84.61	84.61	84.61	112.49	112.49	112.49	112.49	126.42	126.42	126.42	126.42	199.82	199.82	199.82	199.82
223500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223510	10.52	10.52	10.52	10.52	20.81	20.81	20.81	20.81	26.61	26.61	26.61	26.61	29.5	29.5	29.5	29.5	44.68	44.68	44.68	44.68
223520	0.58	0.58	0.58	0.58	4.28	4.28	4.28	4.28	7.01	7.01	7.01	7.01	8.46	8.46	8.46	8.46	16.82	16.82	16.82	16.82
223530	13.53	13.53	13.53	13.53	46.15	46.15	46.15	46.15	67.94	67.94	67.94	67.94	79.22	79.22	79.22	79.22	141.12	141.12	141.12	141.12
223540	6.29	6.29	6.29	6.29	21.67	21.67	21.67	21.67	31.64	31.64	31.64	31.64	36.78	36.78	36.78	36.78	64.79	64.79	64.79	64.79
223550	10.86	10.86	10.86	10.86	27	27	27	27	36.8	36.8	36.8	36.8	41.74	41.74	41.74	41.74	67.92	67.92	67.92	67.92
223560	8.09	8.09	8.09	8.09	23.22	23.22	23.22	23.22	32.61	32.61	32.61	32.61	37.39	37.39	37.39	37.39	63.4	63.4	63.4	63.4
230005	100.99	83.92	80.98	80.98	245.25	234.04	227.65	227.65	311.42	294.32	290.55	290.55	340.6	319.96	316.49	316.49	468.55	431.39	424.88	424.89
230010	114.49	114.61	99.02	99.02	250.79	242.66	237.11	237.11	321.49	308.54	303.53	303.53	353.08	345.59	331.5	331.5	549.89	541.69	499.93	499.93
230020	54.76	42.25	42.02	42.02	174.89	165.26	162.7	162.7	234.18	216.31	216.54	216.54	261.07	238.59	239.23	239.23	385.23	335.33	335.38	335.38
230030	113.96	108.36	109.25	109.25	217.78	220.24	215.38	215.38	281.56	288.25	288.56	288.56	310.52	317.26	320.08	320.08	427.45	436.09	447.05	447.05
230040	87.98	83.23	81.79	81.79	167.85	158.8	153.31	153.31	213.03	203.94	200.39	200.39	231.36	220.18	220.88	220.88	316.21	314.42	318.5	318.5
230050	4.15	4.15	4.15	4.15	8.83	8.83	8.83	8.83	11.53	11.53	11.53	11.53	12.88	12.88	12.88	12.88	20.88	20.88	20.88	20.88
230060	15.15	15.15	15.15	15.15	28.16	28.16	28.16	28.16	35.52	35.52	35.52	35.52	39.18	39.18	39.18	39.18	58.52	58.52	58.52	58.52
230100	32.08	21.62	18.6	18.6	54.66	48.48	32.4	32.4	69.16	66.8	50.65	50.65	75.08	73.93	57.74	57.74	101.92	101.94	86.07	86.07
230110	24.34	12.34	14.48	14.48	25.64	20.72	15.31	15.31	26.77	22.45	18.67	18.67	27.26	23.02	20.07	20.07	29.99	28.42	24.86	24.86
230160	38.19	23.66	16.63	16.63	43.15	40.84	29.66	29.66	42.45	47.96	36.9	36.9	41.55	50.6	40.47	40.47	43.9	58.91	54.11	54.11
230170	35.75	21.18	15.14	15.14	45.02	39.79	27.09	27.09	50.29	50.29	33.9	33.9	55.52	55.52	37.31	37.31	83.1	83.13	55.34	55.34
230180	51.59	50.28	49.59	49.59	87.95	99.12	95.06	95.06	124.15	136.73	132.47	132.47	142.71	153.86	149.68	149.68	233.03	235.28	231.41	231.41
230190	62.02	36.13	36.13	36.13	176.8	164.47	164.48	164.48	215.37	208.85	209.41	209.41	230.69	226.56	227.4	227.4	287.75	294.1	296.75	296.75
230200	8.53	8.53	8.16	8.16	15.57	15.57	15.01	15.01	19.56	19.56	18.89	18.89	21.55	21.55	20.83	20.83	32.07	32.07	31.04	31.04
230210	5.08	5.08	5.08	5.08	8.2	8.2	8.2	8.2	9.58	9.58	9.58	9.58	10.2	10.2	10.2	10.2	13.02	13.02	13.02	13.02
230220	29.75	29.75	29.75	29.75	55.56	55.56	55.56	55.56	70.13	70.13	70.13	70.13	77.39	77.39	77.39	77.39	115.69	115.69	115.69	115.69
230400	15.77	15.78	15.78	15.78	34.13	34.14	34.14	34.14	43.34	43.34	43.34	43.34	48	48	48	48	72.32	72.34	72.35	72.34
230410	2.86	2.86	2.86	2.86	13.46	13.5	13.5	13.5	18.52	18.62	18.62	18.62	19.09	19.28	19.28	19.28	15.9	16.02	16.02	16.02
230420	27.12	27.12	27.12	27.12	51.4	51.4	51.4	51.4	65.09	65.09	65.09	65.09	71.91	71.91	71.91	71.91	107.83	107.83	107.83	107.83
230430	6.23	6.17	6.17	6.17	13.92	13.99	13.99	13.99	14.96	15.15	15.15	15.15	14.77	14.97	14.97	14.97	13.96	13.98	13.98	13.98
230440	34.39	34.39	34.39	34.39	65.94	65.94	65.94	65.94	83.73	83.73	83.73	83.73	92.58	92.58	92.58	92.58	139.2	139.2	139.2	139.2
230450	1.58	1.58	1.58	1.58	14.38	14.41	14.41	14.41	16.69	16.68	16.68	16.68	17.41	17.44	17.44	17.44	41.95	41.95	41.95	41.95
230460	81.76	81.76	81.76	81.76	165.04	165.04	165.04	165.04	212.12	212.12	212.12	212.12	235.52	235.52	235.52	235.52	358.51	358.51	358.51	358.51
230470	13.01	13.01	13.01	13.01	20.35	20.35	20.35	20.35	23.79	23.79	23.79	23.79	25.09	25.09	25.09	25.09	30.6	30.6	30.6	30.6
230480	20.18	20.18	20.18	20.18	40.6	40.61	40.61	40.61	57.59	57.59	57.59	57.59	65.74	65.74	65.74	65.74	108.17	108.17	108.17	108.17
230490	19.65	19.65	19.65	19.65	42.81	42.81	42.81	42.81	58.61	58.61	58.61	58.61	67.56	67.56	67.56	67.56	109.36	109.36	109.36	109.36
240010	264.68	264.76	264.76	264.76	503.66	503.81	503.81	503.81	643.47	643.46	643.47	643.47	694.67	694.67	694.67	694.67	1028.54	1028.54	1028.54	1028.54

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
240020	199.07	199.14	199.14	199.14	480.67	480.81	480.81	480.81	618.62	618.62	618.62	618.62	663.78	663.81	663.83	663.81	837.02	837.03	837.03	837.03
240030	199.04	199.12	199.12	199.12	480.68	480.83	480.83	480.83	618.62	618.62	618.63	618.62	663.78	663.81	663.83	663.8	837	837.02	837.02	837.01
240040	198.97	199.05	199.05	199.05	482.23	482.37	482.37	482.37	620	620	620.01	620	664.23	664.26	664.27	664.25	839.83	839.85	839.85	839.85
240050	193.1	193.17	193.17	193.17	416.74	416.86	416.86	416.86	526.48	526.47	526.47	526.48	556.87	556.87	556.88	556.87	664.36	664.36	664.36	664.35
240060	193.1	193.17	193.17	193.17	416.77	416.89	416.89	416.89	527.52	527.51	527.51	527.51	563.34	563.34	563.35	563.34	681.87	681.57	682.87	683.83
240070	188.88	188.96	188.96	188.96	411.55	411.66	411.66	411.66	527.24	527.23	527.23	527.24	567.08	567.08	567.08	567.07	695.77	695.76	695.77	695.75
240080	214	214.09	214.09	214.09	459.75	459.89	459.89	459.89	592.03	592.02	592.02	592.03	646.31	646.31	646.32	646.31	925.05	925.06	925.06	925.06
240090	215.76	215.85	215.85	215.85	471.49	471.64	471.64	471.64	610.82	610.82	610.81	610.82	671.2	671.2	671.21	671.2	953.2	953.21	953.21	953.21
240100	216.61	216.7	216.7	216.7	489.37	489.54	489.54	489.54	663.85	663.85	663.85	663.85	747.94	747.94	747.95	747.94	1106.84	1106.84	1106.84	1106.84
240110	176.87	176.95	176.95	176.95	343.79	343.86	343.86	343.86	413.88	413.88	413.88	413.88	445.94	445.94	445.94	445.94	595.84	595.84	595.84	595.84
240120	177.67	177.75	177.75	177.75	347.57	347.63	347.63	347.63	418.11	418.11	418.11	418.11	450.46	450.46	450.46	450.46	601.82	601.82	601.82	601.82
240130	171.88	171.95	171.95	171.95	339.28	339.36	339.36	339.36	408.34	408.34	408.34	408.34	438.92	438.92	438.92	438.92	576.43	576.43	576.43	576.43
240140	157.17	157.24	157.24	157.24	307.2	307.25	307.25	307.25	362.1	362.1	362.1	362.1	386.6	386.6	386.6	386.6	494.05	494.05	494.05	494.05
240150	140.3	140.38	140.38	140.38	252.26	252.31	252.31	252.31	294.91	294.91	294.91	294.92	312.51	312.52	312.53	312.52	381.42	381.42	381.42	381.42
240160	140.31	140.38	140.38	140.38	252.34	252.39	252.39	252.39	295	295	294.99	295	312.6	312.6	312.61	312.6	381.53	381.53	381.53	381.53
240170	133.56	133.63	133.63	133.63	236.42	236.47	236.47	236.47	274.2	274.2	274.19	274.21	289.03	289.03	289.05	289.04	343.88	343.88	343.88	343.88
240180	133.19	133.26	133.26	133.26	235.58	235.63	235.63	235.63	273.1	273.1	273.09	273.1	287.77	287.78	287.8	287.78	342.25	342.25	342.25	342.25
240190	116.28	116.32	116.32	116.32	191.37	191.43	191.43	191.43	237.78	237.78	237.78	237.78	259.7	259.7	259.7	259.7	350.9	350.9	350.91	350.91
240200	78.18	78.21	78.2	78.2	146.62	146.64	146.64	146.64	166.92	166.9	166.9	166.91	174.25	174.26	174.27	174.27	220.6	220.6	220.61	220.61
240210	76.94	76.97	76.96	76.96	144.37	144.39	144.39	144.39	163.61	163.6	163.6	163.61	171.1	171.11	171.12	171.11	216.7	216.7	216.7	216.7
240220	77	77.03	77.03	77.03	144.39	144.41	144.41	144.41	163.63	163.61	163.61	163.62	171.11	171.12	171.13	171.12	216.72	216.72	216.72	216.72
240230	77.1	77.13	77.13	77.13	144.42	144.43	144.43	144.43	163.66	163.64	163.65	163.66	171.12	171.13	171.14	171.13	216.74	216.74	216.74	216.74
240240	74.16	74.18	74.18	74.18	141.59	141.6	141.6	141.6	159.46	159.45	159.45	159.46	168.04	168.05	168.06	168.06	214.25	214.25	214.25	214.25
240250	74.13	74.15	74.15	74.15	141.22	141.23	141.23	141.23	158.97	158.95	158.96	158.96	167.53	167.54	167.56	167.55	213.52	213.52	213.52	213.52
240260	74.11	74.13	74.13	74.13	141.2	141.22	141.22	141.22	158.95	158.94	158.94	158.95	167.53	167.54	167.55	167.55	213.57	213.57	213.57	213.57
240270	74.11	74.12	74.12	74.12	141	141.02	141.02	141.02	158.69	158.67	158.67	158.68	167.27	167.28	167.29	167.29	213.19	213.19	213.19	213.19
240280	89.51	89.55	89.55	89.55	141	141.02	141.02	141.02	158.67	158.65	158.66	158.66	167.27	167.28	167.3	167.29	213.25	213.25	213.25	213.25
240290	89.53	89.57	89.57	89.57	125.38	125.39	125.39	125.39	130.81	130.78	130.78	130.81	134.97	135	135.03	135.01	160.87	160.86	160.86	160.87
240300	16.99	16.98	16.98	16.98	30.97	30.97	30.97	30.97	37.74	37.74	37.74	37.74	42.7	42.7	42.71	42.7	66.7	66.7	66.7	66.7
240310	13.91	13.91	13.91	13.91	27.85	27.85	27.85	27.85	33.57	33.57	33.57	33.57	36.95	36.95	36.95	36.95	57.31	57.31	57.31	57.31
240320	13.62	13.62	13.62	13.62	27.16	27.16	27.16	27.16	32.46	32.46	32.46	32.46	35.65	35.65	35.65	35.65	59.91	59.91	59.91	59.91
240330	10.7	10.7	10.7	10.7	23.39	23.39	23.39	23.39	26.92	26.92	26.92	26.92	28.18	28.18	28.18	28.18	32.04	32.04	32.04	32.04
240340	10.81	10.81	10.81	10.81	24.11	24.11	24.11	24.11	28.33	28.33	28.33	28.33	29.67	29.67	29.67	29.67	32.85	32.85	32.85	32.85
240350	11.17	11.17	11.17	11.17	27.72	27.72	27.72	27.72	34.35	34.35	34.35	34.35	37.21	37.21	37.21	37.21	56.77	56.77	56.77	56.77
240360	28.09	28.09	28.09	28.09	65.24	65.24	65.24	65.24	87.04	87.04	87.04	87.04	97.95	97.95	97.95	97.95	157.07	157.07	157.07	157.07
240370	0	0	0	0	0.64	0.64	0.64	0.64	1.58	1.58	1.58	1.58	2.18	2.18	2.18	2.18	6.46	6.46	6.46	6.46
240380	0	0	0	0	0.7	0.7	0.7	0.7	1.64	1.64	1.64	1.64	2.29	2.29	2.29	2.29	6.8	6.8	6.8	6.8
240390	9.66	9.66	9.66	9.66	19.02	19.02	19.02	19.02	24.3	24.3	24.3	24.3	26.93	26.93	26.93	26.93	40.73	40.73	40.73	40.73
240400	27.84	27.84	27.84	27.84	50.25	50.25	50.25	50.25	62.99	62.99	62.99	62.99	69.65	69.65	69.65	69.65	108.99	108.99	108.99	108.99
240410	14.5	14.5	14.5	14.5	27.67	27.67	27.67	27.67	35.11	35.11	35.11	35.11	38.81	38.81	38.81	38.81	58.32	58.32	58.32	58.32
240430	28.84	28.84	28.84	28.84	54.29	54.29	54.29	54.29	68.66	68.66	68.66	68.66	75.82	75.82	75.82	75.82	113.54	113.54	113.54	113.54
240440	0	0	0	0	0.89	0.89	0.89	0.89	1.39	1.39	1.39	1.39	1.61	1.61	1.61	1.61	6.03	6.02	6.03	6.02
240450	23.13	23.13	23.13	23.13	44.14	44.14	44.14	44.14	55.99	55.99	55.99	55.99	61.88	61.88	61.88	61.88	92.94	92.94	92.94	92.94
240460	100.18	100.31	100.31	100.31	294.2	294.32	294.32	294.32	392.98	392.98	392.98	392.98	447.95	447.95	447.95	447.95	685.46	685.46	685.46	685.46
240470	3.6	3.6	3.6	3.6	6.83	6.83	6.83	6.83	14.88	14.88	14.88	14.88	26.24	26.24	26.24	26.24	49.95	49.95	49.95	49.95
240480	15.52	15.52	15.52	15.52	30.64	30.64	30.64	30.64	34.49	34.49	34.49	34.49	36.25	36.25	36.25	36.25	43	43	43	43
240490	24.71	24.71	24.71	24.71	46.87	46.87	46.87	46.87	59.37	59.37	59.37	59.37	65.59	65.59	65.59	65.59	98.37	98.37	98.37	98.37
240500	31.18	31.18	31.18	31.18	68.14	68.14	68.14	68.14	89.59	89.59	89.59	89.59	100.29	100.29	100.29	100.29	202.06	202.06	202.06	202.06
240510	32.75	32.75	32.75	32.75	71.67	71.67	71.67	71.67	93.87	93.87	93.87	93.87	105.23	105.23	105.23	105.23	165.76	165.76	165.76	165.76
240520	4.43	4.43	4.43	4.43	9.64	9.64	9.64	9.64	12.62	12.62	12.62	12.62	14.11	14.11	14.11	14.11	21.9	21.9	21.9	21.9
240530	30.36	30.36	30.36	30.36	70.74	70.74	70.74	70.74	93.08	93.08	93.08	93.08	103.96	103.96	103.96	103.96	158.86	158.86	158.86	158.86
240540	5.9	5.9	5.9	5.9	15.99	16	16	16	23.36	23.36	23.36	23.36	26.55	26.55	26.55	26.55	35.42	35.42	35.42	35.42
240550	34.72	34.72	34.72	34.72	59.41	59.41	59.41	59.41	73.26	73.26	73.26	73.26	80.16	80.16	80.16	80.16	116.11	116.11	116.11	116.11
240560	12.88	12.88	12.88	12.88	26.46	26.46	26.46	26.46	34.14	34.14	34.14	34.14	37.97	37.97	37.97	37.97	58.03	58.03	58.03	58.03
240570	30.86	30.86	30.86	30.86	56.21	56.21	56.21	56.21	70.58	70.58	70.58	70.58	77.75	77.75	77.75	77.75	115.67	115.67	115.67	115.67
240580	2.65	2.65	2.65	2.65	8.39	8.39	8.39	8.39	12.23	12.23	12.23	12.23	14.19	14.19	14.19	14.19	23.57	23.57	23.57	23.57
240590	12.88	12.88	12.88	12.88	25.1	25.1	25.1	25.1	31.99	31.99	31.99	31.99	35.42	35.42	35.42	35.42	53.45	53.45	53.45	53.45
240600	7.91	7.91	7.91	7.91	16.89	16.89	16.89	16.89	22.01	22.01	22.01	22.01	24.56	24.56	24.56	24.56	37.92	37.92	37.92	37.92
240610	6.69	6.69	6.69	6.69	14.26	14.26	14.26	14.26	17.99	17.99	17.99	17.99	19.8	19.8	19.8	19.8	32.61	32.61	32.61	32.61
240620	3.45	3.45	3.45	3.45	7.83	7.83	7.83	7.83	8.27	8.27	8.27	8.27	8.2	8.2	8.2	8.2	5.24	5.24	5.24	5.24
240630	10.23	10.23	10.23	10.23	18.85	18.85	18.85	18.85	23.73	23.73	23.73	23.73	26.16	26.16	26.16	26.16	39.01	39.01	39.01	39.01
240640	0.47	0.47	0.47	0.47	1.75	1.75	1.75	1.75	3.27	3.27	3.27	3.27	4.91	4.91	4.91	4.91	11.36	11.36	11.36	11.36
240650	7.44	7.44	7.44	7.44	16.04	16.04	16.04	16.04	20.95	20.95	20.95	20.95	23.4	23.4	23.4	23.4	36.23	36.23	36.23	36.23
240660	6.91	6.93	6.93	6.93	17.93	17.93	17.93	17.93	20.78	20.78	20.78	20.78	21.44	21.44	21.44	21.44	22.8	22.8	22.8	22.8
240670	61.5	61.52	61.52	61.52	121.92	121.92	121.92	121.92	158.62	158.62	158.62	158.62	176.89	176.89	176.89	176.89	272.85	272.85	272.85	272.85
240680	18.51	18.51	18.51	18.51	37.87	37.87	37.87	37.87	46.91	46.91	46.91	46.91	51.07	51.07	51.07	51.07	69.97	69.97	69.97	69.97
240690	16.8	16.8	16.8	16.8	34.08	34.07	34.07	34.07	43.25	43.25	43.25	43.25	47.46	47.46	47.46	47.46	69.33	69.33	69.33	69.33
240695	20.55	20.55	20.55	20.55	43.54	43.54	43.54	43.54	56.69	56.69	56.69	56.69	63.26	63.26	63.26	63.26	97.93	97.93	97.93	97.93
240700	38.59	38.59	38.59	38.59	40.64	40.63	40.63	40.63	40.52	40.52	40.52	40.52	40.52	40.52	40.52	40.52	39.93	39.93	39.93	39.93
240710	74.38	74.41	74.41	74.41	152.58	152.6	152.6	152.6	196.48	196.47	196.45	196.48	224.74	224.76	224.82	224.78	366.09	366.09	366.09	366.09
240720	68.04	68.08	68.08	68.08	115.25	115.26	115.26	115.26	141.13	141.13	141.13	141.13	152.95	152.95	152.95	152.95	218.56	218.56	218.56	218.56
240730	35.74	35.75	35.75	35.75	48.14	48.14	48.14	48.14	54.19	54.19	54.19	54.19	57.35	57.35	57.35	57.35	82.9	82.9	82.9	82.9
240740	35.26	35.27	35.27	35.27	57.54	57.53	57.53	57.53	66.82	66.82	66.82	66.82	71.09	71.09	71.09	71.09	108.23	108.23	108.23	108.23
240750	19.28	19.18	19.18	19.18	36.74	36.75	36.75	36.75	43.68	43.68	43.68	43.68	46.85	46.85	46.85	46.85	73.51	73.51	73.51	73.51
240760	27.36	27.35	27.35	27.35	38.4	38.4	38.4	38.4	44.57	44.57	44.57	44.57	47.66	47.66	47.66	47.66	61.74	61.74	61.74	61.74
240770	31.88	31.92	31.92	31.92	59.21	59.21	59.21	59.21	77.39	77.39	77.39	77.39	86.43	86.43	86.43	86.43	136.04	136.04	136.04	136.04
240780	13.42	13.42	13.42	13.42	13.69	13.69	13.69	13.69	16.07	16.07	16.07	16.07	17.35	17.35	17.35	17.35	25.09	25.09	25.09	25.09
240790	24.98	24.98	24.98	24.98	58	58	58	58	77.33	77.33	77.33	77.33	86.91	86.91	86.91	86.91	135.16	135.16	135.16	135.16
240800	9.6	9.61	9.61	9.61	14.01	14.01	14.01	14.01	19.36	19.36	19.36	19.36	22.32	22.32	22.32	22.32	38.1	38.1	38.1	38.1
240810	7.38	7.38	7.38	7.38	10.9	10.9	10.9	10.9	15.93	15.93	15.93	15.93	18.5	18.5	18.5	18.5	31.73	31.73	31.73	31.73
240820	24.07	24.08	24.08	24.08	46.21	46.21	46.21	46.21	62.03	62.03	62.03	62.03	70.16	70.16	70.16	70.16	112.83	112.83	112.83	112.83
240830	17.3	17.3	17.3	17.3	33.95	33.95	33.95	33.95	43.78	43.78	43.78	43.78	48.67	48.67	48.67	48.67	73.89	73.89	73.89	73.89
240840	17.28	17.28	17.28	17.28	39.76	39.76	39.76	39.76	50.73	50.73	50.73	50.73	55.98	55.98	55.98	55.98	79.3	79.3	79.3	79.3
240850	19.8	19.8	19.8	19.8	39.43	39.43	39.43	39.43	50.48	50.48	50.48	50.48	55.99	55.99	55.99	55.99	84.77	84.77	84.77	84.77
240860	7.79	7.79	7.79	7.79	16.63	16.63	16.63	16.63	21.68	21.68	21.68	21.68	24.2	24.2	24.2	24.2	37.4	37.4	37.4	37.4
240900	44.95	44.95	44.95	44.95	90.71	90.71	90.71	90.71	116.76	116.76	116.76	116.76	129.73	129.73	129.73	129.73	197.92	197.92	197.92	197.92
240910	36.31	36.3	36.3	36.3	87.75	87.76	87.76	87.76	119.55	119.55	119.55	119.55	135.35	135.35	135.35	135.35	211.32	211.32	211.32	211.32
240920	52.3	52.31	52.31	52.31	127.93	127.94	127.94	127.94	170.69	170.69	170.69	170.69	191.25	191.25	191.25	191.25	294.2	294.2	294.2	294.2
240930	9.62	9.62	9.62	9.62	21.32	21.33	21.33	21.33	32.06	32.06	32.06	32.06	35.86	35.86	35.86	35.86	59.97	59.97	59.97	59.97
240940	28.92	28.95	28.95	28.95	48.67	48.63	48.63	48.63	45.19	45.19	45.19	45.19	45.95	45.95	45.95	45.95	72.26	72.26	72.26	72.26
240950	8.85	8.85	8.85	8.85	18.93	18.93	18.93	18.93	24.69	24.69	24.69	24.69	27.56	27.56	27.56	27.56	42.67	42.67	42.67	42.67
241000	11.23	11.23	11.23	11.23	22.06	22.06	22.06	22.06	28.18	28.18	28.18	28.18	31.23	31.23	31.23	31.23	48.12	48.12	48.12	48.12
241010	7.28	7.28	7.28	7.28	13.66	13.66	13.66	13.66	17.26	17.26	17.26	17.26	19.06	19.06	19.06	19.06	28.51	28.51	28.51	28.51
241100	23.81	23.82	23.82	23.82	44.07	44.01	44.01	44.01	50.29	49.91	49.91	49.91	50.61	49.65	49.65	49.65	52.81	52.81	52.81	52.81
241110	269.05	269.13	269.13	269.13	487.32	487.4	487.4	487.4	595.18	595.18	595.18	595.18	646.17	646.17	646.17	646.17	938.27	938.27	938.3	938.3
241120	37.33	37.33	37.33	37.33	67.94	67.94	67.94	67.94	84.76	84.76	84.76	84.76	91.73	91.73	91.73	91.73	132.19	132.19	132.18	132.18

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
241130	6.56	6.56	6.56	6.56	8.51	8.51	8.51	8.51	9.44	9.44	9.44	9.44	9.91	9.91	9.91	9.91	11.7	11.7	11.7	11.7
241140	18.16	18.16	18.16	18.16	33.47	33.47	33.47	33.47	42.05	42.05	42.05	42.05	46.41	46.41	46.41	46.41	70.62	70.62	70.62	70.62
241150	1.8	1.8	1.8	1.8	2.66	2.66	2.66	2.66	2.91	2.91	2.91	2.91	3.1	3.1	3.1	3.1	7.01	7.01	7.01	7.01
241160	15.36	15.36	15.36	15.36	27.89	27.89	27.89	27.89	35	35	35	35	38.55	38.55	38.55	38.55	57.32	57.32	57.32	57.32
241170	17.93	17.93	17.93	17.93	17.93	17.93	17.93	17.93	30.47	30.45	30.45	30.46	35.1	35.11	35.12	35.12	50.65	50.65	50.65	50.65
241180	87.27	87.27	87.27	87.27	158.44	158.44	158.44	158.44	192.78	192.78	192.78	192.78	209.6	209.6	209.6	209.6	294.52	294.52	294.52	294.52
241190	30.98	30.98	30.98	30.98	41.72	41.72	41.72	41.72	44.5	44.5	44.5	44.5	45.08	45.08	45.08	45.08	45.35	45.35	45.35	45.35
241200	38.81	38.81	38.81	38.81	73.99	73.99	73.99	73.99	93.83	93.83	93.83	93.83	103.71	103.71	103.71	103.71	155.74	155.74	155.74	155.74
241210	35.84	35.84	35.84	35.84	74.05	74.05	74.05	74.05	95.72	95.72	95.72	95.72	106.5	106.5	106.5	106.5	163.1	163.1	163.1	163.1
241220	63.4	63.43	63.43	63.43	141.46	141.54	141.54	141.54	182.27	182.27	182.27	182.27	200.84	200.84	200.84	200.84	338.78	338.78	338.78	338.78
241230	24.17	24.19	24.19	24.19	64.99	65.06	65.06	65.06	85.5	85.5	85.5	85.5	93.99	93.99	93.99	93.99	137.26	137.26	137.26	137.26
241240	35.99	35.99	35.99	35.99	73.22	73.28	73.28	73.28	98.5	98.5	98.5	98.5	109.55	109.55	109.55	109.55	172.9	172.9	172.9	172.9
241250	10.36	10.6	10.6	10.6	21.28	21.31	21.31	21.31	20.91	20.91	20.91	20.91	19.79	19.79	19.79	19.79	21.35	21.35	21.35	21.35
241260	5.84	5.85	5.85	5.85	7.93	7.9	7.9	7.9	14.65	14.65	14.65	14.65	16.19	16.19	16.19	16.19	12.78	12.78	12.78	12.78
241270	38.86	38.86	38.86	38.86	71.46	71.46	71.46	71.46	88.97	88.97	88.97	88.97	96.02	96.02	96.02	96.02	124.25	124.25	124.25	124.25
241300	516.48	517.3	494.28	494.28	750.95	824.6	726.06	756.16	783.18	780.84	785.22	756.96	781.03	891.24	789.02	776.74	517.93	517.93	477.51	477.51
241310	139.85	139.93	139.93	139.93	251.09	251.14	251.14	251.14	305.98	305.98	305.98	305.98	328.72	328.72	328.72	328.72	406.13	406.13	406.12	406.12
241320	118.42	118.48	118.48	118.48	193.88	193.88	193.88	193.88	211.45	211.58	211.43	211.54	218	217.88	217.91	217.88	240.78	240.78	240.77	240.77
241330	80.24	80.28	80.28	80.28	120.9	120.92	120.92	120.92	148.08	148.13	148.08	148.12	158.84	158.81	158.83	158.81	205.71	205.71	205.71	205.71
241340	74.66	74.73	74.73	74.73	121.58	121.63	121.63	121.63	139.64	139.64	139.64	139.64	146.03	146.03	146.03	146.03	178.98	178.98	178.98	178.98
241350	27.39	27.42	27.42	27.42	52.82	52.83	52.83	52.83	64.14	64.14	64.14	64.14	69.85	69.85	69.85	69.85	90.7	90.7	90.7	90.7
241360	26.52	26.55	26.55	26.55	54.83	54.85	54.85	54.85	64.36	64.36	64.36	64.36	68.64	68.64	68.64	68.64	89.61	89.61	89.61	89.61
241370	42.55	42.53	42.53	42.53	105.24	105.27	105.27	105.27	139.16	139.16	139.16	139.16	155.76	155.76	155.76	155.76	245.26	245.26	245.26	245.26
241380	19.88	19.92	19.92	19.92	23.64	23.67	23.67	23.67	26.27	26.27	26.27	26.27	27.27	27.27	27.27	27.27	31.06	31.06	31.06	31.06
241390	13.23	13.27	13.27	13.27	24.55	24.6	24.6	24.6	27.94	27.94	27.94	27.94	29.02	29.02	29.02	29.02	30.86	30.86	30.86	30.86
241400	17.03	17.05	17.05	17.05	37.45	37.57	37.57	37.57	49.02	49.02	49.02	49.02	54.48	54.48	54.48	54.48	73.19	73.19	73.19	73.19
241410	13.76	13.8	13.8	13.8	30.73	30.75	30.75	30.75	32.54	32.54	32.54	32.54	33.62	33.62	33.62	33.62	39.09	39.09	39.09	39.09
241420	14.14	14.15	14.15	14.15	32.69	32.72	32.72	32.72	39.67	39.67	39.67	39.67	44.64	44.64	44.64	44.64	76.81	76.81	76.81	76.81
241430	9.06	9.06	9.06	9.06	18.8	18.85	18.85	18.85	20.63	20.63	20.63	20.63	20.78	20.78	20.78	20.78	21.27	21.27	21.27	21.27
241440	9.07	9.07	9.07	9.07	21.01	21.01	21.01	21.01	25.58	25.58	25.58	25.58	28.08	28.08	28.08	28.08	49.52	49.52	49.52	49.52
241450	2.71	2.71	2.71	2.71	3.52	3.52	3.52	3.52	5.59	5.59	5.59	5.59	6.73	6.73	6.73	6.73	10.95	10.95	10.95	10.95
241460	2.75	2.75	2.75	2.75	3.54	3.54	3.54	3.54	5.68	5.68	5.68	5.68	7.24	7.24	7.24	7.24	14.88	14.88	14.88	14.88
241470	11.86	11.86	11.86	11.86	21.88	21.88	21.88	21.88	27.54	27.54	27.54	27.54	30.37	30.37	30.37	30.37	45.28	45.28	45.28	45.28
241500	415.85	416.49	381.23	381.23	882.03	884.82	707.15	887.24	861.54	866.25	854.92	866.47	876.24	1006.94	883.89	884.69	448.5	448.5	474.83	474.83
241510	2.97	2.97	2.97	2.97	22.35	22.35	22.35	22.35	34.27	34.27	34.27	34.27	40.15	40.15	40.15	40.15	54.76	54.76	54.75	54.75
241520	31.59	31.59	31.59	31.59	61.77	61.77	61.77	61.77	78.79	78.79	78.79	78.79	87.26	87.26	87.26	87.26	131.78	131.78	131.78	131.78
241530	10.74	10.74	10.74	10.74	20.52	20.52	20.52	20.52	27.17	27.17	27.17	27.17	30.48	30.48	30.48	30.48	37.41	37.41	37.41	37.41
241540	13.38	13.38	13.38	13.38	26.44	26.44	26.44	26.44	33.85	33.85	33.85	33.85	37.54	37.54	37.54	37.54	56.93	56.93	56.93	56.93
241550	37.48	37.49	37.49	37.49	66.74	66.74	66.74	66.74	79.53	79.53	79.53	79.53	84.56	84.56	84.56	84.56	94.6	94.6	94.6	94.6
241560	32.97	32.98	32.98	32.98	53.22	53.22	53.22	53.22	60.66	60.66	60.66	60.66	63.47	63.47	63.47	63.47	66.6	66.6	66.6	66.6
241570	20.39	20.39	20.39	20.39	42.38	42.38	42.38	42.38	54.75	54.75	54.75	54.75	60.81	60.81	60.81	60.81	93.33	93.33	93.33	93.33
241580	10.69	10.69	10.69	10.69	19.52	19.52	19.52	19.52	24.52	24.52	24.52	24.52	27.02	27.02	27.02	27.02	40.22	40.22	40.22	40.22
241590	13.03	13.03	13.03	13.03	25.35	25.35	25.35	25.35	32.29	32.29	32.29	32.29	35.74	35.74	35.74	35.74	53.91	53.91	53.91	53.91
241600	6.35	6.37	6.37	6.37	16.82	16.88	16.88	16.88	24.36	24.36	24.36	24.36	24.7	24.7	24.7	24.7	27.74	27.74	27.74	27.74
241610	9.92	9.92	9.92	9.92	27.02	27.05	27.05	27.05	36.04	36.04	36.04	36.04	40.35	40.35	40.35	40.35	64.2	64.2	64.2	64.2
241620	3.33	3.3	3.3	3.3	9.22	9.26	9.26	9.26	14.02	14.02	14.02	14.02	16.56	16.56	16.56	16.56	27.32	27.32	27.32	27.32
241630	1.59	1.57	1.57	1.57	1.87	1.88	1.88	1.88	2.21	2.21	2.21	2.21	2.49	2.49	2.49	2.49	3.08	3.08	3.08	3.08
241640	10.28	10.28	10.28	10.28	17.37	17.37	17.37	17.37	20.49	20.49	20.49	20.49	21.63	21.63	21.63	21.63	16.84	16.84	16.84	16.84
241650	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.65	1.65	1.65	1.65	1.69	1.69	1.69	1.69	1.61	1.61	1.61	1.61
241660	5.94	5.94	5.94	5.94	11.52	11.52	11.52	11.52	14.66	14.66	14.66	14.66	16.23	16.23	16.23	16.23	24.45	24.45	24.45	24.45
241670	1.44	1.44	1.44	1.44	2.82	2.82	2.82	2.82	3.43	3.43	3.43	3.43	3.74	3.74	3.74	3.74	8.93	8.93	8.93	8.93
241680	3.97	3.97	3.97	3.97	7.46	7.46	7.46	7.46	9.43	9.43	9.43	9.43	10.41	10.41	10.41	10.41	15.58	15.58	15.58	15.58
241690	3.46	3.49	3.49	3.49	7.41	7.44	7.44	7.44	10.38	10.38	10.38	10.38	12.11	12.11	12.11	12.11	19.88	19.88	19.88	19.88
241695	4.05	4.07	4.07	4.07	8.47	8.52	8.52	8.52	12.25	12.25	12.25	12.25	14.38	14.38	14.38	14.38	23.39	23.39	23.39	23.39
241700	49.43	49.46	49.46	49.46	103.29	103.31	103.31	103.31	128.65	128.65	128.65	128.65	142.58	142.57	142.57	142.57	196.55	196.55	196.55	196.55
241710	50.78	50.82	50.82	50.82	103.46	103.49	103.49	103.49	130.47	130.47	130.47	130.47	143.92	143.92	143.92	143.92	197.66	197.66	197.66	197.66
241720	30.36	30.39	30.39	30.39	57.64	57.68	57.68	57.68	68.17	68.17	68.17	68.17	75.33	75.33	75.33	75.33	113.02	113.02	113.02	113.02
241730	28.21	28.24	28.24	28.24	55.3	55.34	55.34	55.34	59.59	59.59	59.59	59.59	60.86	60.86	60.86	60.86	66.61	66.61	66.61	66.61
241740	27.99	28.02	28.02	28.02	55.16	55.2	55.2	55.2	59.45	59.45	59.45	59.45	60.72	60.72	60.72	60.72	66.37	66.37	66.37	66.37
241750	27.8	27.82	27.82	27.82	55.04	55.08	55.08	55.08	59.3	59.3	59.3	59.3	60.58	60.58	60.58	60.58	66.14	66.14	66.14	66.14
241760	27.68	27.7	27.7	27.7	54.93	54.97	54.97	54.97	59.15	59.15	59.15	59.15	60.45	60.45	60.45	60.45	66.12	66.12	66.12	66.12
241770	27.7	27.73	27.73	27.73	54.85	54.89	54.89	54.89	59.01	59.01	59.01	59.01	61.49	61.49	61.49	61.49	66.95	66.95	66.95	66.95
241780	27.99	28.01	28.01	28.01	54.82	54.86	54.86	54.86	60.34	60.34	60.34	60.34	63.51	63.51	63.51	63.51	70.58	70.58	70.58	70.58
241790	28.52	28.54	28.54	28.54	54.89	54.93	54.93	54.93	62.44	62.44	62.44	62.44	66.6	66.6	66.6	66.6	76.6	76.6	76.6	76.6
241800	20.23	20.25	20.25	20.25	45.5	45.55	45.55	45.55	52.48	52.48	52.48	52.48	53	53	53	53	58.16	58.16	58.16	58.16
241810	12.83	12.85	12.85	12.85	36.43	36.47	36.47	36.47	43.07	43.07	43.07	43.07	46.87	46.87	46.87	46.87	55.5	55.5	55.5	55.5
242100	29.49	29.49	29.49	29.49	59.68	59.67	59.67	59.67	80.13	80.13	80.13	80.13	87.11	87.11	87.11	87.11	109.3	109.3	109.3	109.3
242110	34.76	34.76	34.76	34.76	88.4	88.4	88.4	88.4	109.51	109.51	109.51	109.51	120.62	120.62	120.62	120.62	181.03	181.03	181.03	181.03
242120	25.17	25.17	25.17	25.17	39.41	39.41	39.41	39.41	37.01	37.01	37.01	37.01	35.15	35.15	35.15	35.15	29.32	29.32	29.32	29.32
242130	44.3	44.3	44.3	44.3	72.36	72.36	72.36	72.36	87.25	87.25	87.25	87.25	95.43	95.43	95.43	95.43	137.3	137.3	137.3	137.3
242140	22.72	22.72	22.72	22.72	28.63	28.63	28.63	28.63	30.74	30.74	30.74	30.74	31.61	31.61	31.61	31.61	37.34	37.34	37.34	37.34
242150	25.3	25.3	25.3	25.3	47.65	47.65	47.65	47.65	60.26	60.26	60.26	60.26	66.54	66.54	66.54	66.54	99.64	99.64	99.64	99.64
242160	4.89	4.88	4.88	4.88	21.6	21.6	21.6	21.6	31.27	31.27	31.27	31.27	36.22	36.22	36.22	36.22	52.55	52.56	52.55	52.55
242170	51.27	51.27	51.27	51.27	106.19	106.21	106.21	106.21	142.87	142.87	142.87	142.87	158.33	158.33	158.33	158.33	228.29	228.29	228.29	228.29
242180	9.6	9.6	9.6	9.6	12.14	12.14	12.14	12.14	17.71	17.71	17.71	17.71	22.19	22.19	22.19	22.19	40.9	40.9	40.9	40.9
242190	40.07	40.09	40.09	40.09	71.68	71.67	71.67	71.67	86.92	86.92	86.92	86.92	94.89	94.89	94.89	94.89	140.83	140.83	140.83	140.83
242200	6.19	6.19	6.19	6.19	11.45	11.45	11.45	11.45	14.43	14.43	14.43	14.43	15.91	15.91	15.91	15.91	23.75	23.75	23.75	23.75
242210	8.93	8.93	8.93	8.93	19.14	19.14	19.14	19.14	24.97	24.97	24.97	24.97	27.87	27.87	27.87	27.87	43.1	43.1	43.1	43.1
242220	11.47	11.47	11.47	11.47	18.35	18.35	18.35	18.35	21.57	21.57	21.57	21.57	22.68	22.68	22.68	22.68	25.54	25.54	25.54	25.54
242230	9.84	9.84	9.84	9.84	19.08	19.08	19.08	19.08	24.4	24.4	24.4	24.4	28.52	28.52	28.52	28.52	45.57	45.57	45.57	45.57
242300	7.08	7.08	7.08	7.08	12.01	12.01	12.01	12.01	12.06	12.06	12.06	12.06	11.63	11.63	11.63	11.63	12.48	12.48	12.48	12.48
242310	12.35	12.35	12.35	12.35	29.65	29.65	29.65	29.65	46.52	46.52	46.52	46.52	53.93	53.93	53.93	53.93	96.13	96.13	96.13	96.13
242320	62.69	62.69	62.69	62.69	113.77	113.77	113.77	113.77	139.56	139.56	139.56	139.56	148.76	148.76	148.76	148.76	171.74	171.74	171.74	171.74
242330	35.68	35.68	35.68	35.68	64.93	64.93	64.93	64.93	81.52	81.52	81.52	81.52	89.8	89.8	89.8	89.8	133.58	133.58	133.58	133.58
242400	23.73	23.7	23.7	23.7	20.45	20.41	20.41	20.41	20.34	20.34	20.34	20.34	23.24	23.25	23.25	23.25	32.4	32.4	32.4	32.4
242410	74.21	74.21	74.21	74.21	141.04	141.04	141.04	141.04	178.76	178.76	178.76	178.76	197.54	197.54	197.54	197.54	296.79	296.79	296.79	296.79
242420	67.03	67.09	67.09	67.09	134.21	134.22	134.22	134.22	170.72	170.72	170.72	170.72	188.61	188.61	188.61	188.61	290.85	290.85	290.85	290.85
242430	51.8	51.8	51.8	51.8	108.16	108.16	108.16	108.16	138.04	138.04	138.04	138.04	153.27	153.27	153.27	153.27	223.29	223.29	223.29	223.29
242440	15.4	15.4	15.4	15.4	23.39	23.39	23.39	23.39	26.3	26.3	26.3	26.3	30.39	30.39	30.39	30.39	41.97	41.97	41.97	41.97
242450	15.46	15.46	15.46	15.46	22.1	22.1	22.1	22.1	24.34	24.34	24.34	24.34	25.39	25.39	25.39	25.39	25.2	25.2	25.2	25.2
242460	33.27	33.27	33.27	33.27	55.17	55.17	55.17	55.17	64.15	64.15	64.15	64.15	68.28	68.28	68.28	68.28	87.32	87.32	87.32	87.32
242470	40.38	40.38	40.38	40.38	75.92	75.92	75.92	75.92	95.97	95.97	95.97	95.97	105.96	105.96	105.96	105.96	158.61	158.61	158.61	158.61
242480	19.98	19.98	19.98	19.98	37.91	37.91	37.91	37.91	48.02	48.02	48.02	48.02	53.06	53.06	53.06	53.06	79.58	79.58	79.58	79.58
242490	8.21	8.21	8.21	8.21	18.96	18.96	18.96	18.96	19.8	19.8	19.8	19.8	21.52	21.52	21.52	21.52	26.58	26.58	26.58	26.58
242500	24.53	24.53	24.53	24.53	48.98	48.98	48.98	48.98	62.23	62.23	62.23	62.23	68.73	68.73	68.73	68.73	98.82	98.82	98.82	98.82
242510	1.87	1.87	1.87	1.87	2.81	2.81	2.81	2.81	2.98	2.98	2.98	2.98	5.22	5.22	5.22	5.22	23.72	23.72	23.72	23.72

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
242520	28.4	28.4	28.4	28.4	53.19	53.19	53.19	53.19	67.18	67.18	67.18	67.18	74.15	74.15	74.15	74.15	110.92	110.92	110.92	110.92
242530	6.76	6.75	6.75	6.75	9.37	9.38	9.38	9.38	9.64	9.64	9.64	9.64	11.17	11.17	11.17	11.17	16.09	16.09	16.09	16.09
242540	34.91	34.93	34.93	34.93	65.31	65.34	65.34	65.34	82.94	82.94	82.94	82.94	85.06	85.06	85.06	85.06	88.91	88.91	88.91	88.91
242550	25.76	25.76	25.76	25.76	48.4	48.4	48.4	48.4	61.18	61.18	61.18	61.18	67.55	67.55	67.55	67.55	101.1	101.1	101.1	101.1
242560	12.06	12.08	12.08	12.08	12.12	12.12	12.12	12.12	10.87	10.87	10.87	10.87	10.35	10.35	10.35	10.35	12.27	12.27	12.27	12.27
242570	21.71	21.75	21.75	21.75	44.33	44.34	44.34	44.34	54.39	54.39	54.39	54.39	59.26	59.26	59.26	59.26	84.63	84.63	84.63	84.63
242600	13.12	13.14	13.14	13.14	15.08	15.08	15.08	15.08	13.41	13.41	13.41	13.41	12.51	12.51	12.51	12.51	9.76	9.76	9.76	9.76
242610	13.99	14	14	14	23.22	23.21	23.21	23.21	25.39	25.39	25.39	25.39	26.54	26.54	26.54	26.54	33.18	33.18	33.18	33.18
242615	8.65	8.65	8.65	8.65	19.42	19.42	19.42	19.42	25.65	25.65	25.65	25.65	28.76	28.76	28.76	28.76	45.15	45.15	45.15	45.15
242620	2.34	2.34	2.34	2.34	3.28	3.28	3.28	3.28	5.51	5.51	5.51	5.51	9.31	9.31	9.31	9.31	28.59	28.59	28.59	28.59
242630	22.74	22.74	22.74	22.74	43.22	43.22	43.22	43.22	54.78	54.78	54.78	54.78	60.53	60.53	60.53	60.53	90.82	90.82	90.82	90.82
242640	1.63	1.63	1.63	1.63	2.21	2.21	2.21	2.21	2.07	2.07	2.07	2.07	1.44	1.44	1.44	1.44	2.28	2.28	2.28	2.28
242650	5.83	5.83	5.83	5.83	11.12	11.12	11.12	11.12	14.1	14.1	14.1	14.1	15.58	15.58	15.58	15.58	23.39	23.39	23.39	23.39
242660	6.59	6.59	6.59	6.59	10.17	10.17	10.17	10.17	10.68	10.68	10.68	10.68	10.87	10.87	10.87	10.87	30.01	30.01	30.01	30.01
242670	44.35	44.35	44.35	44.35	80.97	80.97	80.97	80.97	101.74	101.74	101.74	101.74	112.1	112.1	112.1	112.1	166.85	166.85	166.85	166.85
242680	6.78	6.76	6.76	6.76	5.42	5.42	5.42	5.42	6.42	6.42	6.42	6.42	6.6	6.6	6.6	6.6	7.18	7.18	7.18	7.18
242690	31.97	31.97	31.97	31.97	59.56	59.56	59.56	59.56	75.14	75.14	75.14	75.14	82.9	82.9	82.9	82.9	123.87	123.87	123.87	123.87
242700	17.8	17.8	17.8	17.8	50.04	50.04	50.04	50.04	65.79	65.79	65.79	65.79	73.18	73.18	73.18	73.18	120.46	120.46	120.46	120.46
242710	59.62	59.62	59.62	59.62	110.99	110.99	110.99	110.99	142.18	142.18	142.18	142.18	157.69	157.69	157.69	157.69	239.31	239.31	239.31	239.31
242720	0.57	0.57	0.57	0.57	2.49	2.49	2.49	2.49	3.07	3.07	3.07	3.07	3.37	3.37	3.37	3.37	6.49	6.49	6.49	6.49
242730	0.57	0.57	0.57	0.57	1.41	1.41	1.41	1.41	1.9	1.9	1.9	1.9	2.16	2.16	2.16	2.16	7.5	7.5	7.5	7.5
242740	15.06	15.06	15.06	15.06	27.3	27.3	27.3	27.3	34.26	34.26	34.26	34.26	37.72	37.72	37.72	37.72	56.08	56.08	56.08	56.08
242800	31.03	31.06	31.06	31.06	71.57	71.59	71.59	71.59	90.62	90.62	90.62	90.62	99.19	99.19	99.19	99.19	141.37	141.37	141.37	141.37
242810	23.31	23.32	23.32	23.32	43.45	43.46	43.46	43.46	49.71	49.71	49.71	49.71	52.67	52.67	52.67	52.67	67.38	67.38	67.38	67.38
242820	33.07	33.08	33.08	33.08	74.37	74.37	74.37	74.37	97.55	97.55	97.55	97.55	109.09	109.09	109.09	109.09	171.85	171.85	171.85	171.85
242830	8.14	8.14	8.14	8.14	10.01	10.01	10.01	10.01	9.57	9.57	9.57	9.57	9.29	9.29	9.29	9.29	6.56	6.56	6.56	6.56
242840	3.53	3.53	3.53	3.53	5.9	5.9	5.9	5.9	8.33	8.33	8.33	8.33	9.92	9.92	9.92	9.92	16.47	16.47	16.47	16.47
242850	16.75	16.75	16.75	16.75	30.62	30.62	30.62	30.62	38.48	38.48	38.48	38.48	42.4	42.4	42.4	42.4	63.12	63.12	63.12	63.12
242860	8.16	8.16	8.16	8.16	16.41	16.41	16.41	16.41	18.34	18.34	18.34	18.34	18.54	18.54	18.54	18.54	16.79	16.79	16.79	16.79
242870	9.49	9.49	9.49	9.49	18.6	18.6	18.6	18.6	23.74	23.74	23.74	23.74	26.3	26.3	26.3	26.3	39.74	39.74	39.74	39.74
250005	82.96	86.5	86.5	86.5	172.81	179.55	179.55	179.55	221.85	228.3	228.3	228.3	244.66	250.75	250.75	250.75	348.41	350.88	350.87	350.87
250010	84.02	87.43	87.43	87.43	181.39	189.14	189.14	189.14	239.36	247.6	247.6	247.6	266.96	275.34	275.33	275.33	400.89	406.43	406.42	406.42
250020	57.25	63.8	63.8	63.8	110.51	118.28	118.28	118.28	140.9	148.83	148.83	148.83	154.45	162.39	162.39	162.39	213.69	219.18	219.18	219.18
250030	64.52	69.44	69.44	69.44	139.98	145.01	145.01	145.01	179.57	185.92	185.92	185.92	196	206.64	206.64	206.64	283.8	292.03	292.03	292.03
250040	54.72	62.1	62.1	62.1	80.49	88.05	88.05	88.05	96.05	100.88	100.87	100.87	103.64	106.79	106.77	106.77	139.26	133.22	133.18	133.18
250050	78.07	97.03	97.03	97.03	149.02	171.09	171.09	171.09	188.32	204.79	204.79	204.79	208.15	221.06	221.06	221.06	317.55	305.35	305.31	305.31
250060	48.33	71.2	71.2	71.2	82.35	89.82	89.74	89.74	110.84	102.84	102.41	102.41	123.65	108.57	108.06	108.06	183.91	132.52	131.96	131.96
250070	106.95	110.06	110.06	110.06	195.38	196.65	196.65	196.65	245.35	245.97	245.98	245.98	270.53	271.05	271.09	271.09	399.26	399.44	399.55	399.55
250080	48.06	50.17	50.17	50.17	49.76	52.12	52.12	52.12	53.12	54.15	54.17	54.17	56.35	57.27	57.3	57.3	72.13	72.8	72.86	72.86
250090	70.93	71.06	71.06	71.06	127.22	127.21	127.21	127.21	159.65	159.46	159.46	159.46	175.34	175.07	175.07	175.07	251.37	251.26	251.26	251.26
250100	68.8	68.88	68.88	68.88	101.49	101.61	101.61	101.61	111.8	111.84	111.84	111.84	116.48	116.49	116.5	116.5	136.44	136.37	136.4	136.4
250110	130.98	131.07	131.07	131.07	242.49	242.8	242.8	242.8	286.41	286.85	286.85	286.85	308.03	308.44	308.44	308.44	433.54	433.5	433.5	433.5
250120	71.19	71.2	71.2	71.2	123.14	123.14	123.14	123.14	149.13	149.13	149.13	149.13	163.69	163.69	163.69	163.69	234.25	234.25	234.25	234.25
250130	63.09	63.08	63.08	63.08	179.14	179.15	179.15	179.15	187.28	187.28	187.28	187.28	189.38	189.39	189.39	189.39	200.68	200.68	200.68	200.68
250140	34.13	34.13	34.13	34.13	43.77	43.77	43.77	43.77	51.41	51.41	51.41	51.41	54.06	54.05	54.05	54.05	62.41	62.4	62.4	62.4
250150	36.69	36.69	36.69	36.69	55.33	55.33	55.33	55.33	66.13	66.13	66.13	66.13	71.42	71.42	71.42	71.42	98.98	98.98	98.98	98.98
250160	24.98	24.98	24.98	24.98	26.38	26.38	26.38	26.38	26.44	26.44	26.44	26.44	26.41	26.41	26.41	26.41	25.72	25.72	25.72	25.72
250170	58.29	58.29	58.29	58.29	95.88	95.88	95.88	95.88	116.04	116.04	116.04	116.04	126.25	126.25	126.25	126.25	183.14	183.14	183.14	183.14
250180	22.32	22.32	22.32	22.32	25.67	25.67	25.67	25.67	32.44	32.44	32.44	32.44	35.68	35.68	35.68	35.68	44.07	44.07	44.07	44.07
250190	28.37	28.37	28.37	28.37	49.22	49.22	49.22	49.22	63.08	63.08	63.08	63.08	69.7	69.7	69.7	69.7	103.1	103.1	103.1	103.1
250200	20.12	20.12	20.12	20.12	35.57	35.57	35.57	35.57	44.24	44.24	44.24	44.24	48.5	48.5	48.5	48.5	73.14	73.14	73.14	73.14
250210	5.72	5.72	5.72	5.72	9.69	9.69	9.69	9.69	13.82	13.82	13.82	13.82	15.67	15.67	15.67	15.67	24.65	24.65	24.65	24.65
250220	7.49	7.49	7.49	7.49	14.52	14.52	14.52	14.52	18.49	18.49	18.49	18.49	20.46	20.46	20.46	20.46	30.86	30.86	30.86	30.86
250300	3.23	3.17	3.17	3.17	9.03	8.81	8.81	8.81	11.36	10.5	10.5	10.5	11.64	10.6	10.6	10.6	12.4	12.06	12.06	12.06
250310	9.19	9.19	9.19	9.19	16.82	16.82	16.82	16.82	21.14	21.14	21.14	21.14	23.3	23.3	23.3	23.3	34.69	34.69	34.69	34.69
250320	2.83	2.83	2.83	2.83	4.24	4.2	4.2	4.2	4.75	4.72	4.72	4.72	5	4.98	4.98	4.98	6.2	6.24	6.22	6.22
250330	3.25	3.27	3.27	3.27	4.24	4.21	4.21	4.21	4.75	4.73	4.72	4.72	5	4.99	4.98	4.98	6.2	6.24	6.22	6.22
250340	45.7	45.7	45.7	45.7	83.53	83.53	83.53	83.53	104.97	104.97	104.97	104.97	115.67	115.67	115.67	115.67	175.3	175.23	175.23	175.23
250400	26.92	26.92	26.92	26.92	41.88	41.92	41.92	41.92	43.64	43.65	43.65	43.65	44.93	44.95	44.95	44.95	48.93	48.95	48.95	48.95
250410	33.93	33.94	33.94	33.94	52.34	52.37	52.37	52.37	55.19	55.2	55.2	55.2	57.05	57.06	57.06	57.06	63.56	63.58	63.58	63.58
250420	23.18	23.18	23.18	23.18	28.58	28.57	28.57	28.57	30.9	30.89	30.89	30.89	32	31.99	31.99	31.99	37.77	37.76	37.76	37.76
250430	34.68	34.68	34.68	34.68	68.81	68.81	68.81	68.81	87.53	87.53	87.53	87.53	96.63	96.63	96.63	96.63	144.38	144.38	144.38	144.38
250440	51.08	51.08	51.08	51.08	96.83	96.83	96.83	96.83	122.64	122.64	122.64	122.64	135.49	135.49	135.49	135.49	210.98	210.98	210.98	210.98
250450	47.93	47.94	47.94	47.94	103.31	103.32	103.32	103.32	129.66	129.66	129.66	129.66	143.09	143.1	143.1	143.1	214.15	214.15	214.15	214.15
250460	8.28	8.28	8.28	8.28	10.55	10.55	10.55	10.55	11.51	11.51	11.51	11.51	11.99	11.99	11.99	11.99	14.64	14.64	14.64	14.64
250470	84.25	84.26	84.26	84.26	159.31	159.31	159.31	159.31	196.4	196.41	196.41	196.41	214.17	214.18	214.18	214.18	298.6	298.6	298.6	298.6
250480	1.4	1.4	1.4	1.4	3.08	3.08	3.08	3.08	3.83	3.83	3.83	3.83	4.82	4.82	4.82	4.82	9.98	9.98	9.98	9.98
250490	6.12	6.12	6.12	6.12	11.51	11.51	11.51	11.51	14.55	14.55	14.55	14.55	16.07	16.07	16.07	16.07	24.05	24.05	24.05	24.05
260010	198.26	198.35	198.35	198.35	325.53	325.56	325.56	325.56	374.61	374.61	374.61	374.61	399.21	399.21	399.21	399.21	542.52	542.52	542.52	542.52
260020	198.26	198.35	198.35	198.35	319.07	319.1	319.1	319.1	366.9	366.91	366.91	366.9	391.55	391.56	391.56	391.56	519.07	519.08	519.07	519.07
260030	198.27	198.36	198.36	198.36	319.07	319.11	319.11	319.11	366.91	366.91	366.91	366.91	391.56	391.56	391.56	391.56	519.07	519.08	519.08	519.08
260040	211.57	211.7	211.7	211.7	395.42	395.48	395.48	395.48	466.8	466.8	466.8	466.8	502.34	502.34	502.34	502.34	691.29	691.29	691.29	691.29
260050	211.53	211.65	211.65	211.65	393.83	393.89	393.89	393.89	465.01	465.01	465.01	465.01	500.74	500.74	500.74	500.74	691.29	691.29	691.29	691.29
260060	216.58	216.72	216.72	216.72	407.27	407.33	407.33	407.33	476.4	476.4	476.4	476.4	511.22	511.22	511.22	511.22	703.87	703.87	703.87	703.87
260070	215.87	215.99	215.99	215.99	326.84	326.88	326.88	326.88	359.22	359.22	359.22	359.22	371.64	371.64	371.64	371.64	420.01	420.01	420.01	420.01
260080	215.94	216.06	216.06	216.06	327.64	327.68	327.68	327.68	359.8	359.8	359.8	359.8	372.97	372.97	372.97	372.97	422.84	422.84	422.84	422.84
260090	218.95	219.09	219.09	219.09	429.47	429.56	429.56	429.56	519.18	519.18	519.18	519.18	557.06	557.06	557.06	557.06	702.89	702.89	702.89	702.89
260100	224.81	225	225	225	542.68	542.84	542.84	542.84	676.68	676.68	676.68	676.68	735.62	735.62	735.62	735.62	1003.87	1003.87	1003.87	1003.87
260110	221.16	221.34	221.34	221.34	606.85	607.07	607.07	607.07	839.38	839.38	839.38	839.38	931.49	931.49	931.49	931.49	1245.81	1245.81	1245.81	1245.81
260120	244.47	244.65	244.65	244.65	577.33	577.56	577.56	577.56	777.57	777.57	777.57	777.57	860.46	860.46	860.46	860.46	1118.5	1118.5	1118.5	1118.5
260130	261.21	261.4	261.4	261.4	583.84	584.06	584.06	584.06	774.36	774.36	774.36	774.36	856.95	856.95	856.95	856.95	1113.46	1113.46	1113.46	1113.46
260140	284.69	284.89	284.89	284.89	601.29	601.49	601.49	601.49	775.05	775.05	775.05	775.05	857.44	857.44	857.44	857.44	1112.98	1112.98	1112.98	1112.98
260150	153.35	153.49	153.49	153.49	371.55	371.68	371.68	371.68	496.56	496.56	496.56	496.56	568.36	568.36	568.36	568.36	802.55	802.55	802.55	802.55
260160	159.53	159.66	159.66	159.66	379.9	380.03	380.03	380.03	496.78	496.78	496.78	496.78	568.76	568.76	568.76	568.76	802.34	802.34	802.34	802.34
260170	151.07	151.19	151.19	151.19	362.76	362.86	362.86	362.86	491	491	491	491	547.78	547.78	547.78	547.78	718.07	718.07	718.07	718.07
260180	143.14	143.25	143.25	143.25	356.97	357.1	357.1	357.1	488.87	488.87	488.87	488.87	545.26	545.26	545.26	545.26	715.23	715.23	715.23	715.23
260190	142.59	142.74	142.74	142.74	356.98	357.12	357.12	357.12	488.88	488.88	488.88	488.88	545.28	545.28	545.28	545.28	715.22	715.22	715.22	715.22
260200	202.36	202.36	202.36	202.36	357.76	357.9	357.9	357.9	490.26	490.26	490.26	490.26	548.11	548.11	548.11	548.11	740.06	740.06	740.06	740.06
260210	255.41	255.48	255.48	255.48	515.44	515.62	515.62	515.62	683.95	683.95	683.95	683.95	754.01	754.01	754.01	754.01	989.18	989.18	989.18	989.18
260220	274.16	274.22	274.22	274.22	516.3	516.48	516.48	516.48	682.49	682.49	682.49	682.49	753.38	753.38	753.38	753.38	990.63	990.63	990.63	990.63
260230	198.33	198.43	198.43	198.43	476.37	476.55	476.55	476.55	629.26	629.26	629.26	629.26	692.9	692.9	692.9	692.9	895.86	895.86	895.86	895.86
260240	197.95	198.05	198.05	198.05	475.95	476.12	476.12	476.12	628.54	628.54	628.54	628.54	691.82	691.82	691.82	691.82	939.28	939.28	939.28	939.28
260250	195.3	195.39	195.39	195.39	450.96	451.12	451.12	451.12	594.79	594.79	594.79	594.79	655.7	655.7	655.7	655.7	875.1	875.1	875.1	875.1
260260	223.93	224.09	224.09	224.09	475.58	475.76	475.76	475.76	601.76	601.76	601.76	601.76	660.69	660.69	660.69	660.69	881.37	881.37	881.37	881.37
260270	236.51	236.68	236.68	236.68	407.72	407.82	407.82	407.82	479.33	479.33	479.33	479.33	510.78	510.78	510.78	510.78	622.7	622.7	622.7	622.7
260280	187.97	188.09	188.09	188.09	323.75	323.82	323.82	323.82	382.21	382.21	382.21	382.21	407.73	407.73	407.73	407.73	500.31	500.31	500.31	500.31

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
260290	189.59	189.71	189.71	189.71	324.51	324.58	324.58	324.58	383.29	383.29	383.29	383.29	408.79	408.79	408.79	408.79	501.24	501.24	501.24	501.24
260300	196.51	196.63	196.63	196.63	324.33	324.4	324.4	324.4	381.59	381.59	381.59	381.59	406.1	406.1	406.1	406.1	496.81	496.81	496.81	496.81
260310	213.56	213.7	213.7	213.7	320.2	320.27	320.27	320.27	376.02	376.02	376.02	376.02	399.9	399.9	399.9	399.9	486.92	486.92	486.92	486.92
260320	212.21	212.36	212.36	212.36	355.15	355.21	355.21	355.21	408.5	408.5	408.5	408.5	430.89	430.89	430.89	430.89	525.5	525.5	525.5	525.5
260330	210.06	210.2	210.21	210.21	351.27	351.34	351.34	351.34	405.45	405.45	405.45	405.45	427.51	427.51	427.51	427.51	521.65	521.65	521.65	521.65
260340	204.79	204.94	204.94	204.94	333.45	333.53	333.53	333.53	387.68	387.68	387.68	387.68	412.89	412.89	412.89	412.89	541.24	541.24	541.24	541.24
260350	179.59	179.71	179.71	179.71	296.7	296.76	296.76	296.76	351.84	351.84	351.84	351.84	379.4	379.4	379.4	379.4	527.52	527.52	527.52	527.52
260360	202.78	202.9	202.9	202.9	317.94	318.01	318.01	318.01	378.34	378.34	378.34	378.34	408.42	408.42	408.42	408.42	562.79	562.79	562.79	562.79
260370	160.28	160.46	160.46	160.46	310.99	311.07	311.07	311.07	386.23	386.23	386.23	386.23	422.61	422.61	422.61	422.61	618.56	618.56	618.56	618.56
260380	135.39	135.41	135.41	135.41	218.82	218.95	218.95	218.95	269.6	269.6	269.6	269.6	293.47	293.47	293.47	293.47	412.43	412.43	412.43	412.43
260390	128.11	128.13	128.13	128.13	208.81	208.91	208.91	208.91	257.13	257.13	257.13	257.13	279.4	279.4	279.4	279.4	377.7	377.7	377.7	377.7
260400	127.46	127.48	127.48	127.48	183.51	183.53	183.53	183.53	217.67	217.67	217.67	217.67	235.48	235.48	235.48	235.48	309.02	309.02	309.02	309.02
260410	123.76	123.77	123.77	123.77	170.97	171	171	171	210.48	210.48	210.48	210.48	226.22	226.22	226.22	226.22	279.27	279.27	279.27	279.27
260420	122.35	122.36	122.36	122.36	170.97	171	171	171	206.53	206.53	206.53	206.53	220.37	220.37	220.37	220.37	271.04	271.04	271.04	271.04
260430	129.02	129.04	129.04	129.04	216.57	216.59	216.59	216.59	248.87	248.87	248.87	248.87	261.27	261.27	261.27	261.27	312.42	312.42	312.42	312.42
260440	71.72	71.73	71.73	71.73	110.02	110.04	110.04	110.04	123.54	123.54	123.54	123.54	127.49	127.49	127.49	127.49	137.59	137.59	137.59	137.59
260450	67.59	67.6	67.6	67.6	101.8	101.81	101.81	101.81	106.76	106.76	106.76	106.76	109.86	109.86	109.86	109.86	116.88	116.88	116.88	116.88
260460	67.25	67.27	67.27	67.27	101.62	101.63	101.63	101.63	109.16	109.16	109.16	109.16	113.85	113.85	113.85	113.85	126.87	126.87	126.87	126.87
260470	66.19	66.2	66.2	66.2	99.54	99.55	99.55	99.55	109.25	109.25	109.25	109.25	114.03	114.03	114.03	114.03	127.63	127.63	127.63	127.63
260480	65.87	65.89	65.89	65.89	99.03	99.04	99.04	99.04	110.55	110.55	110.55	110.55	115.6	115.6	115.6	115.6	133.15	133.15	133.15	133.15
260490	65.79	65.8	65.8	65.8	98.88	98.89	98.89	98.89	110.42	110.42	110.42	110.42	115.4	115.4	115.4	115.4	132.47	132.47	132.47	132.47
260500	177.77	177.87	177.87	177.87	347.09	347.16	347.16	347.16	433.87	433.87	433.87	433.87	473.55	473.55	473.55	473.55	655.25	655.25	655.25	655.25
260510	99.49	99.57	99.57	99.57	194.89	194.98	194.98	194.98	244.5	244.5	244.5	244.5	265.97	265.97	265.97	265.97	358.38	358.38	358.38	358.38
260520	57.41	57.59	57.59	57.59	131.67	131.82	131.82	131.82	162.01	162.01	162.01	162.01	173.42	173.42	173.42	173.42	225.8	225.8	225.8	225.8
260530	49.13	49.25	49.25	49.25	85.63	85.67	85.67	85.67	89.94	89.94	89.94	89.94	89.46	89.46	89.46	89.46	87.34	87.34	87.34	87.34
260540	41.68	41.81	41.81	41.81	76.2	76.27	76.27	76.27	87.17	87.17	87.17	87.17	93.98	93.98	93.98	93.98	114.08	114.08	114.08	114.08
260545	38.39	38.46	38.46	38.46	65.09	65.14	65.14	65.14	81.05	81.05	81.05	81.05	88.84	88.84	88.84	88.84	109.78	109.78	109.78	109.78
260550	38.72	38.78	38.78	38.78	70.6	70.63	70.63	70.63	89.67	89.67	89.67	89.67	97.74	97.74	97.74	97.74	120.66	120.66	120.66	120.66
260560	40.71	40.79	40.79	40.79	69.31	69.35	69.35	69.35	77.25	77.25	77.25	77.25	79.21	79.21	79.21	79.21	96.85	96.85	96.85	96.85
260570	33.8	33.88	33.88	33.88	62.27	62.32	62.32	62.32	73.56	73.56	73.56	73.56	78.34	78.34	78.34	78.34	91.4	91.4	91.4	91.4
260580	33.12	33.19	33.19	33.19	62.15	62.2	62.2	62.2	72.04	72.04	72.04	72.04	76.62	76.62	76.62	76.62	113.05	113.05	113.05	113.05
260590	28.11	28.17	28.17	28.17	48.29	48.31	48.31	48.31	47.19	47.19	47.19	47.19	47.07	47.07	47.07	47.07	46.73	46.73	46.73	46.73
260600	28.27	28.32	28.32	28.32	48.34	48.35	48.35	48.35	47.38	47.38	47.38	47.38	47.31	47.31	47.31	47.31	47.09	47.09	47.09	47.09
260610	38.35	38.37	38.37	38.37	69.54	69.52	69.52	69.52	72.42	72.42	72.42	72.42	72.06	72.06	72.06	72.06	75.56	75.56	75.56	75.56
260620	27.1	27.1	27.1	27.1	36.76	36.76	36.76	36.76	37.32	37.32	37.32	37.32	36.72	36.72	36.72	36.72	29.62	29.62	29.62	29.62
260630	28.02	28.01	28.01	28.01	37.08	37.07	37.07	37.07	37.79	37.79	37.79	37.79	37.34	37.34	37.34	37.34	39.83	39.83	39.83	39.83
260640	29.09	29.09	29.09	29.09	36.92	36.91	36.91	36.91	39.93	39.93	39.93	39.93	42.04	42.04	42.04	42.04	43.43	43.43	43.43	43.43
260650	19.76	19.76	19.76	19.76	23.21	23.21	23.21	23.21	23.35	23.35	23.35	23.35	24.46	24.46	24.46	24.46	24.52	24.52	24.52	24.52
260660	20.37	20.36	20.36	20.36	23.31	23.31	23.31	23.31	24.07	24.07	24.07	24.07	25.15	25.15	25.15	25.15	26.79	26.79	26.79	26.79
260670	16.38	16.37	16.37	16.37	22.74	22.73	22.73	22.73	23.56	23.56	23.56	23.56	24.64	24.64	24.64	24.64	25.1	25.1	25.1	25.1
260680	46.61	46.6	46.6	46.6	63.75	63.69	63.69	63.69	66.91	66.91	66.91	66.91	65.89	65.89	65.89	65.89	68.63	68.63	68.63	68.63
260690	40.28	40.29	40.29	40.29	65.99	65.99	65.99	65.99	78.01	78.01	78.01	78.01	83.68	83.68	83.68	83.68	110.44	110.44	110.44	110.44
260700	3.54	3.54	3.54	3.54	9.25	9.25	9.25	9.25	11.61	11.61	11.61	11.61	12.65	12.65	12.65	12.65	15.07	15.07	15.07	15.07
260710	9.35	9.35	9.35	9.35	21.44	21.44	21.44	21.44	28.52	28.52	28.52	28.52	32.07	32.07	32.07	32.07	50.93	50.93	50.93	50.93
260720	10.17	10.17	10.17	10.17	23.02	23.02	23.02	23.02	30.45	30.45	30.45	30.45	34.17	34.17	34.17	34.17	53.7	53.7	53.7	53.7
260800	21.12	21.12	21.12	21.12	159.38	159.44	159.44	159.44	239.49	239.49	239.49	239.49	275.58	275.58	275.58	275.58	415.01	415.01	415.01	415.01
260810	4.12	4.12	4.12	4.12	7.74	7.74	7.74	7.74	9.46	9.46	9.46	9.46	10.87	10.87	10.87	10.87	15.71	15.71	15.71	15.71
260820	15.3	15.3	15.3	15.3	28.76	28.76	28.76	28.76	36.35	36.35	36.35	36.35	40.13	40.13	40.13	40.13	64.14	64.14	64.14	64.14
260830	1.4	1.4	1.4	1.4	3.11	3.11	3.11	3.11	9.24	9.24	9.24	9.24	13.07	13.07	13.07	13.07	23.26	23.26	23.26	23.26
260840	4.85	4.85	4.85	4.85	9.11	9.11	9.11	9.11	11.52	11.52	11.52	11.52	12.72	12.72	12.72	12.72	32.99	32.99	32.99	32.99
260850	29.37	29.37	29.37	29.37	133.66	133.76	133.76	133.76	216.55	216.55	216.55	216.55	251.08	251.08	251.08	251.08	411.25	411.25	411.25	411.25
260860	383.43	383.43	383.43	383.43	712.43	712.43	712.43	712.43	898.35	898.35	898.35	898.35	990.98	990.98	990.98	990.98	1479.91	1479.91	1479.91	1479.91
260870	302.92	302.92	302.92	302.92	562.84	562.84	562.84	562.84	709.72	709.72	709.72	709.72	782.91	782.91	782.91	782.91	1169.17	1169.17	1169.17	1169.17
260900	143.43	143.51	143.51	143.51	245.83	245.89	245.89	245.89	278.97	278.97	278.97	278.97	295.66	295.66	295.66	295.66	327.16	327.16	327.16	327.16
260910	143.63	143.69	143.69	143.69	247.07	247.1	247.1	247.1	279.75	279.75	279.75	279.75	302.8	302.8	302.8	302.8	383.48	383.48	383.48	383.48
260920	127.17	127.23	127.23	127.23	215.4	215.43	215.43	215.43	270.61	270.61	270.61	270.61	295.37	295.37	295.37	295.37	375.47	375.47	375.47	375.47
260930	127.36	127.41	127.41	127.41	215.48	215.51	215.51	215.51	262.89	262.89	262.89	262.89	286.77	286.77	286.77	286.77	362.69	362.69	362.69	362.69
260940	128.1	128.16	128.16	128.16	215.58	215.61	215.61	215.61	263	263	263	263	286.83	286.83	286.83	286.83	362.71	362.71	362.71	362.71
260950	133.38	133.45	133.45	133.45	216.21	216.24	216.24	216.24	263.37	263.37	263.37	263.37	287.05	287.05	287.05	287.05	362.8	362.8	362.8	362.8
260960	47.28	47.28	47.28	47.28	80.46	80.45	80.45	80.45	85.84	85.84	85.84	85.84	86.16	86.16	86.16	86.16	84.01	84.01	84.01	84.01
260970	47.64	47.64	47.64	47.64	96	96	96	96	127.4	127.4	127.4	127.4	143.45	143.45	143.45	143.45	228.89	228.89	228.89	228.89
260975	7.06	7.06	7.06	7.06	18.23	18.23	18.23	18.23	26.19	26.19	26.19	26.19	32.88	32.88	32.88	32.88	71.78	71.78	71.78	71.78
260980	9.88	9.89	9.89	9.89	11.32	11.32	11.32	11.32	10.57	10.57	10.57	10.57	10.17	10.17	10.17	10.17	11.99	11.95	11.95	11.95
260990	19.81	19.81	19.81	19.81	36.32	36.32	36.32	36.32	46.42	46.42	46.42	46.42	51.59	51.59	51.59	51.59	77.96	77.96	77.96	77.96
261000	81.95	82.01	82.01	82.01	125.38	125.39	125.39	125.39	139.72	139.72	139.72	139.72	145.97	145.97	145.97	145.97	170.41	170.41	170.41	170.41
261010	71.4	71.43	71.43	71.43	104.8	104.82	104.82	104.82	116.86	116.86	116.86	116.86	122.31	122.31	122.31	122.31	153.43	153.43	153.43	153.43
261020	52.3	52.32	52.32	52.32	70.16	70.14	70.14	70.14	72.23	72.23	72.23	72.23	72.93	72.93	72.93	72.93	76.96	76.96	76.96	76.96
261030	34.13	34.11	34.11	34.11	42.12	42.02	42.02	42.02	47.91	47.91	47.91	47.91	52.8	52.8	52.8	52.8	80.06	80.06	80.06	80.06
261040	28.58	28.59	28.59	28.59	44.33	44.35	44.35	44.35	45.57	45.57	45.57	45.57	45.27	45.27	45.27	45.27	37.86	37.86	37.86	37.86
261050	37.55	37.55	37.55	37.55	71.85	71.85	71.85	71.85	91.18	91.18	91.18	91.18	100.8	100.8	100.8	100.8	151.47	151.47	151.47	151.47
261060	58.43	58.45	58.45	58.45	118.73	118.75	118.75	118.75	144	144	144	144	155.99	155.99	155.99	155.99	218.46	218.46	218.46	218.46
261070	54.66	54.66	54.66	54.66	139.3	139.35	139.35	139.35	201.88	201.88	201.88	201.88	229.94	229.94	229.94	229.94	359.02	359.02	359.02	359.02
261080	14.7	14.7	14.7	14.7	25.25	25.25	25.25	25.25	27.05	27.05	27.05	27.05	27.7	27.7	27.7	27.7	29.65	29.65	29.65	29.65
261090	20.49	20.49	20.49	20.49	39.24	39.24	39.24	39.24	49.82	49.82	49.82	49.82	55.09	55.09	55.09	55.09	82.82	82.82	82.82	82.82
261100	18.02	18.02	18.02	18.02	35.26	35.26	35.26	35.26	46.6	46.6	46.6	46.6	52.49	52.49	52.49	52.49	82.13	82.13	82.14	82.14
261110	18.64	18.64	18.64	18.64	35.69	35.69	35.69	35.69	45.31	45.31	45.31	45.31	50.1	50.1	50.1	50.1	75.31	75.31	75.31	75.31
261120	4.05	4.05	4.05	4.05	8.21	8.21	8.21	8.21	11.2	11.2	11.2	11.2	12.67	12.67	12.67	12.67	19.71	19.71	19.71	19.71
261130	7.52	7.52	7.52	7.52	14.66	14.66	14.66	14.66	18.68	18.68	18.68	18.68	20.68	20.68	20.68	20.68	31.2	31.2	31.2	31.2
261200	12.32	12.32	12.32	12.32	27.78	27.78	27.78	27.78	34.14	34.14	34.14	34.14	36.17	36.17	36.17	36.17	41.49	41.49	41.49	41.49
261210	13.79	13.79	13.79	13.79	30.84	30.84	30.84	30.84	40.94	40.94	40.94	40.94	45.6	45.6	45.6	45.6	67.22	67.22	67.22	67.22
261220	20.5	20.5	20.5	20.5	39.94	39.94	39.94	39.94	50.9	50.9	50.9	50.9	56.35	56.35	56.35	56.35	85.01	85.01	85.01	85.01
261230	25.99	26.14	26.14	26.14	33.53	33.53	33.51	33.52	36.24	36.24	36.24	36.24	34.6	34.6	36.15	34.6	38.6	38.59	38.59	38.6
261300	132.63	132.62	132.62	132.62	183.21	183.2	183.2	183.2	206.57	206.57	206.57	206.57	217.31	217.31	217.31	217.31	272.13	272.13	272.13	272.13
261310	102.05	102.05	102.05	102.05	138.46	138.46	138.46	138.46	161.42	161.42	161.42	161.42	170.56	170.56	170.56	170.56	215.18	215.18	215.18	215.18
261320	78.07	78.07	78.07	78.07	105.4	105.41	105.41	105.41	128.03	128.03	128.03	128.03	139.29	139.29	139.29	139.29	189.77	189.77	189.77	189.77
261330	86.63	86.63	86.63	86.63	167.02	167.02	167.02	167.02	212.36	212.36	212.36	212.36	234.91	234.91	234.91	234.91	353.64	353.64	353.64	353.64
261400	113.14	113.21	113.21	113.21	187.6	187.55	187.55	187.55	204.51	204.51	204.51	204.51	201.07	201.07	201.07	201.07	147.3	147.3	147.3	147.3
261410	123.33	123.44	123.44	123.44	247.7	247.69	247.69	247.69	293.93	293.93	293.93	293.93	313.93	313.93	313.93	313.93	389.63	389.63	389.63	389.63
261420	97.86	97.98	97.98	97.98	206.37	206.42	206.42	206.42	257.01	257.01	257.01	257.01	272.8	272.8	272.8	272.8	362.93	362.93	362.93	362.93
261430	35.95	35.96	35.96	35.96	104.12	104.13	104.13	104.13	136.39	136.39	136.39	136.39	149.06	149.06	149.06	149.06	215.98	215.98	215.98	215.98
261440	36.23	36.25	36.25	36.25	105.27	105.27	105.27	105.27	147.72	147.72	147.72	147.72	169.28	169.28	169.28	169.28	285.64	285.64	285.64	285.64
261450	0.27	0.27	0.27	0.27	3.5	3.5	3.5	3.5	6.3	6.3	6.3	6.3	7.73	7.73	7.73	7.73	14.6	14.6	14.6	14.6
261460	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.73	7.73	7.73	7.73	14.6	14.6	14.6	14.6
261470	67.59	67.59	67.59	67.59	121.38	121.38	121.38	121.38	151.3	151.3	151.3	151.3	166.13	166.13	166.13	166.13	244.24	244.24	244.24	244.24
261480	13.25	13.25	13.25	13.25	18.54	18.54	18.54	18.54	20.99	20.99	20.99	20.99	21.98	21.98	21.98	21.98	25.99	25.99	25.99	25.99
261490	38.96	38.96	38.96	38.96	73.99	73.99	73.99	73.99	93.77	93.77	93.77	93.77	103.61	103.61	103.61	103.61	155.49	155.49	155.49	155.49

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
261500	23.64	23.64	23.64	23.64	49.24	49.24	49.24	49.24	64.06	64.06	64.06	64.06	71.43	71.43	71.43	71.43	110.15	110.15	110.15	110.15
261510	17.38	17.38	17.38	17.38	37.6	37.6	37.6	37.6	48.7	48.7	48.7	48.7	53.97	53.97	53.97	53.97	103.5	103.5	103.5	103.5
261520	6.03	6.03	6.03	6.03	13.26	13.26	13.26	13.26	17.44	17.44	17.44	17.44	21.32	21.32	21.32	21.32	44.69	44.69	44.69	44.69
261530	8.54	8.54	8.54	8.54	16.59	16.59	16.59	16.59	21.14	21.14	21.14	21.14	25.42	25.42	25.42	25.42	57.2	57.2	57.19	57.19
261540	2.47	2.48	2.48	2.48	5.8	5.8	5.8	5.8	6.86	6.86	6.86	6.86	7.2	7.2	7.2	7.2	8.32	8.32	8.32	8.32
261550	20.76	20.76	20.76	20.76	38.7	38.7	38.7	38.7	48.83	48.83	48.83	48.83	54.38	54.38	54.38	54.38	80.53	80.53	80.53	80.53
261560	48.52	48.52	48.52	48.52	106.27	106.28	106.28	106.28	138.43	138.43	138.43	138.43	156.08	156.08	156.08	156.08	257.51	257.51	257.51	257.51
261570	21.02	21.02	21.02	21.02	47.29	47.29	47.29	47.29	64.72	64.72	64.72	64.72	72.44	72.44	72.44	72.44	103.68	103.68	103.68	103.68
261600	35.52	35.6	35.6	35.6	44.52	44.54	44.54	44.54	42.21	42.21	42.21	42.21	40.94	40.94	40.94	40.94	38.99	38.99	38.99	38.99
261610	62.51	62.83	62.83	62.83	104.12	104.12	104.12	104.12	119.86	119.86	119.86	119.86	126.59	126.59	126.59	126.59	163.01	163.01	163.01	163.01
261620	42.33	42.64	42.64	42.64	62.14	62.13	62.13	62.13	64.23	64.23	64.23	64.23	64.36	64.36	64.36	64.36	65.77	65.77	65.77	65.77
261630	43.78	44.03	44.03	44.03	69.02	69.04	69.04	69.04	79.96	79.96	79.96	79.96	85.62	85.62	85.62	85.62	115.73	115.73	115.73	115.73
261640	25.29	25.35	25.35	25.35	43.45	43.45	43.45	43.45	52.18	52.18	52.18	52.18	56.21	56.21	56.21	56.21	68.49	68.49	68.49	68.49
261650	19.72	19.72	19.72	19.72	43.01	43.01	43.01	43.01	56.38	56.38	56.38	56.38	63.03	63.03	63.03	63.03	97.85	97.85	97.85	97.85
261660	8.02	8.02	8.02	8.02	17.49	17.49	17.49	17.49	22.93	22.93	22.93	22.93	25.64	25.64	25.64	25.64	39.9	39.9	39.9	39.9
261670	3.66	3.66	3.66	3.66	6.85	6.85	6.85	6.85	9.69	9.69	9.69	9.69	10.96	10.96	10.96	10.96	15.35	15.35	15.35	15.35
261680	18.94	18.94	18.94	18.94	36.6	36.6	36.6	36.6	46.55	46.55	46.55	46.55	51.5	51.5	51.5	51.5	77.55	77.55	77.55	77.55
261700	59.76	59.78	59.78	59.78	158.01	158.05	158.05	158.05	223.48	223.48	223.48	223.48	250.13	250.13	250.13	250.13	342.77	342.77	342.77	342.77
261710	28.11	28.11	28.11	28.11	61.86	61.88	61.88	61.88	80.65	80.65	80.65	80.65	89.81	89.81	89.81	89.81	106.16	106.16	106.16	106.16
261720	28.39	28.39	28.39	28.39	63.13	63.13	63.13	63.13	83.08	83.08	83.08	83.08	92.74	92.74	92.74	92.74	151.05	151.05	151.05	151.05
261730	1.15	1.15	1.15	1.15	5.7	5.7	5.7	5.7	8.19	8.19	8.19	8.19	10.64	10.64	10.64	10.64	17.76	17.76	17.76	17.76
261740	18.73	18.73	18.73	18.73	35.12	35.12	35.12	35.12	44.37	44.37	44.37	44.37	48.98	48.98	48.98	48.98	73.29	73.29	73.29	73.29
261750	32.47	32.47	32.47	32.47	60.58	60.58	60.58	60.58	76.45	76.45	76.45	76.45	84.36	84.36	84.36	84.36	126.08	126.08	126.08	126.08
261760	0.42	0.42	0.42	0.42	1.09	1.09	1.09	1.09	2.83	2.83	2.83	2.83	3.99	3.99	3.99	3.99	13.2	13.2	13.2	13.2
261796	4.52	4.53	4.53	4.53	9.05	9.07	9.07	9.07	17.24	17.24	17.24	17.24	21.63	21.63	21.63	21.63	38.22	38.22	38.22	38.22
261798	13.65	13.66	13.66	13.66	25.92	25.95	25.95	25.95	32.94	32.94	32.94	32.94	36.29	36.29	36.29	36.29	51.51	51.51	51.51	51.51
261800	10.5	10.5	10.5	10.5	19.68	19.68	19.68	19.68	24.87	24.87	24.87	24.87	27.45	27.45	27.45	27.45	41.07	41.07	41.07	41.07
261806	4.52	4.52	4.52	4.52	7.08	7.11	7.11	7.11	17.43	17.43	17.43	17.43	22.62	22.62	22.62	22.62	36.24	36.24	36.24	36.24
261808	18.9	18.92	18.92	18.92	36.29	36.32	36.32	36.32	44.5	44.5	44.5	44.5	45.71	45.71	45.71	45.71	52.47	52.47	52.47	52.47
261810	15.06	15.06	15.06	15.06	28.39	28.39	28.39	28.39	35.91	35.91	35.91	35.91	39.66	39.66	39.66	39.66	59.4	59.4	59.4	59.4
261820	2.39	2.39	2.39	2.39	2.52	2.52	2.52	2.52	2.66	2.66	2.66	2.66	3	3	3	3	4.95	4.95	4.95	4.95
261830	23.89	23.89	23.89	23.89	49.21	49.21	49.21	49.21	63.55	63.55	63.55	63.55	70.69	70.69	70.69	70.69	108.13	108.13	108.13	108.13
261840	2.9	2.9	2.9	2.9	5.08	5.07	5.07	5.07	6.17	6.17	6.17	6.17	6.77	6.77	6.77	6.77	9.6	9.6	9.6	9.6
261850	18.67	18.67	18.67	18.67	38.16	38.16	38.16	38.16	47.82	47.82	47.82	47.82	52.5	52.5	52.5	52.5	75.86	75.86	75.86	75.86
261860	8.63	8.63	8.63	8.63	16.23	16.23	16.23	16.23	20.38	20.38	20.38	20.38	22.49	22.49	22.49	22.49	26.08	26.08	26.08	26.08
261870	13.81	13.81	13.81	13.81	28.64	28.64	28.64	28.64	37.05	37.05	37.05	37.05	41.24	41.24	41.24	41.24	63.19	63.19	63.19	63.19
261880	3.69	3.69	3.69	3.69	8.83	8.83	8.83	8.83	11.57	11.57	11.57	11.57	12.67	12.67	12.67	12.67	16.57	16.57	16.57	16.57
261890	14.27	14.27	14.27	14.27	28.86	28.86	28.86	28.86	37.11	37.11	37.11	37.11	41.22	41.22	41.22	41.22	62.76	62.76	62.76	62.76
261900	21.18	21.2	21.2	21.2	24.25	24.25	24.25	24.25	22.04	22.04	22.04	22.04	20.91	20.91	20.91	20.91	18.81	18.81	18.81	18.81
261910	28.86	28.88	28.88	28.88	39.04	39.03	39.03	39.03	39.14	39.14	39.14	39.14	38.42	38.42	38.42	38.42	50.3	50.3	50.3	50.3
261920	14.01	14.01	14.01	14.01	22.76	22.75	22.75	22.75	23.52	23.52	23.52	23.52	23.66	23.66	23.66	23.66	23.34	23.34	23.34	23.34
261930	21.22	21.22	21.22	21.22	37.71	37.71	37.71	37.71	43.24	43.24	43.24	43.24	44.79	44.79	44.79	44.79	50.5	50.5	50.5	50.5
261940	38.35	38.35	38.35	38.35	69.05	69.05	69.05	69.05	83.09	83.09	83.09	83.09	89.93	89.93	89.93	89.93	126.75	126.75	126.75	126.75
261950	3.01	3.01	3.01	3.01	5.06	5.06	5.06	5.06	6.36	6.36	6.36	6.36	6.8	6.8	6.8	6.8	7.97	7.97	7.97	7.97
261960	8.18	8.18	8.18	8.18	15.23	15.23	15.23	15.23	19.32	19.32	19.32	19.32	21.67	21.67	21.67	21.67	32.44	32.44	32.44	32.44
261970	7.32	7.32	7.32	7.32	13.08	13.08	13.08	13.08	16.37	16.37	16.37	16.37	18.01	18.01	18.01	18.01	26.71	26.71	26.71	26.71
261980	29.7	29.72	29.72	29.72	67.58	67.58	67.58	67.58	77.52	77.52	77.52	77.52	79.18	79.18	79.18	79.18	113.43	113.43	113.43	113.43
261990	13.25	13.25	13.25	13.25	24.23	24.23	24.23	24.23	30.44	30.44	30.44	30.44	33.55	33.55	33.55	33.55	49.94	49.94	49.94	49.94
262000	25.67	25.68	25.68	25.68	52.12	52.15	52.15	52.15	78.62	78.62	78.62	78.62	92.51	92.51	92.51	92.51	173.92	173.92	173.92	173.92
262010	50.49	50.49	50.49	50.49	95.21	95.22	95.22	95.22	116.8	116.8	116.8	116.8	126.03	126.03	126.03	126.03	170.33	170.33	170.33	170.33
262020	40.35	40.34	40.34	40.34	76.94	76.94	76.94	76.94	95.42	95.42	95.42	95.42	104.5	104.5	104.5	104.5	152	152	152	152
262030	4.64	4.64	4.64	4.64	9.58	9.58	9.58	9.58	12.38	12.38	12.38	12.38	13.77	13.77	13.77	13.77	21.07	21.07	21.07	21.07
262040	80.29	80.29	80.29	80.29	141.54	141.54	141.54	141.54	174.95	174.95	174.95	174.95	191.43	191.43	191.43	191.43	276.65	276.65	276.65	276.65
262050	38.31	38.31	38.31	38.31	71.64	71.64	71.64	71.64	90.45	90.45	90.45	90.45	99.82	99.82	99.82	99.82	149.26	149.26	149.26	149.26
262070	21.13	21.13	21.13	21.13	39.37	39.37	39.37	39.37	49.67	49.67	49.67	49.67	54.81	54.81	54.81	54.81	81.89	81.89	81.89	81.89
262080	7.81	7.81	7.81	7.81	14.66	14.66	14.66	14.66	18.52	18.52	18.52	18.52	20.45	20.45	20.45	20.45	30.6	30.6	30.6	30.6
262100	13.66	13.66	13.66	13.66	29.75	29.75	29.75	29.75	39.03	39.03	39.03	39.03	43.66	43.66	43.66	43.66	68.02	68.02	68.02	68.02
262110	47.25	47.25	47.25	47.25	94.16	94.16	94.16	94.16	120.63	120.63	120.63	120.63	133.79	133.79	133.79	133.79	202.95	202.95	202.95	202.95
262120	15.89	15.89	15.89	15.89	30.32	30.32	30.32	30.32	38.45	38.45	38.45	38.45	42.5	42.5	42.5	42.5	63.84	63.84	63.84	63.84
262130	5.98	5.98	5.98	5.98	9.23	9.22	9.22	9.22	14.32	14.32	14.32	14.32	19.15	19.15	19.15	19.15	34.55	34.55	34.55	34.55
262140	37.69	37.69	37.69	37.69	70.61	70.61	70.61	70.61	89.18	89.18	89.18	89.18	98.44	98.44	98.44	98.44	147.24	147.24	147.24	147.24
262150	2.86	2.86	2.86	2.86	5.51	5.51	5.51	5.51	7.01	7.01	7.01	7.01	8.13	8.13	8.13	8.13	31.43	31.43	31.43	31.43
262160	1.84	1.84	1.84	1.84	5.48	5.48	5.48	5.48	5.47	5.47	5.47	5.47	5.48	5.48	5.48	5.48	8.12	8.12	8.12	8.12
262170	15.24	15.24	15.24	15.24	26.41	26.41	26.41	26.41	32.14	32.14	32.14	32.14	34.98	34.98	34.98	34.98	50.06	50.06	50.06	50.06
262180	2.94	2.94	2.94	2.94	5.29	5.29	5.29	5.29	6.62	6.62	6.62	6.62	7.29	7.29	7.29	7.29	10.82	10.82	10.82	10.82
262190	4.45	4.45	4.45	4.45	7.38	7.38	7.38	7.38	17.3	17.3	17.3	17.3	22.57	22.57	22.57	22.57	35.41	35.41	35.41	35.41
262200	42.28	42.28	42.28	42.28	81.57	81.57	81.57	81.57	103.74	103.74	103.74	103.74	114.76	114.76	114.76	114.76	172.81	172.81	172.81	172.81
262300	20.03	20.03	20.03	20.03	37.18	37.18	37.18	37.18	46.45	46.45	46.45	46.45	50.99	50.99	50.99	50.99	74.47	74.47	74.47	74.47
262310	18.79	18.79	18.79	18.79	34.73	34.73	34.73	34.73	43.74	43.74	43.74	43.74	48.23	48.23	48.23	48.23	71.94	71.94	71.94	71.94
262320	0.01	0.01	0.01	0.01	1.01	1.01	1.01	1.01	2.75	2.75	2.75	2.75	4.44	4.44	4.44	4.44	8.86	8.86	8.86	8.86
262330	47.14	47.14	47.14	47.14	85.51	85.51	85.51	85.51	107.23	107.23	107.23	107.23	118.03	118.03	118.03	118.03	173.44	173.44	173.44	173.44
262340	61.29	61.29	61.29	61.29	112	112	112	112	140.74	140.74	140.74	140.74	155.08	155.08	155.08	155.08	230.85	230.85	230.85	230.85
262350	53.38	53.38	53.38	53.38	100.56	100.63	100.63	100.63	148.59	148.59	148.59	148.59	174.01	174.01	174.01	174.01	315.77	315.77	315.77	315.77
262400	37.71	37.72	37.72	37.72	69.99	70	70	70	92.05	92.05	92.05	92.05	104.85	104.85	104.85	104.85	151.42	151.42	151.42	151.42
262410	57.12	57.13	57.13	57.13	106.05	106.05	106.05	106.05	125.37	125.37	125.37	125.37	133.95	133.95	133.95	133.95	177.89	177.89	177.89	177.89
262420	56.23	56.25	56.25	56.25	108.54	108.56	108.56	108.56	136.25	136.25	136.25	136.25	150.04	150.04	150.04	150.04	221.14	221.14	221.14	221.14
262430	53.9	53.91	53.91	53.91	100.87	100.88	100.88	100.88	127.76	127.76	127.76	127.76	139.45	139.45	139.45	139.45	189.48	189.48	189.48	189.48
262440	57.69	57.7	57.7	57.7	106.47	106.48	106.48	106.48	128.92	128.92	128.92	128.92	140.8	140.8	140.8	140.8	190.83	190.83	190.83	190.83
262450	61.16	61.17	61.17	61.17	111.33	111.34	111.34	111.34	133.55	133.55	133.55	133.55	144.23	144.23	144.23	144.23	192.18	192.18	192.18	192.18
262460	63.58	63.58	63.58	63.58	120.84	120.89	120.89	120.89	158.6	158.6	158.6	158.6	174.89	174.89	174.89	174.89	252.24	252.24	252.24	252.24
262470	12.67	12.67	12.67	12.67	30.66	30.66	30.66	30.66	41.85	41.85	41.85	41.85	47.32	47.32	47.32	47.32	70.39	70.39	70.39	70.39
262480	11.4	11.4	11.4	11.4	25.82	25.82	25.82	25.82	33.53	33.53	33.53	33.53	37.93	37.93	37.93	37.93	60.76	60.76	60.76	60.76
262490	22.99	22.99	22.99	22.99	62.65	62.65	62.65	62.65	83.85	83.85	83.85	83.85	92.52	92.52	92.52	92.52	134.47	134.47	134.47	134.47
262500	11.52	11.52	11.52	11.52	29.02	29.02	29.02	29.02	35.88	35.88	35.88	35.88	38.74	38.74	38.74	38.74	52.94	52.94	52.94	52.94
262510	40.9	40.9	40.9	40.9	77.56	77.56	77.56	77.56	96.88	96.88	96.88	96.88	106.09	106.09	106.09	106.09	152.94	152.94	152.94	152.94
262520	8.58	8.58	8.58	8.58	15.47	15.47	15.47	15.47	15.56	15.56	15.56	15.56	16.16	16.16	16.16	16.16	17.52	17.52	17.52	17.52
262530	19.32	19.32	19.32	19.32	39.62	39.62	39.62	39.62	54.64	54.64	54.64	54.64	62.38	62.38	62.38	62.38	103.38	103.38	103.38	103.38
262540	7.87	7.87	7.87	7.87	22.79	22.79	22.79	22.79	31.81	31.81	31.81	31.81	36.4	36.4	36.4	36.4	59.39	59.39	59.39	59.39
262550	24.91	24.91	24.91	24.91	50.17	50.17	50.17	50.17	63.38	63.38	63.38	63.38	70.36	70.36	70.36	70.36	105.9	105.9	105.9	105.9
262560	13.68	13.68	13.68	13.68	26.54	26.54	26.54	26.54	32.61	32.61	32.61	32.61	35.28	35.28	35.28	35.28	48.12	48.12	48.12	48.12
262570	6.13	6.13	6.13	6.13	11.35	11.35	11.35	11.35	12.28	12.28	12.28	12.28	12.53	12.53	12.53	12.53	13.25	13.25	13.25	13.25
262580	11.09	11.09	11.09	11.09	20.61	20.61	20.61	20.61	26	26	26	26	28.68	28.68	28.68	28.68	42.84	42.84	42.84	42.84
262590	44.63	44.63	44.63	44.63	83.68	83.68	83.68	83.68	105.08	105.08	105.08	105.08	115.49	115.49	115.49	115.49	168.77	168.77	168.77	168.77
262600	6.41	6.41	6.41	6.41	12.41	12.41	12.41	12.41	13.28	13.28	13.28	13.28	12.94	12.94	12.94	12.94	9.02	9.02	9.02	9.02
262610	7.92	7.92	7.92	7.92	16.42	16.42	16.42	16.42	17.55	17.55	17.55	17.55	17.28	17.28	17.28	17.28	12.8	12.8	12.8	12.8
262620	13.24	13.24	13.24	13.24	23.69	23.7	23.7	23.7	37.27	37.27	37.27	37.27	44.29	44.29	44.29	44.29	77.74	77.74	77.74	77.74

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
262695	24.31	24.31	24.31	24.31	45.15	45.15	45.15	45.15	56.93	56.93	56.93	56.93	62.8	62.8	62.8	62.8	93.77	93.77	93.77	93.77
262700	21.41	21.42	21.42	21.42	22.95	22.96	22.96	22.96	19.1	19.1	19.1	19.1	24.13	24.13	24.13	24.13	55.34	55.34	55.34	55.34
262710	61.42	61.42	61.42	61.42	104.16	104.17	104.17	104.17	131.36	131.36	131.36	131.36	140.97	140.97	140.97	140.97	217.83	217.83	217.83	217.83
262720	33.16	33.16	33.16	33.16	75.09	75.09	75.09	75.09	98.36	98.36	98.36	98.36	109.77	109.77	109.77	109.77	169.72	169.72	169.72	169.72
262730	1.75	1.75	1.75	1.75	5.13	5.13	5.13	5.13	6.7	6.7	6.7	6.7	6.75	6.75	6.75	6.75	4.31	4.31	4.31	4.31
262740	6.24	6.24	6.24	6.24	11.33	11.33	11.33	11.33	14.22	14.22	14.22	14.22	15.66	15.66	15.66	15.66	33.08	33.08	33.08	33.08
262750	0.89	0.89	0.89	0.89	1.93	1.94	1.94	1.94	5.61	5.61	5.61	5.61	7.08	7.08	7.08	7.08	7.21	7.21	7.21	7.21
262800	17.97	17.98	17.98	17.98	29.37	29.39	29.39	29.39	34.08	34.08	34.08	34.08	35.74	35.74	35.74	35.74	53.28	53.28	53.28	53.28
262810	14.24	14.24	14.24	14.24	21.97	21.96	21.96	21.96	24.19	24.19	24.19	24.19	26.31	26.31	26.31	26.31	75.24	75.24	75.24	75.24
262820	10.38	10.38	10.38	10.38	17.17	17.17	17.17	17.17	20.26	20.26	20.26	20.26	21.62	21.62	21.62	21.62	31.53	31.53	31.53	31.53
262830	5.48	5.48	5.48	5.48	7.62	7.61	7.61	7.61	7.72	7.72	7.72	7.72	7.6	7.6	7.6	7.6	9.17	9.17	9.17	9.17
262840	15.34	15.34	15.34	15.34	31.93	31.93	31.93	31.93	41.35	41.35	41.35	41.35	46.63	46.63	46.63	46.63	74.49	74.49	74.49	74.49
262850	2.89	2.89	2.89	2.89	3.79	3.79	3.79	3.79	4.28	4.28	4.28	4.28	4.99	4.99	4.99	4.99	9.71	9.71	9.71	9.71
262860	3.67	3.67	3.67	3.67	6.67	6.67	6.67	6.67	8.38	8.38	8.38	8.38	9.23	9.23	9.23	9.23	15.49	15.49	15.49	15.49
262900	33.17	33.17	33.17	33.17	48.18	48.16	48.16	48.16	50.39	50.39	50.39	50.39	53.03	53.03	53.03	53.03	61.45	61.45	61.45	61.45
262910	66.08	66.08	66.08	66.08	120.13	120.13	120.13	120.13	157.58	157.58	157.58	157.58	175.65	175.65	175.65	175.65	287.23	287.23	287.23	287.23
262920	11.3	11.3	11.3	11.3	25.23	25.23	25.23	25.23	29.52	29.52	29.52	29.52	31.45	31.45	31.45	31.45	33.24	33.24	33.24	33.24
262930	25.77	25.77	25.77	25.77	53.53	53.53	53.53	53.53	70.5	70.5	70.5	70.5	78.75	78.75	78.75	78.75	118.45	118.45	118.45	118.45
262940	3.04	3.04	3.04	3.04	10.96	10.96	10.96	10.96	15.08	15.08	15.08	15.08	16.76	16.76	16.76	16.76	21.54	21.54	21.54	21.54
262950	15.32	15.32	15.32	15.32	28.83	28.83	28.83	28.83	36.44	36.44	36.44	36.44	40.24	40.24	40.24	40.24	60.24	60.24	60.24	60.24
262960	15.27	15.27	15.27	15.27	31.36	31.36	31.36	31.36	40.47	40.47	40.47	40.47	45.01	45.01	45.01	45.01	68.8	68.8	68.8	68.8
262970	0	0	0	0	0	0	0	0	0.36	0.36	0.36	0.36	0.69	0.69	0.69	0.69	2.88	2.88	2.88	2.88
262980	16.49	16.49	16.49	16.49	32.71	32.71	32.71	32.71	41.67	41.67	41.67	41.67	45.97	45.97	45.97	45.97	65.83	65.83	65.83	65.83
263000	6.47	6.47	6.47	6.47	13.48	13.47	13.47	13.47	14.99	14.99	14.99	14.99	15.41	15.41	15.41	15.41	18.42	18.42	18.42	18.42
263010	45.28	45.28	45.28	45.28	82.31	82.31	82.31	82.31	103.32	103.32	103.32	103.32	113.81	113.81	113.81	113.81	169.26	169.26	169.26	169.26
263020	0.81	0.81	0.81	0.81	5.52	5.52	5.52	5.52	7.19	7.19	7.19	7.19	7.68	7.68	7.68	7.68	8.65	8.65	8.65	8.65
263030	8.13	8.13	8.13	8.13	14.67	14.67	14.67	14.67	18.39	18.39	18.39	18.39	20.25	20.25	20.25	20.25	30.07	30.07	30.07	30.07
263040	13.85	13.85	13.85	13.85	25.34	25.34	25.34	25.34	31.85	31.85	31.85	31.85	35.09	35.09	35.09	35.09	52.25	52.25	52.25	52.25
263050	26.28	26.28	26.28	26.28	47.89	47.89	47.89	47.89	60.15	60.15	60.15	60.15	66.26	66.26	66.26	66.26	98.6	98.6	98.6	98.6
263060	7.52	7.52	7.52	7.52	14.79	14.79	14.79	14.79	16.54	16.54	16.54	16.54	17.22	17.22	17.22	17.22	21.5	21.5	21.5	21.5
263070	8.83	8.83	8.83	8.83	16.77	16.77	16.77	16.77	21.25	21.25	21.25	21.25	23.48	23.48	23.48	23.48	35.22	35.22	35.22	35.22
263100	438.61	438.68	438.68	438.68	808.16	808.34	808.34	808.34	991.73	991.73	991.73	991.73	1079.09	1079.09	1079.09	1079.09	1515.79	1515.79	1515.79	1515.79
263110	127.14	127.2	127.2	127.2	236.5	236.6	236.6	236.6	271.34	271.34	271.34	271.34	285.27	285.27	285.27	285.27	332.75	332.75	332.75	332.75
263120	148.39	148.39	148.39	148.39	239.45	239.52	239.52	239.52	275.91	275.91	275.91	275.91	290.88	290.88	290.88	290.88	341.82	341.82	341.81	341.81
263130	86.82	86.86	86.86	86.86	158.98	159.01	159.01	159.01	173.76	173.76	173.76	173.76	178.43	178.43	178.43	178.43	216.64	216.64	216.63	216.63
263140	46.79	46.79	46.79	46.79	85.91	85.91	85.91	85.91	108.06	108.06	108.06	108.06	119.11	119.11	119.11	119.11	177.47	177.47	177.47	177.47
263150	1.93	1.93	1.93	1.93	6.09	6.09	6.09	6.09	7.2	7.2	7.2	7.2	7.55	7.55	7.55	7.55	9.51	9.51	9.51	9.51
263160	6.32	6.32	6.32	6.32	12.92	12.92	12.92	12.92	15.75	15.75	15.75	15.75	17.17	17.17	17.17	17.17	23.98	23.98	23.98	23.98
263170	6.39	6.39	6.39	6.39	12.15	12.15	12.15	12.15	15.39	15.39	15.39	15.39	17.01	17.01	17.01	17.01	25.52	25.52	25.52	25.52
263180	6.52	6.52	6.52	6.52	15.27	15.28	15.28	15.28	18.55	18.55	18.55	18.55	18.99	18.99	18.99	18.99	21.79	21.79	21.79	21.79
263190	74.51	74.51	74.51	74.51	139.35	139.35	139.35	139.35	175.97	175.97	175.97	175.97	194.21	194.21	194.21	194.21	290.45	290.45	290.45	290.45
263200	44.5	44.5	44.5	44.5	71.18	71.18	71.18	71.18	91.69	91.69	91.69	91.69	104.49	104.49	104.49	104.49	151	151	151	151
263210	59.69	59.68	59.68	59.68	117.71	117.71	117.71	117.71	141.62	141.62	141.62	141.62	153.48	153.48	153.48	153.48	200.06	200.06	200.06	200.06
263220	39.15	39.15	39.15	39.15	103.08	103.09	103.09	103.09	151.53	151.53	151.53	151.53	173.72	173.72	173.72	173.72	283	283	283	283
263230	35.71	35.71	35.71	35.71	79.01	79.01	79.01	79.01	107.18	107.18	107.18	107.18	122.58	122.58	122.58	122.58	205.88	205.88	205.89	205.89
263240	25.29	25.28	25.28	25.28	53.54	53.54	53.54	53.54	69.59	69.59	69.59	69.59	76.28	76.28	76.28	76.28	108.69	108.69	108.69	108.69
263250	17.25	17.25	17.25	17.25	44.62	44.62	44.62	44.62	66.17	66.17	66.17	66.17	78.19	78.19	78.19	78.19	141.62	141.62	141.62	141.62
263260	8.32	8.32	8.32	8.32	29	29	29	29	43.03	43.03	43.03	43.03	49.39	49.39	49.39	49.39	82.54	82.54	82.54	82.54
263270	19.03	19.03	19.03	19.03	40.45	40.45	40.45	40.45	52.02	52.02	52.02	52.02	57.74	57.74	57.74	57.74	94.44	94.44	94.44	94.44
263280	11.59	11.59	11.59	11.59	24.6	24.6	24.6	24.6	32.33	32.33	32.33	32.33	36.15	36.15	36.15	36.15	56.65	56.65	56.65	56.65
263290	30.25	30.25	30.25	30.25	57.98	57.98	57.98	57.98	74.4	74.4	74.4	74.4	82.64	82.64	82.64	82.64	125.07	125.07	125.07	125.07
263300	7.33	7.33	7.33	7.33	7.79	7.79	7.79	7.79	8.18	8.18	8.18	8.18	8.49	8.49	8.49	8.49	9.61	9.61	9.61	9.61
263310	39.45	39.45	39.45	39.45	74.65	74.65	74.65	74.65	103.7	103.7	103.7	103.7	117.32	117.32	117.32	117.32	162.47	162.47	162.47	162.47
263320	15.55	15.55	15.55	15.55	23.85	23.85	23.85	23.85	25.73	25.73	25.73	25.73	26.41	26.41	26.41	26.41	28.88	28.88	28.88	28.88
263330	17.76	17.76	17.76	17.76	33.85	33.85	33.85	33.85	42.92	42.92	42.92	42.92	47.43	47.43	47.43	47.43	71.21	71.21	71.21	71.21
263400	35.28	35.31	35.31	35.31	66.64	66.64	66.64	66.64	62.23	62.23	62.23	62.23	61.22	61.22	61.22	61.22	85.28	85.28	85.28	85.28
263410	19.67	19.68	19.68	19.68	44.13	44.14	44.14	44.14	48.33	48.33	48.33	48.33	50.11	50.11	50.11	50.11	67.9	67.9	67.9	67.9
263420	42.21	42.13	42.13	42.13	42.21	42.13	42.13	42.13	42.71	42.71	42.71	42.71	48.16	48.16	48.16	48.16	84.19	84.19	84.19	84.19
263430	50.07	49.84	49.84	49.84	71.85	71.85	71.85	71.85	87.94	87.94	87.94	87.94	96.65	96.65	96.65	96.65	140.15	140.15	140.15	140.15
263440	8.06	8.08	8.08	8.08	9.43	9.45	9.45	9.45	15.14	15.14	15.14	15.14	17.35	17.35	17.35	17.35	35.34	35.34	35.34	35.34
263450	2.08	2.08	2.08	2.08	16.97	16.98	16.98	16.98	21.08	21.08	21.08	21.08	23.8	23.8	23.8	23.8	38.87	38.87	38.87	38.87
263460	0.91	0.91	0.91	0.91	10.91	10.91	10.91	10.91	19.74	19.74	19.74	19.74	23.92	23.92	23.92	23.92	39.42	39.42	39.42	39.42
263470	66.89	66.89	66.89	66.89	66.89	66.89	66.89	66.89	75.81	75.81	75.81	75.81	83.45	83.45	83.45	83.45	132.87	132.87	132.87	132.87
263480	19.9	19.9	19.9	19.9	41.15	41.15	41.15	41.15	50.7	50.7	50.7	50.7	54.92	54.92	54.92	54.92	76.14	76.14	76.14	76.14
263490	8.13	8.14	8.14	8.14	19.96	19.97	19.97	19.97	28.68	28.68	28.68	28.68	32.78	32.78	32.78	32.78	49.04	49.04	49.04	49.04
263500	14.01	14.01	14.01	14.01	24.59	24.58	24.58	24.58	30.09	30.09	30.09	30.09	34.43	34.43	34.43	34.43	50.74	50.74	50.74	50.74
263510	6.33	6.34	6.34	6.34	14.33	14.34	14.34	14.34	22.67	22.67	22.67	22.67	26.76	26.76	26.76	26.76	41.71	41.71	41.71	41.71
263520	4.54	4.54	4.54	4.54	14.85	14.86	14.86	14.86	23.15	23.15	23.15	23.15	27.16	27.16	27.16	27.16	42.09	42.09	42.09	42.09
263530	65.76	65.77	65.77	65.77	99.59	99.58	99.58	99.58	114.58	114.58	114.58	114.58	121.55	121.55	121.55	121.55	163.81	163.81	163.81	163.81
263540	22.07	22.06	22.06	22.06	18.12	18.11	18.11	18.11	16.44	16.44	16.44	16.44	17.33	17.35	17.25	17.25	28.59	28.59	28.59	28.59
263550	38.12	38.12	38.12	38.12	71.17	71.17	71.17	71.17	89.83	89.83	89.83	89.83	99.13	99.13	99.13	99.13	148.18	148.18	148.18	148.18
263560	17.42	17.4	17.4	17.4	24.93	24.92	24.92	24.92	28.2	28.2	28.2	28.2	29.04	29.04	29.04	29.04	45.82	45.82	45.82	45.82
263570	40.71	40.71	40.71	40.71	77.22	77.21	77.21	77.21	93.21	93.21	93.21	93.21	100.63	100.63	100.63	100.63	146.54	146.54	146.54	146.54
263580	12.31	12.31	12.31	12.31	19.85	19.84	19.84	19.84	19.27	19.27	19.27	19.27	18.55	18.55	18.55	18.55	21.98	21.98	21.98	21.98
263590	4.46	4.46	4.46	4.46	10.21	10.21	10.21	10.21	12.92	12.92	12.92	12.92	14.26	14.26	14.26	14.26	19.98	19.98	19.98	19.98
263600	5.45	5.45	5.45	5.45	10.35	10.35	10.35	10.35	13.12	13.12	13.12	13.12	14.5	14.5	14.5	14.5	21.75	21.75	21.75	21.75
263610	1.88	1.88	1.88	1.88	15.83	15.83	15.83	15.83	18.51	18.51	18.51	18.51	19.05	19.05	19.05	19.05	19.55	19.55	19.55	19.55
263620	1.82	1.82	1.82	1.82	15.42	15.42	15.42	15.42	17.59	17.59	17.59	17.59	18.11	18.11	18.11	18.11	18.58	18.58	18.58	18.58
263630	7.92	7.92	7.92	7.92	19.54	19.54	19.54	19.54	24.9	24.9	24.9	24.9	28.4	28.4	28.4	28.4	61.61	61.61	61.61	61.61
263640	16.29	16.29	16.29	16.29	30.62	30.62	30.62	30.62	38.71	38.71	38.71	38.71	42.74	42.74	42.74	42.74	63.97	63.97	63.97	63.97
263650	1.57	1.57	1.57	1.57	5.19	5.19	5.19	5.19	6.42	6.42	6.42	6.42	6.48	6.48	6.48	6.48	14.21	14.21	14.21	14.21
263660	78.49	77.71	77.71	77.71	78.49	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71	77.71
263670	22.46	22.42	22.42	22.42	22.46	22.42	22.42	22.42	22.42	22.42	22.42	22.42	22.42	22.42	22.42	22.42	33.53	33.53	33.53	33.53
263680	48.08	48.08	48.08	48.08	97.08	97.08	97.08	97.08	125.14	125.14	125.14	125.14	139.09	139.09	139.09	139.09	205.14	205.14	205.14	205.14
263690	8.92	8.92	8.92	8.92	8.92	8.92	8.92	8.92	11.57	11.57	11.57	11.57	12.89	12.89	12.89	12.89	17.58	17.58	17.58	17.58
263700	7.82	7.82	7.82	7.82	14.64	14.64	14.64	14.64	18.49	18.49	18.49	18.49	20.41	20.41	20.41	20.41	30.52	30.52	30.52	30.52
263710	0.86	0.86	0.86	0.86	6.49	6.49	6.49	6.49	11.08	11.08	11.08	11.08	11.96	11.96	11.96	11.96	9.88	9.88	9.88	9.88
263720	103	103	103	103	222.51	222.51	222.51	222.51	290.1	290.1	290.1	290.1	323.47	323.47	323.47	323.47	492.41	492.41	492.41	492.41
263730	16.12	16.12	16.12	16.12	33.21	33.21	33.21	33.21	42.89	42.89	42.89	42.89	47.7	47.7	47.7	47.7	72.96	72.96	72.96	72.96
263740	21.18	21.18	21.18	21.18	21.37	21.37	21.37	21.37	24.31	24.31	24.31	24.31	25.47	25.47	25.47	25.47	31.82	31.82	31.82	31.82
263750	92.16	92.16	92.16	92.16	174.9	174.91	174.91	174.91	219.81	219.81	219.81	219.81	240.43	240.43	240.43	240.43	358.26	358.26	358.26	358.26
263760	15.64	15.64	15.64	15.64	15.64	15.64	15.64	15.64	15.64	15.64	15.64	15.64	17.11	17.11	17.11	17.11	27.71	27.71	27.71	27.71
263770	44.35	44.35	44.35	44.35	83.99	83.99	83.99	83.99	106.36	106.36	106.36	106.36	117.5	117.5	117.5	117.5	176.2	176.2	176.2	176.2
263780	64.74	64.74	64.74	64.74	123.57	123.57	123.57	123.57	155.71	155.71	155.71	155.71	170.26	170.26	170.26	170.26	240.52	240.52	240.52	240.52
263790	17.98	17.98	17.98	17.98	35.29	35.29	35.29	35.29	41.88	41.88	41.88	41.88	44.68	44.68	44.68	44.68	54.25	54.25	54.25	54.25
263800	23.38	23.38	23.38	23.38	44.11	44.11	44.11	44.11	55.38	55.38	55.38	55.38	60.73	60.73	60.73	60.73	85.89	85.89	85.89	85.89

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
263810	14.24	14.24	14.24	14.24	26.64	26.64	26.64	26.64	33.64	33.64	33.64	33.64	37.13	37.13	37.13	37.13	55.52	55.52	55.52	55.52
263815	1.53	1.53	1.53	1.53	1.96	1.96	1.96	1.96	1.94	1.94	1.94	1.94	2.05	2.05	2.05	2.05	1.99	1.99	1.99	1.99
263820	33.16	33.16	33.16	33.16	63.41	63.41	63.41	63.41	80.59	80.59	80.59	80.59	88.94	88.94	88.94	88.94	137.96	137.96	137.96	137.96
263830	1.9	1.9	1.9	1.9	4.71	4.71	4.71	4.71	6.95	6.95	6.95	6.95	9.23	9.23	9.23	9.23	15.48	15.48	15.48	15.48
263840	30.08	30.08	30.08	30.08	55.99	55.99	55.99	55.99	70.63	70.63	70.63	70.63	77.92	77.92	77.92	77.92	116.4	116.4	116.4	116.4
263850	12.57	12.56	12.56	12.56	10.79	10.78	10.78	10.78	16.1	16.09	16.08	16.1	17.11	17.03	17.12	17.06	19.8	19.74	19.8	19.88
263860	18.47	18.47	18.47	18.47	40.39	40.39	40.39	40.39	52.97	52.97	52.97	52.97	59.24	59.24	59.24	59.24	92.2	92.2	92.2	92.2
263870	44.96	44.96	44.96	44.96	86.3	86.3	86.3	86.3	109.61	109.61	109.61	109.61	121.22	121.22	121.22	121.22	182.31	182.31	182.31	182.31
263900	7.55	7.49	7.49	7.49	7.55	7.49	7.49	7.49	7.49	7.49	7.49	7.49	7.49	7.49	7.49	7.49	9.84	9.84	9.84	9.84
263910	13.44	13.23	13.23	13.23	13.44	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23	13.23
263920	1.28	1.28	1.28	1.28	1.63	1.63	1.63	1.63	1.9	1.9	1.9	1.9	2.02	2.02	2.02	2.02	4.98	4.98	4.98	4.98
263930	36.28	36.28	36.28	36.28	68.42	68.42	68.42	68.42	86.56	86.56	86.56	86.56	95.6	95.6	95.6	95.6	143.23	143.23	143.23	143.23
263940	1.6	1.6	1.6	1.6	3.27	3.27	3.27	3.27	4.2	4.2	4.2	4.2	4.61	4.61	4.61	4.61	5.83	5.83	5.83	5.83
263950	11.1	11.1	11.1	11.1	20.25	20.25	20.25	20.25	25.43	25.43	25.43	25.43	28.03	28.03	28.03	28.03	41.79	41.79	41.79	41.79
263960	0.62	0.62	0.62	0.62	1.01	1.01	1.01	1.01	1.19	1.19	1.19	1.19	1.27	1.27	1.27	1.27	1.65	1.65	1.65	1.65
263970	1.75	1.79	1.79	1.79	1.75	1.79	1.79	1.79	2.11	2.11	2.11	2.11	3.64	3.64	3.64	3.64	8.03	8.03	8.03	8.03
263980	11.06	11.06	11.06	11.06	24.9	24.9	24.9	24.9	32.03	32.03	32.03	32.03	35.36	35.36	35.36	35.36	53.41	53.41	53.41	53.41
263990	9.09	9.09	9.09	9.09	11.1	11.1	11.1	11.1	12.44	12.44	12.44	12.44	13.72	13.72	13.72	13.72	20.5	20.5	20.5	20.5
264000	0.04	0.04	0.04	0.04	0.55	0.55	0.55	0.55	0.71	0.71	0.71	0.71	0.77	0.77	0.77	0.77	4.47	4.47	4.47	4.47
264010	25.83	25.83	25.83	25.83	46.69	46.69	46.69	46.69	58.55	58.55	58.55	58.55	64.47	64.47	64.47	64.47	95.79	95.79	95.79	95.79
264020	5.52	5.52	5.52	5.52	7.3	7.3	7.3	7.3	9.17	9.17	9.17	9.17	10.1	10.1	10.1	10.1	15.03	15.03	15.03	15.03
264100	18.5	18.5	18.5	18.5	36.21	36.2	36.2	36.2	38.38	38.38	38.38	38.38	38.06	38.06	38.06	38.06	24.8	24.8	24.8	24.8
264110	99.14	99.14	99.14	99.14	184.33	184.33	184.33	184.33	232.46	232.46	232.46	232.46	256.45	256.45	256.45	256.45	383.02	383.02	383.02	383.02
264120	5.23	5.23	5.23	5.23	11.25	11.25	11.25	11.25	14.81	14.81	14.81	14.81	16.61	16.61	16.61	16.61	28.18	28.18	28.18	28.18
264130	9.94	9.94	9.94	9.94	18.76	18.76	18.76	18.76	23.73	23.73	23.73	23.73	26.21	26.21	26.21	26.21	39.26	39.26	39.26	39.26
264140	2.42	2.42	2.42	2.42	9.77	9.78	9.78	9.78	14.31	14.31	14.31	14.31	16.01	16.01	16.01	16.01	21.66	21.66	21.66	21.66
264150	22.86	22.86	22.86	22.86	41.58	41.58	41.58	41.58	52.19	52.19	52.19	52.19	57.49	57.49	57.49	57.49	85.5	85.5	85.5	85.5
264160	2.77	2.77	2.77	2.77	7.82	7.82	7.82	7.82	11.33	11.33	11.33	11.33	13.02	13.02	13.02	13.02	21.74	21.74	21.74	21.74
264170	73.13	73.13	73.13	73.13	135.28	135.28	135.28	135.28	170.42	170.42	170.42	170.42	187.93	187.93	187.93	187.93	280.41	280.41	280.41	280.41
264200	43.47	43.46	43.46	43.46	73.79	73.76	73.76	73.76	84.69	84.69	84.69	84.69	88.07	88.07	88.07	88.07	151.33	151.33	151.33	151.33
264208	45.97	45.97	45.97	45.97	111.32	111.31	111.31	111.31	135.7	135.7	135.7	135.7	147.28	147.28	147.28	147.28	205.85	205.85	205.85	205.85
264210	44.47	44.47	44.47	44.47	102.22	102.21	102.21	102.21	128.07	128.07	128.07	128.07	138.93	138.93	138.93	138.93	189.99	189.99	189.99	189.99
264220	52.2	52.2	52.2	52.2	124.82	124.82	124.82	124.82	156.34	156.34	156.34	156.34	173	173	173	173	251.74	251.74	251.74	251.74
264230	28.71	28.76	28.76	28.76	46.97	46.99	46.99	46.99	54.21	54.21	54.21	54.21	57.52	57.52	57.52	57.52	72.7	72.7	72.7	72.7
264240	25.1	25.1	25.1	25.1	47.9	47.9	47.9	47.9	60.76	60.76	60.76	60.76	67.15	67.15	67.15	67.15	100.85	100.85	100.85	100.85
264250	7.83	7.84	7.84	7.84	15.47	15.48	15.48	15.48	21.5	21.5	21.5	21.5	24.49	24.49	24.49	24.49	37.35	37.35	37.35	37.35
264260	3.7	3.71	3.71	3.71	15.91	15.91	15.91	15.91	20.72	20.72	20.72	20.72	23.24	23.24	23.24	23.24	35.4	35.4	35.4	35.4
264270	48.81	48.81	48.81	48.81	92.92	92.96	92.96	92.96	118.1	118.1	118.1	118.1	129.57	129.57	129.57	129.57	190.42	190.42	190.42	190.42
264280	88.42	88.42	88.42	88.42	156.95	156.95	156.95	156.95	195.52	195.52	195.52	195.52	214.68	214.68	214.68	214.68	314.94	314.94	314.94	314.94
264290	24.74	24.74	24.74	24.74	59.31	59.33	59.33	59.33	80.24	80.24	80.24	80.24	89.07	89.07	89.07	89.07	128.4	128.4	128.4	128.4
264300	5.46	5.46	5.46	5.46	11.3	11.3	11.3	11.3	14.62	14.62	14.62	14.62	16.26	16.26	16.26	16.26	24.91	24.91	24.91	24.91
264310	50.63	50.63	50.63	50.63	120.32	120.32	120.32	120.32	147.63	147.63	147.63	147.63	159.75	159.75	159.75	159.75	222.07	222.07	222.07	222.07
264320	87.17	87.17	87.17	87.17	200.4	200.4	200.4	200.4	260.78	260.78	260.78	260.78	287.88	287.88	287.88	287.88	389.19	389.19	389.19	389.19
264330	88.22	88.22	88.22	88.22	199.29	199.29	199.29	199.29	251.2	251.2	251.2	251.2	272.39	272.39	272.39	272.39	361.44	361.44	361.44	361.44
264340	44.42	44.42	44.42	44.42	103.69	103.69	103.69	103.69	124.84	124.84	124.84	124.84	132.96	132.96	132.96	132.96	169	169	169	169
264350	295.07	295.07	295.07	295.07	549.31	549.31	549.31	549.31	693.87	693.87	693.87	693.87	766.15	766.15	766.15	766.15	1123.86	1123.86	1123.86	1123.86
264360	74.93	74.93	74.93	74.93	141.34	141.34	141.34	141.34	178.82	178.82	178.82	178.82	197.49	197.49	197.49	197.49	295.9	295.9	295.9	295.9
264370	21.99	21.99	21.99	21.99	42.07	42.07	42.07	42.07	53.39	53.39	53.39	53.39	59.03	59.03	59.03	59.03	88.7	88.7	88.7	88.7
264380	5.86	5.86	5.86	5.86	11	11	11	11	13.9	13.9	13.9	13.9	15.35	15.35	15.35	15.35	22.97	22.97	22.97	22.97
264390	1.31	1.31	1.31	1.31	2.06	2.06	2.06	2.06	2.25	2.25	2.25	2.25	2.95	2.95	2.95	2.95	13.19	13.19	13.19	13.19
264395	15.72	15.72	15.72	15.72	28.89	28.89	28.89	28.89	36.34	36.34	36.34	36.34	40.06	40.06	40.06	40.06	59.69	59.69	59.69	59.69
264398	15.25	15.26	15.26	15.26	12.45	12.45	12.45	12.45	13.12	13.12	13.12	13.12	13.27	13.27	13.27	13.27	14.56	14.56	14.56	14.56
264400	45.52	45.57	45.57	45.57	73.77	73.76	73.76	73.76	86.81	86.81	86.81	86.81	93.21	93.21	93.21	93.21	125.55	125.55	125.55	125.55
264410	22.64	22.64	22.64	22.64	42.92	42.92	42.92	42.92	54.37	54.37	54.37	54.37	60.06	60.06	60.06	60.06	90.09	90.09	90.09	90.09
264500	10.57	10.57	10.57	10.57	13.88	13.88	13.88	13.88	14.27	14.27	14.27	14.27	14.49	14.49	14.49	14.49	14.54	14.54	14.54	14.54
264510	75.47	75.48	75.48	75.48	132.88	132.89	132.89	132.89	163.9	163.9	163.9	163.9	180.91	180.91	180.91	180.91	274.5	274.5	274.49	274.49
264520	61.22	61.22	61.22	61.22	112.89	112.89	112.89	112.89	142.13	142.13	142.13	142.13	156.71	156.71	156.71	156.71	233.7	233.7	233.7	233.7
264530	15.13	15.12	15.12	15.12	27.7	27.7	27.7	27.7	34.82	34.82	34.82	34.82	38.37	38.37	38.37	38.37	57.15	57.15	57.15	57.15
264540	21.58	21.58	21.58	21.58	25.8	25.8	25.8	25.8	30.49	30.49	30.49	30.49	32.51	32.51	32.51	32.51	40.93	40.93	40.93	40.93
264550	38.04	38.04	38.04	38.04	69.52	69.52	69.52	69.52	87.35	87.35	87.35	87.35	96.25	96.25	96.25	96.25	143.28	143.28	143.28	143.28
264560	56.64	56.64	56.64	56.64	101.01	101.01	101.01	101.01	125.52	125.52	125.52	125.52	137.66	137.66	137.66	137.66	201.46	201.46	201.46	201.46
264570	10.1	10.1	10.1	10.1	20.46	20.46	20.46	20.46	27.39	27.39	27.39	27.39	30.78	30.78	30.78	30.78	42.74	42.74	42.74	42.74
264580	19.48	19.48	19.48	19.48	35.99	35.99	35.99	35.99	46.82	46.82	46.82	46.82	52.4	52.4	52.4	52.4	77.63	77.63	77.63	77.63
264590	3.04	3.04	3.04	3.04	4.87	4.87	4.87	4.87	9.23	9.23	9.23	9.23	11.76	11.76	11.76	11.76	23.16	23.16	23.16	23.16
264600	10.26	10.26	10.26	10.26	18.69	18.69	18.69	18.69	23.48	23.48	23.48	23.48	25.87	25.87	25.87	25.87	38.49	38.49	38.49	38.49
264610	58.01	58.01	58.01	58.01	108.55	108.55	108.55	108.55	137.09	137.09	137.09	137.09	151.3	151.3	151.3	151.3	226.27	226.27	226.27	226.27
264700	11.7	11.71	11.71	11.71	20.53	20.58	20.58	20.58	25.02	25.02	25.02	25.02	29.88	29.88	29.88	29.88	43.02	43.02	43.02	43.02
264710	7.51	7.54	7.54	7.54	17.64	17.64	17.64	17.64	25.1	25.1	25.1	25.1	30.83	30.83	30.83	30.83	51.01	51.01	51.01	51.01
264720	3.59	3.59	3.59	3.59	9.96	9.97	9.97	9.97	23.59	23.59	23.59	23.59	31.29	31.29	31.29	31.29	54.49	54.49	54.49	54.49
264730	23.13	23.13	23.13	23.13	42.38	42.38	42.38	42.38	52.13	52.13	52.13	52.13	55.66	55.66	55.66	55.66	78.13	78.13	78.13	78.13
264740	9.2	9.2	9.2	9.2	16.78	16.78	16.78	16.78	21.08	21.08	21.08	21.08	23.22	23.22	23.22	23.22	34.56	34.56	34.56	34.56
264750	11.74	11.75	11.75	11.75	14.3	14.34	14.34	14.34	15.78	15.78	15.78	15.78	16.15	16.15	16.15	16.15	29.07	20.22	20.22	20.22
264760	11.66	11.67	11.67	11.67	13.17	13.18	13.18	13.18	14.17	14.17	14.17	14.17	14.79	14.79	14.79	14.79	19.39	19.39	19.39	19.39
264770	189.92	189.96	189.96	189.96	360.1	360.43	360.43	360.43	454.86	454.86	454.86	454.86	497.87	497.87	497.87	497.87	706.05	706.05	706.05	706.05
264780	13.85	13.85	13.85	13.85	20.64	20.64	20.64	20.64	22.94	22.94	22.94	22.94	25.28	25.28	25.28	25.28	33.19	33.19	33.19	33.19
264790	13.86	13.86	13.86	13.86	20.71	20.71	20.71	20.71	24.26	24.26	24.26	24.26	26.66	26.66	26.66	26.66	37.72	37.72	37.72	37.72
264800	27.19	27.19	27.19	27.19	49.63	49.63	49.63	49.63	62.19	62.19	62.19	62.19	68.07	68.07	68.07	68.07	95.12	95.12	95.12	95.12
264810	27.37	27.37	27.37	27.37	53.24	53.24	53.24	53.24	67.84	67.84	67.84	67.84	75.1	75.1	75.1	75.1	113.32	113.32	113.32	113.32
264820	22.27	22.27	22.27	22.27	41.47	41.47	41.47	41.47	52.31	52.31	52.31	52.31	57.71	57.71	57.71	57.71	86.21	86.21	86.21	86.21
264830	20.02	20.02	20.02	20.02	20.02	20.02	20.02	20.02	20.02	20.02	20.02	20.02	21.54	21.54	21.54	21.54	33.4	33.4	33.4	33.4
264840	8.78	8.78	8.78	8.78	16.76	16.76	16.76	16.76	21.37	21.37	21.37	21.37	23.71	23.71	23.71	23.71	36.32	36.32	36.32	36.32
264850	12.77	12.77	12.77	12.77	23.33	23.33	23.33	23.33	29.32	29.32	29.32	29.32	32.31	32.31	32.31	32.31	48.09	48.09	48.09	48.09
264860	28.52	28.54	28.54	28.54	53.16	53.19	53.19	53.19	67.24	67.24	67.24	67.24	74.17	74.17	74.17	74.17	104.72	104.72	104.72	104.72
264870	14.21	14.16	14.16	14.16	15.78	15.8	15.8	15.8	19.94	19.94	19.94	19.94	21.99	21.99	21.99	21.99	30.23	30.23	30.23	30.23
264880	9.68	9.7	9.7	9.7	17.66	17.69	17.69	17.69	22.23	22.23	22.23	22.23	24.48	24.48	24.48	24.48	32.07	32.07	32.07	32.07
264890	9.83	9.83	9.83	9.83	17.94	17.94	17.94	17.94	22.54	22.54	22.54	22.54	24.83	24.83	24.83	24.83	36.96	36.96	36.96	36.96
264900	15.32	15.33	15.33	15.33	26.81	26.81	26.81	26.81	27.79	27.79	27.79	27.79	27.68	27.68	27.68	27.68	22.38	22.38	22.38	22.38
264910	20.5	20.52	20.52	20.52	38.53	38.55	38.55	38.55	45.43	45.43	45.43	45.43	47.61	47.61	47.61	47.61	55.81	55.81	55.81	55.81
264920	17.7	17.7	17.7	17.7	31.97	31.97	31.97	31.97	36.56	36.56	36.56	36.56	37.84	37.84	37.84	37.84	40.89	40.89	40.89	40.89
264930	15.67	15.67	15.67	15.67	28.25	28.24	28.24	28.24	31.48	31.48	31.48	31.48	32.37	32.37	32.37	32.37	34.06	34.06	34.06	34.06
264940	16.75	16.75	16.75	16.75	30.58	30.58	30.58	30.58	38.41	38.41	38.41	38.41	42.32	42.32	42.32	42.32	62.98	62.98	62.98	62.98
264950	24.85	24.85	24.85	24.85	49.48	49.48	49.48	49.48	62.94	62.94	62.94	62.94	69.07	69.07	69.07	69.07	89.68	89.68	89.68	89.68
264960	28.88	28.88	28.88	28.88	56.07	56.07	56.07	56.07	71.09	71.09	71.09	71.09	77.59	77.59	77.59	77.59	109.23	109.23	109.23	109.23
264970	9.98	9.98	9.98	9.98	19.19	19.19	19.19	19.19	24.4	24.4	24.4	24.4	26.98	26.98	26.98	26.98	40.61	40.61	40.61	40.61
265000	10.85	10.86	10.86	10.86	19.67	19.75	19.75	19.75	22.29	22.29	22.29	22.29	22.36	22.36	22.36	22.36	21.7	21.7	21.7	21.7
265010	16.71	16.71	16.71	16.71	18.63	18.61	18.61	18.61	18.43	18.43	18.43	18.43	18.08	18.08	18.08	18.08	15.51	15.51	15.51	15.51

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
265020	15.69	15.69	15.69	15.69	18.5	18.5	18.5	18.5	19.53	19.53	19.53	19.53	19.93	19.93	19.93	19.93	21.68	21.68	21.68	21.68
265030	11.05	11.05	11.05	11.05	20.78	20.78	20.78	20.78	26.28	26.28	26.28	26.28	29.01	29.01	29.01	29.01	43.44	43.44	43.44	43.44
265040	18.25	18.25	18.25	18.25	34.52	34.52	34.52	34.52	43.71	43.71	43.71	43.71	48.28	48.28	48.28	48.28	72.39	72.39	72.39	72.39
265050	28.18	28.18	28.18	28.18	53.08	53.08	53.08	53.08	67.14	67.14	67.14	67.14	74.14	74.14	74.14	74.14	111.03	111.03	111.03	111.03
265060	10.58	10.58	10.58	10.58	19.82	19.82	19.82	19.82	25.03	25.03	25.03	25.03	27.62	27.62	27.62	27.62	41.32	41.32	41.32	41.32
265070	13.65	13.65	13.65	13.65	25.81	25.81	25.81	25.81	32.67	32.67	32.67	32.67	36.08	36.08	36.08	36.08	54.09	54.09	54.09	54.09
265100	17	17.03	17.03	17.03	35.85	35.86	35.86	35.86	44	44	44	44	47.83	47.83	47.83	47.83	64.71	64.71	64.71	64.71
265110	13.56	13.56	13.56	13.56	22.29	22.29	22.29	22.29	27.05	27.05	27.05	27.05	29.43	29.43	29.43	29.43	38.37	38.37	38.37	38.37
265120	14.74	14.76	14.76	14.76	30.65	30.66	30.66	30.66	37.86	37.86	37.86	37.86	41.09	41.09	41.09	41.09	57.47	57.47	57.47	57.47
265130	8.8	8.81	8.81	8.81	11.18	11.17	11.17	11.17	11.47	11.47	11.47	11.47	11.63	11.63	11.63	11.63	12.34	12.34	12.34	12.34
265140	10.75	10.75	10.75	10.75	16.57	16.53	16.53	16.53	20.76	20.76	20.76	20.76	22.63	22.63	22.63	22.63	29.93	29.93	29.93	29.93
265150	6.16	6.17	6.17	6.17	8.16	8.16	8.16	8.16	8.49	8.49	8.49	8.49	8.54	8.54	8.54	8.54	9.34	9.34	9.34	9.34
265160	8.94	8.94	8.94	8.94	16.47	16.47	16.47	16.47	20.72	20.72	20.72	20.72	22.85	22.85	22.85	22.85	34.06	34.06	34.06	34.06
265170	3.52	3.52	3.52	3.52	7.98	7.98	7.98	7.98	10.19	10.19	10.19	10.19	10.9	10.9	10.9	10.9	14.46	14.46	14.46	14.46
265180	2.96	2.96	2.96	2.96	7.45	7.45	7.45	7.45	9.21	9.21	9.21	9.21	9.66	9.66	9.66	9.66	12.61	12.61	12.61	12.61
265190	1.88	1.89	1.89	1.89	6.19	6.2	6.2	6.2	8.1	8.1	8.1	8.1	9.02	9.02	9.02	9.02	12.56	12.56	12.56	12.56
265200	7.33	7.32	7.32	7.32	7.96	7.97	7.97	7.97	10.52	10.52	10.52	10.52	12.01	12.01	12.01	12.01	16.86	16.86	16.86	16.86
265210	40.5	40.51	40.51	40.51	79.33	79.36	79.36	79.36	101.07	101.07	101.07	101.07	111.82	111.82	111.82	111.82	159.21	159.21	159.21	159.21
265220	17.56	17.57	17.57	17.57	32.86	32.88	32.88	32.88	41.36	41.36	41.36	41.36	44.73	44.73	44.73	44.73	53.85	53.85	53.85	53.85
265230	17.65	17.65	17.65	17.65	32.99	33	33	33	41.49	41.49	41.49	41.49	44.88	44.88	44.88	44.88	54.07	54.07	54.07	54.07
265240	15.13	15.13	15.13	15.13	28.06	28.06	28.06	28.06	35.03	35.03	35.03	35.03	36.83	36.83	36.83	36.83	40.36	40.36	40.36	40.36
265250	26.1	26.1	26.1	26.1	47.68	47.68	47.68	47.68	59.91	59.91	59.91	59.91	66.01	66.01	66.01	66.01	98.26	98.26	98.26	98.26
265260	4.88	4.88	4.88	4.88	8.07	8.07	8.07	8.07	9.52	9.52	9.52	9.52	10.31	10.31	10.31	10.31	14.66	14.66	14.66	14.66
265270	22.55	22.55	22.55	22.55	43.37	43.37	43.37	43.37	55.1	55.1	55.1	55.1	60.94	60.94	60.94	60.94	91.69	91.69	91.69	91.69
265280	6.67	6.66	6.66	6.66	10.49	10.49	10.49	10.49	12.16	12.16	12.16	12.16	12.78	12.78	12.78	12.78	14.37	14.37	14.37	14.37
265290	69.67	69.67	69.67	69.67	123.69	123.68	123.68	123.68	142.84	142.84	142.84	142.84	151.52	151.52	151.52	151.52	194.34	194.34	194.34	194.34
265300	48.26	48.26	48.26	48.26	94.38	94.38	94.38	94.38	120.39	120.39	120.39	120.39	133.33	133.33	133.33	133.33	201.37	201.37	201.37	201.37
265400	27.33	27.37	27.37	27.37	73.82	73.83	73.83	73.83	100.47	100.47	100.47	100.47	114.89	114.89	114.89	114.89	192.46	192.46	192.46	192.46
265410	16.07	16.07	16.07	16.07	32.94	32.94	32.94	32.94	42.56	42.56	42.56	42.56	48.65	48.65	48.65	48.65	110.75	110.75	110.75	110.75
265420	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04	8.04
265430	0.95	0.95	0.95	0.95	2.47	2.47	2.47	2.47	3.27	3.27	3.27	3.27	3.85	3.85	3.85	3.85	7.29	7.29	7.29	7.29
265440	1.58	1.58	1.58	1.58	3.59	3.59	3.59	3.59	4.76	4.76	4.76	4.76	5.34	5.34	5.34	5.34	8.4	8.4	8.4	8.4
265460	9.9	9.9	9.9	9.9	10.29	10.29	10.29	10.29	12.95	12.95	12.95	12.95	14.22	14.22	14.22	14.22	20.66	20.66	20.66	20.66
265470	1.95	1.95	1.95	1.95	4.07	4.07	4.07	4.07	5.27	5.27	5.27	5.27	5.87	5.87	5.87	5.87	9.01	9.01	9.01	9.01
265480	4.17	4.17	4.17	4.17	9.26	9.26	9.26	9.26	12.19	12.19	12.19	12.19	13.65	13.65	13.65	13.65	21.3	21.3	21.3	21.3
265490	8.72	8.72	8.72	8.72	18.57	18.57	18.57	18.57	24.19	24.19	24.19	24.19	27	27	27	27	47.94	47.94	47.94	47.94
265500	11.98	11.98	11.98	11.98	29.42	29.42	29.42	29.42	38.78	38.78	38.78	38.78	43.26	43.26	43.26	43.26	62.38	62.38	62.38	62.38
265510	5.59	5.59	5.59	5.59	9.23	9.23	9.23	9.23	11.98	11.98	11.98	11.98	12.78	12.78	12.78	12.78	22.65	22.65	22.65	22.65
265520	6.53	6.53	6.53	6.53	10.61	10.61	10.61	10.61	13.96	13.96	13.96	13.96	15.48	15.48	15.48	15.48	18.5	18.5	18.5	18.5
265530	9.57	9.57	9.57	9.57	17.98	17.98	17.98	17.98	22.72	22.72	22.72	22.72	25.08	25.08	25.08	25.08	37.54	37.54	37.54	37.54
265540	2.15	2.16	2.16	2.16	4.13	4.13	4.13	4.13	6.67	6.67	6.67	6.67	7.6	7.6	7.6	7.6	10.92	10.92	10.92	10.92
265550	6.22	6.22	6.22	6.22	10.21	10.21	10.21	10.21	11.87	11.87	11.87	11.87	12.53	12.53	12.53	12.53	15.81	15.81	15.81	15.81
265560	4.25	4.25	4.25	4.25	7.78	7.78	7.78	7.78	9.78	9.78	9.78	9.78	10.78	10.78	10.78	10.78	16.05	16.05	16.05	16.05
265600	3.57	3.58	3.58	3.58	3.95	3.92	3.92	3.92	3.54	3.54	3.54	3.54	3.65	3.65	3.65	3.65	3.62	3.62	3.62	3.62
265610	18.26	18.26	18.26	18.26	22.65	22.65	22.65	22.65	28.33	28.33	28.33	28.33	31.11	31.11	31.11	31.11	38.71	38.71	38.71	38.71
265620	8.54	8.54	8.54	8.54	16.33	16.33	16.33	16.33	19.65	19.65	19.65	19.65	20.34	20.34	20.34	20.34	20.23	20.23	20.23	20.23
265630	1.04	1.04	1.04	1.04	4.11	4.11	4.11	4.11	6.11	6.11	6.11	6.11	7.06	7.06	7.06	7.06	9.66	9.66	9.66	9.66
265640	8.66	8.66	8.66	8.66	16.86	16.86	16.86	16.86	21.48	21.48	21.48	21.48	23.77	23.77	23.77	23.77	37.67	37.67	37.67	37.67
265650	13.35	13.34	13.34	13.34	22.67	22.66	22.66	22.66	23.98	23.98	23.98	23.98	24.81	24.81	24.81	24.81	27.1	27.1	27.1	27.1
265660	11.09	11.09	11.09	11.09	21.62	21.62	21.62	21.62	27.56	27.56	27.56	27.56	30.52	30.52	30.52	30.52	46.06	46.06	46.06	46.06
265670	3.06	3.06	3.06	3.06	3.13	3.11	3.11	3.11	3.12	3.12	3.12	3.12	3.22	3.22	3.22	3.22	5.96	5.96	5.96	5.96
265680	4.66	4.66	4.66	4.66	9.62	9.62	9.62	9.62	12.44	12.44	12.44	12.44	13.84	13.84	13.84	13.84	21.18	21.18	21.18	21.18
265690	30.45	30.48	30.48	30.48	60.73	60.72	60.72	60.72	73.89	73.89	73.89	73.89	79.82	79.82	79.82	79.82	107.9	107.9	107.9	107.9
265700	10.88	10.88	10.88	10.88	19.68	19.66	19.66	19.66	21.68	21.68	21.68	21.68	23.04	23.04	23.04	23.04	27.15	27.15	27.15	27.15
265710	48.04	48.04	48.04	48.04	90.4	90.4	90.4	90.4	113.93	113.93	113.93	113.93	125.33	125.33	125.33	125.33	174.46	174.46	174.46	174.46
265720	26.99	26.99	26.99	26.99	52.23	52.23	52.23	52.23	66.46	66.46	66.46	66.46	73.54	73.54	73.54	73.54	110.8	110.8	110.8	110.8
265730	2.68	2.69	2.69	2.69	4.63	4.63	4.63	4.63	7.37	7.37	7.37	7.37	9.44	9.44	9.44	9.44	13.62	13.62	13.62	13.62
265740	3.1	3.1	3.1	3.1	6.34	6.34	6.34	6.34	10.09	10.09	10.09	10.09	12.89	12.89	12.89	12.89	20.65	20.65	20.65	20.65
265750	4.98	4.98	4.98	4.98	10.68	10.67	10.67	10.67	11.55	11.55	11.55	11.55	11.18	11.18	11.18	11.18	8.85	8.85	8.85	8.85
265760	8.06	8.06	8.06	8.06	17.03	17.03	17.03	17.03	21.91	21.91	21.91	21.91	24.22	24.22	24.22	24.22	40.7	40.7	40.7	40.7
265770	3.78	3.78	3.78	3.78	6.63	6.62	6.62	6.62	8.23	8.23	8.23	8.23	8.79	8.79	8.79	8.79	9.34	9.34	9.34	9.34
265780	8.41	8.41	8.41	8.41	18.36	18.36	18.36	18.36	24.07	24.07	24.07	24.07	26.92	26.92	26.92	26.92	41.89	41.89	41.89	41.89
265790	1.54	1.54	1.54	1.54	4.66	4.66	4.66	4.66	6.66	6.66	6.66	6.66	7.51	7.51	7.51	7.51	9.77	9.77	9.77	9.77
265800	3.51	3.51	3.51	3.51	6.84	6.84	6.84	6.84	8.71	8.71	8.71	8.71	9.64	9.64	9.64	9.64	14.54	14.54	14.54	14.54
265810	9.02	9.03	9.03	9.03	14.19	14.19	14.19	14.19	18.77	18.77	18.77	18.77	18.92	18.92	18.92	18.92	17.12	17.12	17.12	17.12
265820	9.35	9.34	9.34	9.34	15.37	15.35	15.35	15.35	20.83	20.83	20.83	20.83	21.13	21.13	21.13	21.13	19.46	19.46	19.46	19.46
265830	23.37	23.37	23.37	23.37	45.02	45.02	45.02	45.02	57.23	57.23	57.23	57.23	63.31	63.31	63.31	63.31	95.3	95.3	95.3	95.3
265900	8.64	8.64	8.64	8.64	13.26	13.24	13.24	13.24	14.98	14.98	14.98	14.98	16.24	16.24	16.24	16.24	20.76	20.76	20.76	20.76
265910	10.26	10.26	10.26	10.26	19.49	19.49	19.49	19.49	24.7	24.7	24.7	24.7	27.29	27.29	27.29	27.29	40.95	40.95	40.95	40.95
265940	23.82	23.82	23.82	23.82	23.82	23.82	23.82	23.82	26.16	26.16	26.16	26.16	30.06	30.06	30.06	30.06	50.8	50.8	50.8	50.8
265950	16.62	16.62	16.62	16.62	32.05	32.05	32.05	32.05	40.74	40.74	40.74	40.74	45.07	45.07	45.07	45.07	67.85	67.85	67.85	67.85
265960	7.05	7.05	7.05	7.05	12.98	12.98	12.98	12.98	16.34	16.34	16.34	16.34	18.01	18.01	18.01	18.01	26.85	26.85	26.85	26.85
265970	9.69	9.69	9.69	9.69	20.51	20.51	20.51	20.51	26.38	26.38	26.38	26.38	29.3	29.3	29.3	29.3	44.54	44.54	44.54	44.54
265980	2.23	2.23	2.23	2.23	4.69	4.69	4.69	4.69	5.29	5.29	5.29	5.29	5.34	5.34	5.34	5.34	3.85	3.85	3.85	3.85
265990	2.89	2.89	2.89	2.89	5.63	5.63	5.63	5.63	7.18	7.18	7.18	7.18	7.95	7.95	7.95	7.95	11.99	11.99	11.99	11.99
266000	14.94	14.94	14.94	14.94	31.51	31.51	31.51	31.51	40.95	40.95	40.95	40.95	45.64	45.64	45.64	45.64	70.28	70.28	70.28	70.28
266010	22.14	22.14	22.14	22.14	47.29	47.29	47.29	47.29	61.64	61.64	61.64	61.64	68.79	68.79	68.79	68.79	106.3	106.3	106.3	106.3
266110	3.65	3.65	3.65	3.65	9.5	9.5	9.5	9.5	13.81	13.81	13.81	13.81	16.1	16.1	16.1	16.1	20.51	20.51	20.51	20.51
266120	19.8	19.8	19.8	19.8	37.12	37.12	37.12	37.12	46.89	46.89	46.89	46.89	51.75	51.75	51.75	51.75	77.42	77.42	77.42	77.42
266130	4.16	4.16	4.16	4.16	9.91	9.91	9.91	9.91	12.29	12.29	12.29	12.29	12.93	12.93	12.93	12.93	15.83	15.83	15.83	15.83
266140	0.22	0.22	0.22	0.22	1.29	1.29	1.29	1.29	2.68	2.68	2.68	2.68	3.45	3.45	3.45	3.45	7.61	7.61	7.61	7.61
266150	18.23	18.23	18.23	18.23	36.27	36.27	36.27	36.27	46.46	46.46	46.46	46.46	51.52	51.52	51.52	51.52	78.13	78.13	78.13	78.13
266160	16.11	16.11	16.11	16.11	28.45	28.45	28.45	28.45	30.5	30.5	30.5	30.5	30.39	30.39	30.39	30.39	23.25	23.25	23.25	23.25
266170	17.12	17.12	17.12	17.12	33.56	33.56	33.56	33.56	42.83	42.83	42.83	42.83	47.44	47.44	47.44	47.44	71.68	71.68	71.68	71.68
266180	27.2	27.2	27.2	27.2	54.95	54.95	54.95	54.95	68.54	68.54	68.54	68.54	74.87	74.87	74.87	74.87	105.22	105.22	105.22	105.22
266190	14.75	14.75	14.75	14.75	25.9	25.9	25.9	25.9	28.37	28.37	28.37	28.37	29.24	29.24	29.24	29.24	34.31	34.31	34.31	34.31
266200	14	14	14	14	25.42	25.42	25.42	25.42	28.17	28.17	28.17	28.17	29.44	29.44	29.44	29.44	32.32	32.32	32.32	32.32
266210	26.84	26.84	26.84	26.84	59.52	59.52	59.52	59.52	77.6	77.6	77.6	77.6	86.47	86.47	86.47	86.47	132.22	132.22	132.22	132.22
266220	24.34	24.34	24.34	24.34	53.82	53.82	53.82	53.82	70.08	70.08	70.08	70.08	78.06	78.06	78.06	78.06	119.22	119.22	119.22	119.22
266230	57.15	57.15	57.15	57.15	108.38	108.38	108.38	108.38	137.54	137.54	137.54	137.54	152.08	152.08	152.08	152.08	228.62	228.62	228.62	228.62
266240	5.04	5.04	5.04	5.04	10.45	10.45	10.45	10.45	13.56	13.56	13.56	13.56	15.11	15.11	15.11	15.11	21.43	21.43	21.43	21.43
266250	6.49	6.49	6.49	6.49	12.55	12.55	12.55	12.55	15.97	15.97	15.97	15.97	17.67	17.67	17.67	17.67	26.61	26.61	26.61	26.61
266260	16.21	16.21	16.21	16.21	34.22	34.22	34.22	34.22	44.46	44.46	44.46	44.46	49.55	49.55	49.55	49.55	95.16	95.16	95.16	95.16
266270	2.3	2.3	2.3	2.3	12.34	12.34	12.34	12.34	19.84	19.84	19.84	19.84	23.84	23.84	23.84	23.84	46.71	46.71	46.71	46.71
266280	0.73	0.73	0.73	0.73	6.14	6.14	6.14	6.14	10.33	10.33	10.33	10.33	12.59	12.59	12.59	12.59	25.66	25.66	25.66	25.66
266290	2.19	2.18	2.18	2.18	3.55	3.53	3.53	3.53	2.49	2.49	2.49	2.49	2.35	2.35	2.35	2.35	4.36	4.36	4.36	4.36

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
266300	8.58	8.58	8.58	8.58	19.91	19.91	19.91	19.91	26.65	26.65	26.65	26.65	30.01	30.01	30.01	30.01	47.47	47.47	47.47	47.47
266310	2.41	2.41	2.41	2.41	10.5	10.5	10.5	10.5	17.26	17.26	17.26	17.26	19.36	19.36	19.36	19.36	20.53	20.53	20.53	20.53
266320	8.62	8.62	8.62	8.62	25.99	25.99	25.99	25.99	36.88	36.88	36.88	36.88	42.44	42.44	42.44	42.44	72.35	72.35	72.35	72.35
266330	6.01	6.01	6.01	6.01	11.85	11.85	11.85	11.85	15.15	15.15	15.15	15.15	16.79	16.79	16.79	16.79	25.41	25.41	25.41	25.41
266340	16.79	16.79	16.79	16.79	32.38	32.38	32.38	32.38	41.17	41.17	41.17	41.17	45.54	45.54	45.54	45.54	68.55	68.55	68.55	68.55
266350	4.44	4.44	4.44	4.44	6.46	6.45	6.45	6.45	6.46	6.46	6.46	6.46	6.59	6.59	6.59	6.59	6.57	6.57	6.57	6.57
266360	4.32	4.32	4.32	4.32	11.07	11.07	11.07	11.07	14.99	14.99	14.99	14.99	16.88	16.88	16.88	16.88	25.86	25.86	25.86	25.86
266370	5.25	5.25	5.25	5.25	11.75	11.75	11.75	11.75	15.5	15.5	15.5	15.5	17.36	17.36	17.36	17.36	27.17	27.17	27.17	27.17
266400	19.2	19.2	19.2	19.2	42.75	42.75	42.75	42.75	56.33	56.33	56.33	56.33	63.11	63.11	63.11	63.11	98.72	98.72	98.72	98.72
266410	6.28	6.28	6.28	6.28	34.91	34.91	34.91	34.91	49.43	49.43	49.43	49.43	57.14	57.14	57.14	57.14	88.78	88.78	88.78	88.78
266420	3.12	3.12	3.12	3.12	6.74	6.74	6.74	6.74	8.81	8.81	8.81	8.81	9.83	9.83	9.83	9.83	15.24	15.24	15.24	15.24
266430	10.83	10.83	10.83	10.83	23.48	23.48	23.48	23.48	30.71	30.71	30.71	30.71	34.31	34.31	34.31	34.31	53.21	53.21	53.21	53.21
266440	6.76	6.76	6.76	6.76	14.67	14.67	14.67	14.67	19.2	19.2	19.2	19.2	21.45	21.45	21.45	21.45	33.27	33.27	33.27	33.27
266450	6.11	6.11	6.11	6.11	14.29	14.29	14.29	14.29	19.08	19.08	19.08	19.08	21.48	21.48	21.48	21.48	34.16	34.16	34.16	34.16
266460	9.31	9.31	9.31	9.31	20.11	20.11	20.11	20.11	26.29	26.29	26.29	26.29	29.36	29.36	29.36	29.36	45.49	45.49	45.49	45.49
266500	16.33	16.33	16.33	16.33	29.93	29.93	29.93	29.93	37.64	37.64	37.64	37.64	41.48	41.48	41.48	41.48	61.78	61.78	61.78	61.78
266510	2.08	2.08	2.08	2.08	7.42	7.42	7.42	7.42	11.77	11.77	11.77	11.77	13.6	13.6	13.6	13.6	21.92	21.92	21.92	21.92
266520	17.02	17.02	17.02	17.02	31.66	31.66	31.66	31.66	39.94	39.94	39.94	39.94	44.06	44.06	44.06	44.06	65.82	65.82	65.82	65.82
266600	37.41	37.41	37.41	37.41	82.06	82.06	82.06	82.06	111.22	111.22	111.22	111.22	127.41	127.41	127.41	127.41	214.07	214.07	214.07	214.07
266610	7.2	7.2	7.2	7.2	14.43	14.43	14.43	14.43	26.41	26.41	26.41	26.41	32.41	32.41	32.41	32.41	64.49	64.49	64.49	64.49
266620	42.05	42.05	42.05	42.05	79.11	79.11	79.11	79.11	100.03	100.03	100.03	100.03	110.44	110.44	110.44	110.44	165.35	165.35	165.35	165.35
266630	3.06	3.06	3.06	3.06	5.64	5.64	5.64	5.64	10.51	10.51	10.51	10.51	13.08	13.08	13.08	13.08	27.43	27.43	27.43	27.43
266640	42.23	42.23	42.23	42.23	78.65	78.65	78.65	78.65	99.23	99.23	99.23	99.23	109.48	109.48	109.48	109.48	163.57	163.57	163.57	163.57
266650	28.16	28.16	28.16	28.16	60.8	60.8	60.8	60.8	79.5	79.5	79.5	79.5	88.81	88.81	88.81	88.81	137.76	137.76	137.76	137.76
266700	6.21	6.21	6.21	6.21	11.81	11.81	11.81	11.81	14.07	14.07	14.07	14.07	14.67	14.67	14.67	14.67	17.69	17.69	17.69	17.69
266710	6.74	6.74	6.74	6.74	13.34	13.34	13.34	13.34	15.83	15.83	15.83	15.83	16.54	16.54	16.54	16.54	18.16	18.16	18.16	18.16
266720	8.16	8.16	8.16	8.16	19.02	19.02	19.02	19.02	27.31	27.31	27.31	27.31	32.31	32.31	32.31	32.31	57.54	57.54	57.54	57.54
266730	0.36	0.36	0.36	0.36	6.28	6.28	6.28	6.28	10.12	10.12	10.12	10.12	11.7	11.7	11.7	11.7	19.04	19.04	19.04	19.04
266740	12.3	12.3	12.3	12.3	22.3	22.3	22.3	22.3	27.98	27.98	27.98	27.98	30.82	30.82	30.82	30.82	45.81	45.81	45.81	45.81
266750	0.14	0.14	0.14	0.14	0.17	0.17	0.17	0.17	0.65	0.65	0.65	0.65	1.31	1.31	1.31	1.31	4.67	4.67	4.67	4.67
266760	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	1.24	1.24	1.24	1.24	2.61	2.61	2.61	2.61	9.4	9.4	9.4	9.4
266770	16.32	16.32	16.32	16.32	34.12	34.12	34.12	34.12	44.26	44.26	44.26	44.26	49.3	49.3	49.3	49.3	75.79	75.79	75.79	75.79
266810	206.76	206.76	206.76	206.76	370.14	370.14	370.14	370.14	463.25	463.25	463.25	463.25	509.77	509.77	509.77	509.77	756.17	756.17	756.17	756.17
270005	95.75	95.76	95.76	95.76	122.87	122.95	122.95	122.95	138.02	138.16	138.16	138.16	145.23	145.37	145.37	145.37	180.22	180.33	180.33	180.33
270010	180.86	180.86	180.86	180.86	296.35	296.39	296.39	296.39	364.71	365.44	365.44	365.44	402.12	403.11	403.11	403.11	604.2	605.88	605.88	605.88
270020	56.6	56.6	56.6	56.6	121.84	121.84	121.84	121.84	159.22	159.22	159.22	159.22	177.84	177.84	177.84	177.84	275.73	275.73	275.73	275.73
270030	52.41	52.41	52.41	52.41	103.98	103.98	103.98	103.98	133.1	133.1	133.1	133.1	147.58	147.58	147.58	147.58	223.71	223.71	223.71	223.71
270040	7.3	7.3	7.3	7.3	16.66	16.66	16.66	16.66	21.5	21.5	21.5	21.5	22.89	22.89	22.89	22.89	26.44	26.44	26.44	26.44
270050	47.2	47.2	47.2	47.2	89.28	89.28	89.28	89.28	113.03	113.03	113.03	113.03	124.85	124.85	124.85	124.85	187.17	187.17	187.17	187.17
270060	17.61	17.61	17.61	17.61	28.83	28.83	28.83	28.83	33.74	33.74	33.74	33.74	35.65	35.65	35.65	35.65	43.75	43.75	43.75	43.75
270070	17.68	17.68	17.68	17.68	28.89	28.89	28.89	28.89	33.79	33.79	33.79	33.79	35.7	35.7	35.7	35.7	43.8	43.8	43.8	43.8
270080	50.55	50.55	50.55	50.55	95.46	95.46	95.46	95.46	120.81	120.81	120.81	120.81	133.42	133.42	133.42	133.42	199.94	199.94	199.94	199.94
280010	63.59	62.78	62.78	62.78	131.92	131.94	131.94	131.94	167.54	167.54	167.54	167.54	183.42	183.42	183.42	183.42	248.63	248.63	248.63	248.63
280020	63.59	62.79	62.79	62.79	131.93	131.95	131.95	131.95	167.56	167.56	167.56	167.56	183.44	183.44	183.44	183.44	248.64	248.64	248.64	248.64
280030	63.59	62.8	62.8	62.8	131.95	131.98	131.98	131.98	167.65	167.65	167.65	167.65	183.55	183.55	183.55	183.55	248.8	248.8	248.8	248.8
280040	117.58	117.59	117.59	117.59	218.9	218.9	218.9	218.9	264.5	264.5	264.5	264.5	284.3	284.3	284.3	284.3	370.72	370.72	370.72	370.72
280050	95.7	95.7	95.7	95.7	176.09	176.1	176.1	176.1	210.23	210.23	210.23	210.23	224.23	224.23	224.23	224.23	279.54	279.54	279.54	279.54
280060	99.06	99.06	99.06	99.06	184.3	184.31	184.31	184.31	225.26	225.26	225.26	225.26	242.62	242.62	242.62	242.62	322.03	322.03	322.02	322.02
280070	124.71	124.72	124.72	124.72	257.26	257.28	257.28	257.28	323	323	323	323	351.48	351.48	351.48	351.48	490.9	490.9	490.9	490.9
280080	96.99	97.02	97.02	97.02	183.3	183.31	183.31	183.31	226.46	226.46	226.46	226.46	242.77	242.77	242.77	242.77	321.83	321.83	321.83	321.83
280090	110.72	110.72	110.72	110.72	202.43	202.44	202.44	202.44	253.18	253.18	253.18	253.18	279.49	279.49	279.49	279.49	411.3	411.3	411.3	411.3
280100	99.28	99.28	99.28	99.28	194.59	194.59	194.59	194.59	248.43	248.43	248.43	248.43	275.22	275.22	275.22	275.22	416.13	416.13	416.13	416.13
280110	66.95	66.96	66.96	66.96	108.17	108.18	108.18	108.18	128.48	128.48	128.48	128.48	138.72	138.72	138.72	138.72	188.75	188.75	188.75	188.75
280120	73.41	73.43	73.43	73.43	154.92	154.94	154.94	154.94	199.01	199.01	199.01	199.01	221.59	221.59	221.59	221.59	334.15	334.15	334.15	334.15
280130	73.53	73.55	73.55	73.55	156.48	156.52	156.52	156.52	204.44	204.44	204.44	204.44	229.71	229.71	229.71	229.71	349.74	349.74	349.74	349.74
280140	62.18	62.2	62.19	62.19	84.97	84.3	84.3	84.3	100.2	100.2	100.2	100.2	102.34	102.34	102.34	102.34	105.03	101.54	102.45	102.05
280150	61.27	61.29	61.29	61.29	80.65	80.33	80.33	80.33	88.31	87.74	87.74	87.74	91.59	90.14	90.14	90.14	97.57	94.34	94.34	94.34
280160	61.76	61.77	61.77	61.77	85.57	85.58	85.58	85.58	94.02	94.02	94.02	94.02	99.45	99.45	99.45	99.45	130.58	130.58	130.58	130.58
280170	59.97	59.97	59.97	59.97	61.2	61.2	61.2	61.2	63.75	63.75	63.75	63.75	65.4	65.4	65.4	65.4	71.51	71.51	71.51	71.51
280180	72.92	72.93	72.93	72.93	96.66	96.68	96.68	96.68	115.14	115.14	115.14	115.14	123.39	123.39	123.39	123.39	163.03	163.03	163.03	163.03
280190	73.34	73.35	73.35	73.35	96.92	96.92	96.92	96.92	104.88	104.88	104.88	104.88	109.35	109.35	109.35	109.35	129.37	129.37	129.37	129.37
280200	89.22	89.25	89.25	89.25	191.26	191.29	191.29	191.29	242.1	242.1	242.1	242.1	269.67	269.67	269.67	269.67	402.68	402.68	402.68	402.68
280210	89.11	89.13	89.13	89.13	190.43	190.45	190.45	190.45	241.05	241.05	241.05	241.05	268.31	268.31	268.31	268.31	400.09	400.09	400.09	400.09
280220	89.63	89.66	89.66	89.66	193.21	193.24	193.24	193.24	245.35	245.35	245.35	245.35	272.68	272.68	272.68	272.68	403.65	403.65	403.65	403.65
280230	94.59	94.61	94.61	94.61	193.25	193.27	193.27	193.27	245.04	245.04	245.04	245.04	264.4	264.4	264.4	264.4	341.28	341.28	341.28	341.28
280240	88.06	88.08	88.08	88.08	147.85	147.86	147.86	147.86	180.15	180.14	180.14	180.14	195.64	195.64	195.64	195.64	270.91	270.91	270.91	270.91
280250	88.14	88.16	88.16	88.16	147.86	147.87	147.87	147.87	180.13	180.13	180.13	180.13	195.62	195.62	195.62	195.62	270.85	270.85	270.85	270.85
280260	88.5	88.52	88.52	88.52	148.3	148.31	148.31	148.31	180.69	180.69	180.69	180.69	196.26	196.26	196.26	196.26	271.73	271.73	271.73	271.73
280270	76.97	76.99	76.99	76.99	128.56	128.57	128.57	128.57	159.76	159.76	159.76	159.76	174.96	174.96	174.96	174.96	239.13	239.13	239.13	239.13
280280	77.94	77.96	77.96	77.96	129.26	129.27	129.27	129.27	160.59	160.59	160.59	160.59	175.98	175.98	175.98	175.98	240.99	240.99	240.99	240.99
280290	76.61	76.63	76.63	76.63	127.52	127.53	127.53	127.53	158.71	158.71	158.71	158.71	173.94	173.94	173.94	173.94	238.25	238.25	238.25	238.25
280300	91.82	91.83	91.83	91.83	158.26	158.27	158.27	158.27	188.04	188.04	188.04	188.04	201.89	201.89	201.89	201.89	282.93	282.93	282.93	282.93
280310	68.79	68.8	68.8	68.8	114.3	114.31	114.31	114.31	144.09	144.09	144.09	144.09	158.06	158.06	158.06	158.06	215.48	215.48	215.48	215.48
280320	72.16	72.18	72.18	72.18	136.09	136.11	136.11	136.11	168.18	168.18	168.18	168.18	183.79	183.79	183.79	183.79	261.78	261.78	261.78	261.78
280330	84.94	84.94	84.94	84.94	165.91	165.95	165.95	165.95	204.27	204.27	204.27	204.27	223.1	223.1	223.1	223.1	309.12	309.12	309.12	309.12
280340	63.06	63.07	63.07	63.07	113.73	113.77	113.77	113.77	139.36	139.36	139.36	139.36	154.24	154.24	154.24	154.24	211.91	211.91	211.91	211.91
280350	47.71	47.71	47.71	47.71	103.64	103.64	103.64	103.64	138.85	138.85	138.85	138.85	154.64	154.64	154.64	154.64	266.82	266.82	266.82	266.82
280360	42.27	42.27	42.27	42.27	99.79	99.79	99.79	99.79	122.6	122.6	122.6	122.6	135.11	135.11	135.11	135.11	184.55	184.55	184.55	184.55
280370	17.23	17.25	17.25	17.25	45.77	45.8	45.8	45.8	64.31	64.31	64.31	64.31	73.38	73.38	73.38	73.38	108.93	108.93	108.93	108.93
280380	17.89	17.91	17.91	17.91	48.37	48.44	48.44	48.44	69.8	69.8	69.8	69.8	79.57	79.57	79.57	79.57	115.66	115.66	115.66	115.66
280390	18.04	18.04	18.04	18.04	51.34	51.4	51.4	51.4	74.58	74.58	74.58	74.58	84.88	84.88	84.88	84.88	134.17	134.17	134.17	134.17
280400	22.99	22.98	22.98	22.98	57.65	57.7	57.7	57.7	73.34	73.34	73.34	73.34	79.5	79.5	79.5	79.5	110.16	110.16	110.16	110.16
280410	21.33	21.32	21.32	21.32	49.88	49.92	49.92	49.92	61.38	61.38	61.38	61.38	64.57	64.57	64.57	64.57	83.05	83.05	83.05	83.05
280420	15.22	15.22	15.22	15.22	14.51	14.51	14.51	14.51	14.44	14.44	14.44	14.44	14.61	14.61	14.61	14.61	14.71	14.71	14.71	14.71
280430	17.79	17.77	17.77	17.77	16.52	16.52	16.52	16.52	16.16	16.16	16.16	16.16	15.97	15.97	15.97	15.97	15.11	15.11	15.11	15.11
280440	19.99	19.99	19.99	19.99	18.26	18.26	18.26	18.26	17.8	17.8	17.8	17.8	17.59	17.59	17.59	17.59	16.27	16.27	16.27	16.27
280450	38.53	38.56	38.56	38.56	70.17	70.18	70.18	70.18	86.37	86.37	86.37	86.37	94.29	94.29	94.29	94.29	138.43	138.43	138.43	138.43
280460	27.54	27.54	27.54	27.54	38.27	38.27	38.27	38.27	44.3	44.3	44.3	44.3	48.25	48.25	48.25	48.25	68.57	68.57	68.57	68.57
280470	49.43	49.43	49.43	49.43	96.23	96.23	96.23	96.23	125.09	125.09	125.09	125.09	143.64	143.64	143.64	143.64	244.76	244.76	244.76	244.76
280480	3.25	3.25	3.25	3.25	6.45	6.45	6.45	6.45	8.6	8.6	8.6	8.6	9.45	9.45	9.45	9.45	12.09	12.09	12.09	12.09
280490	4.55	4.55	4.55	4.55	8.36	8.36	8.36	8.36	10.52	10.52	10.52	10.52	11.59	11.59	11.59	11.59	17.27	17.27	17.27	17.27
280500	133.82	133.82	133.82	133.82	254.33	254.33	254.33	254.33	322.29	322.29	322.29	322.29	356.11	356.11	356.11	356.11	534.32	534.32	534.32	534.32
280510	190.07	190.07	190.07	190.07	361.26	361.26	361.26	361.26	457.79	457.79	457.79	457.79	505.83	505.83	505.83	505.83	758.97	758.97	758.97	758.97
280520	34.24	34.24	34.24	34.24	65.29	65.29	65.29	65.29	82.83	82.83	82.83	82.83	91.56	91.56	91.56	91.56	137.57	137.57	137.57	137.57
280530	29.19	29.17	29.17	29.17	56.05	56.04	56.04	56.04	76.89	76.89	76.89	76.89	87.32	87.32	87.32	87.32	116.19	116.19	116.19	116.19
280540	162.39	162.39	162.39	162.39	277.96	277.96	277.96	277.96	336.03	336.03	336.03	336.03	364.56	364.56	364.56	364.56	511.3	511.3	511.3	511.3

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
280550	135.68	135.68	135.68	135.68	222.45	222.45	222.45	222.45	264.4	264.4	264.4	264.4	284.83	284.83	284.83	284.83	388.25	388.25	388.24	388.24
280560	195.39	195.39	195.39	195.39	358.36	358.36	358.36	358.36	450.65	450.65	450.65	450.65	496.67	496.67	496.67	496.67	739.86	739.86	739.86	739.86
280600	408.26	408.26	408.26	408.26	732.14	732.14	732.14	732.14	916.62	916.62	916.62	916.62	1008.78	1008.78	1008.78	1008.78	1496.8	1496.8	1496.8	1496.8
280610	57.48	57.48	57.48	57.48	102.18	102.18	102.18	102.18	127.73	127.73	127.73	127.73	140.5	140.5	140.5	140.5	208.2	208.2	208.2	208.2
280620	451.7	451.7	451.7	451.7	811.15	811.15	811.15	811.15	1015.79	1015.79	1015.79	1015.79	1118.02	1118.02	1118.02	1118.02	1659.25	1659.25	1659.25	1659.25
280630	11.66	11.67	11.67	11.67	31.89	31.9	31.9	31.9	45.94	45.94	45.94	45.94	54.74	54.74	54.74	54.74	103.42	103.42	103.42	103.42
280640	2.79	2.79	2.79	2.79	7.78	7.79	7.79	7.79	11.38	11.38	11.38	11.38	13.24	13.24	13.24	13.24	24.81	24.81	24.81	24.81
280650	3	3.01	3.01	3.01	8.2	8.2	8.2	8.2	11.82	11.82	11.82	11.82	14.79	14.79	14.79	14.79	25.21	25.21	25.21	25.21
280660	3.13	3.13	3.13	3.13	8.45	8.45	8.45	8.45	12.04	12.04	12.04	12.04	14.73	14.73	14.73	14.73	25.25	25.25	25.25	25.25
280670	3	3	3	3	8.2	8.2	8.2	8.2	11.79	11.79	11.79	11.79	13.34	13.34	13.34	13.34	24.63	24.63	24.63	24.63
280680	36.03	36.03	36.03	36.03	72.75	72.75	72.75	72.75	83.64	83.64	83.64	83.64	86.18	86.18	86.18	86.18	86.6	86.6	86.6	86.6
280690	8.03	8.03	8.03	8.03	16.04	16.03	16.03	16.03	14.45	14.45	14.45	14.45	13.07	13.07	13.07	13.07	8.16	8.16	8.14	8.14
280700	8.31	8.33	8.33	8.33	16.19	16.18	16.18	16.18	14.53	14.53	14.53	14.53	13.1	13.1	13.1	13.1	8.33	8.33	8.33	8.33
280710	16.04	16.04	16.04	16.04	17.75	17.74	17.74	17.74	15.17	15.17	15.17	15.17	13.6	13.6	13.6	13.6	10.9	10.9	10.9	10.9
280720	12.33	12.33	12.33	12.33	22.48	22.48	22.48	22.48	28.23	28.23	28.23	28.23	31.1	31.1	31.1	31.1	46.27	46.27	46.27	46.27
280730	26.6	26.6	26.6	26.6	48.56	48.56	48.56	48.56	61.01	61.01	61.01	61.01	67.22	67.22	67.22	67.22	100.05	100.05	100.05	100.05
280740	17.99	17.98	17.98	17.98	23.57	23.56	23.56	23.56	25.79	25.79	25.79	25.79	26.36	26.36	26.36	26.36	22.62	22.62	22.62	22.62
280800	132.14	132.17	132.17	132.17	244.44	244.42	244.42	244.42	300.58	300.58	300.58	300.58	326.03	326.03	326.03	326.03	448.81	448.81	448.81	448.81
280810	88.68	88.69	88.69	88.69	154.83	154.82	154.82	154.82	181.29	181.29	181.29	181.29	192.82	192.82	192.82	192.82	230.59	230.59	230.59	230.59
280820	32.49	32.49	32.49	32.49	61.93	61.93	61.93	61.93	78.56	78.56	78.56	78.56	86.83	86.83	86.83	86.83	130.44	130.44	130.44	130.44
280830	4.84	4.84	4.84	4.84	16.88	16.88	16.88	16.88	21.18	21.18	21.18	21.18	22.93	22.93	22.93	22.93	29.01	29.01	29.01	29.01
280840	4.83	4.84	4.84	4.84	16.87	16.87	16.87	16.87	21.16	21.16	21.16	21.16	22.9	22.9	22.9	22.9	29.01	29.01	29.01	29.01
280850	11.96	11.96	11.96	11.96	22.2	22.2	22.2	22.2	27.99	27.99	27.99	27.99	30.87	30.87	30.87	30.87	46.1	46.1	46.1	46.1
280860	8.06	8.06	8.06	8.06	14.71	14.71	14.71	14.71	18.48	18.48	18.48	18.48	20.36	20.36	20.36	20.36	30.3	30.3	30.3	30.3
280870	63.48	63.49	63.49	63.49	160.2	160.24	160.24	160.24	234.68	234.68	234.68	234.68	274.86	274.86	274.86	274.86	448.24	448.24	448.24	448.24
280880	15.89	15.9	15.9	15.9	59.14	59.15	59.15	59.15	80.35	80.35	80.35	80.35	89.46	89.46	89.46	89.46	125.12	124.94	124.97	125.28
280890	19.84	19.84	19.84	19.84	49.79	49.79	49.79	49.79	77.88	77.88	77.88	77.88	95.19	95.19	95.19	95.19	169.88	169.88	169.88	169.88
280900	11.36	11.36	11.36	11.36	41.08	41.08	41.08	41.08	56.68	56.68	56.68	56.68	63.43	63.43	63.43	63.43	97.26	97.26	97.26	97.26
281000	36.24	36.24	36.24	36.24	55.09	55.08	55.08	55.08	84.81	84.81	84.81	84.81	103.33	103.33	103.33	103.33	192.67	192.67	192.67	192.67
281010	30.97	30.97	30.97	30.97	54.24	54.24	54.24	54.24	67.2	67.2	67.2	67.2	73.75	73.75	73.75	73.75	108.7	108.7	108.7	108.7
281020	11.48	11.48	11.48	11.48	11.67	11.67	11.67	11.67	11.82	11.82	11.82	11.82	11.91	11.91	11.91	11.91	12.53	12.53	12.53	12.53
281030	12.85	12.85	12.85	12.85	12.83	12.83	12.83	12.83	12.85	12.85	12.85	12.85	12.8	12.8	12.8	12.8	12.55	12.55	12.55	12.55
281040	17.28	17.28	17.28	17.28	16.09	16.08	16.08	16.08	15.46	15.46	15.46	15.46	15.5	15.5	15.5	15.5	14.12	14.12	14.12	14.12
281050	23.07	23.07	23.07	23.07	20.66	20.65	20.65	20.65	18.29	18.29	18.29	18.29	18.57	18.57	18.57	18.57	16.06	16.06	16.06	16.06
281060	35.63	35.64	35.64	35.64	72.48	72.48	72.48	72.48	95.4	95.4	95.4	95.4	107.87	107.87	107.87	107.87	168.29	168.29	168.29	168.29
281070	7.26	7.26	7.26	7.26	13.34	13.34	13.34	13.34	16.79	16.79	16.79	16.79	18.51	18.51	18.51	18.51	27.59	27.59	27.59	27.59
281080	3.44	3.44	3.44	3.44	15.94	15.94	15.94	15.94	24.68	24.68	24.68	24.68	29.61	29.61	29.61	29.61	49.91	49.91	49.91	49.91
281090	6.11	6.11	6.11	6.11	11.13	11.13	11.13	11.13	13.98	13.98	13.98	13.98	15.4	15.4	15.4	15.4	22.92	22.92	22.92	22.92
281100	21.37	21.31	21.31	21.31	48.59	48.6	48.6	48.6	62.59	62.59	62.59	62.59	68.22	68.22	68.22	68.22	83.3	83.3	83.3	83.3
281110	21.15	21.12	21.12	21.12	48.65	48.66	48.66	48.66	62.67	62.67	62.67	62.67	68.27	68.27	68.27	68.27	83.12	83.12	83.12	83.12
281120	27.7	27.68	27.68	27.68	58.42	58.43	58.43	58.43	79.77	79.77	79.77	79.77	89.81	89.81	89.81	89.81	128.53	128.53	128.53	128.53
281130	15.89	15.91	15.91	15.91	58.8	58.82	58.82	58.82	80.08	80.08	80.08	80.08	89.92	89.92	89.92	89.92	126.05	126.05	126.05	126.05
281140	11.18	11.18	11.18	11.18	21.01	21.01	21.01	21.01	26.56	26.56	26.56	26.56	29.32	29.32	29.32	29.32	46.74	46.74	46.74	46.74
281150	2.66	2.66	2.66	2.66	7.91	7.91	7.91	7.91	9.69	9.69	9.69	9.69	10.05	10.05	10.05	10.05	9.82	9.82	9.82	9.82
281160	6.75	6.75	6.75	6.75	12.69	12.69	12.69	12.69	16.04	16.04	16.04	16.04	17.71	17.71	17.71	17.71	26.51	26.51	26.51	26.51
281170	1.27	1.27	1.27	1.27	6.18	6.18	6.18	6.18	8.92	8.92	8.92	8.92	9.84	9.84	9.84	9.84	9.65	9.65	9.65	9.65
281180	6.02	6.02	6.02	6.02	11.38	11.38	11.38	11.38	14.41	14.41	14.41	14.41	15.91	15.91	15.91	15.91	23.85	23.85	23.85	23.85
281190	2.83	2.83	2.83	2.83	7.73	7.73	7.73	7.73	9.45	9.45	9.45	9.45	9.66	9.66	9.66	9.66	7.69	7.69	7.69	7.69
281200	6.12	6.12	6.12	6.12	11.6	11.6	11.6	11.6	14.69	14.69	14.69	14.69	16.23	16.23	16.23	16.23	24.34	24.34	24.34	24.34
281210	7.95	7.92	7.92	7.92	14.8	14.83	14.83	14.83	26.28	26.28	26.28	26.28	29.65	29.65	29.65	29.65	47.6	47.6	47.6	47.6
281220	37.06	37.06	37.06	37.06	68.1	68.1	68.1	68.1	85.68	85.68	85.68	85.68	94.44	94.44	94.44	94.44	140.73	140.73	140.73	140.73
281230	6.83	6.81	6.81	6.81	2.56	2.55	2.55	2.55	2.35	2.35	2.35	2.35	2.26	2.26	2.26	2.26	3.37	3.37	3.37	3.37
281240	17.46	17.46	17.46	17.46	33.02	33.02	33.02	33.02	41.79	41.79	41.79	41.79	46.16	46.16	46.16	46.16	69.19	69.19	69.19	69.19
281250	7.04	7.04	7.04	7.04	13.76	13.76	13.76	13.76	17.55	17.55	17.55	17.55	19.44	19.44	19.44	19.44	29.7	29.7	29.7	29.7
281300	31.57	31.51	31.51	31.51	45.61	45.62	45.62	45.62	66.49	66.49	66.49	66.49	73.61	73.61	73.61	73.61	112.94	112.94	112.94	112.94
281310	287.45	287.6	287.6	287.6	574.91	574.96	574.96	574.96	722.89	722.89	722.89	722.89	795.16	795.16	795.16	795.16	1170.05	1170.05	1170.05	1170.05
281315	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	119.95	172.27	172.27	172.27	172.27
281320	34.87	34.87	34.87	34.87	76.32	76.32	76.32	76.32	99.61	99.61	99.61	99.61	111.03	111.03	111.03	111.03	172.31	172.31	172.31	172.31
281330	49.42	49.42	49.42	49.42	104.52	104.52	104.52	104.52	134.71	134.71	134.71	134.71	149.11	149.11	149.11	149.11	219.22	219.22	219.22	219.22
281340	2.28	2.28	2.28	2.28	4.68	4.68	4.68	4.68	5.43	5.43	5.43	5.43	5.72	5.72	5.72	5.72	6.94	6.94	6.94	6.94
281350	37.43	37.43	37.43	37.43	78.32	78.32	78.32	78.32	101.65	101.65	101.65	101.65	113.27	113.27	113.27	113.27	174.3	174.3	174.3	174.3
281360	11.76	11.76	11.76	11.76	19.4	19.4	19.4	19.4	22.61	22.61	22.61	22.61	24.02	24.02	24.02	24.02	28.7	28.7	28.7	28.7
281370	6.72	6.72	6.72	6.72	22.01	22.01	22.01	22.01	26.88	26.88	26.88	26.88	28.59	28.59	28.59	28.59	32.98	32.98	32.98	32.98
281380	43.25	43.25	43.25	43.25	86.89	86.89	86.89	86.89	111.3	111.3	111.3	111.3	123.31	123.31	123.31	123.31	179.95	179.95	179.95	179.95
281390	49.71	49.71	49.71	49.71	95.14	95.14	95.14	95.14	120.77	120.77	120.77	120.77	133.53	133.53	133.53	133.53	200.73	200.73	200.73	200.73
281400	83.13	83.13	83.13	83.13	152.97	152.97	152.97	152.97	191.45	191.45	191.45	191.45	210.43	210.43	210.43	210.43	308.86	308.86	308.86	308.86
281410	26.25	26.25	26.25	26.25	53.74	53.74	53.74	53.74	69.36	69.36	69.36	69.36	77.12	77.12	77.12	77.12	117.96	117.96	117.96	117.96
281420	40.31	40.31	40.31	40.31	77.75	77.75	77.75	77.75	98.86	98.86	98.86	98.86	109.37	109.37	109.37	109.37	164.69	164.69	164.69	164.69
281430	25.39	25.4	25.4	25.4	39.43	39.43	39.43	39.43	42.48	42.48	42.48	42.48	43.5	43.5	43.5	43.5	46.1	46.1	46.1	46.1
281440	85.06	85.08	85.08	85.08	166.26	166.31	166.31	166.31	206.73	206.73	206.73	206.73	228.51	228.51	228.51	228.51	342.06	342.06	342.06	342.06
281450	26.35	26.35	26.35	26.35	50.99	50.99	50.99	50.99	64.36	64.36	64.36	64.36	70.97	70.97	70.97	70.97	98.07	98.07	98.07	98.07
281455	11.77	11.77	11.77	11.77	23.37	23.37	23.37	23.37	29.47	29.47	29.47	29.47	32.43	32.43	32.43	32.43	32.83	32.83	32.83	32.83
281460	2.12	2.12	2.12	2.12	4.42	4.42	4.42	4.42	6.02	6.02	6.02	6.02	6.94	6.94	6.94	6.94	10.67	10.67	10.67	10.67
281470	2.21	2.21	2.21	2.21	4.53	4.53	4.53	4.53	5.71	5.71	5.71	5.71	6.26	6.26	6.26	6.26	9.39	9.39	9.39	9.39
281480	7.1	7.1	7.1	7.1	14.13	14.13	14.13	14.13	18.18	18.18	18.18	18.18	20.2	20.2	20.2	20.2	30.8	30.8	30.8	30.8
281490	4.98	4.98	4.98	4.98	9.44	9.44	9.44	9.44	11.95	11.95	11.95	11.95	13.2	13.2	13.2	13.2	19.8	19.8	19.8	19.8
281500	0	0	0	0	0.01	0.01	0.01	0.01	0.5	0.5	0.5	0.5	0.75	0.75	0.75	0.75	2.35	2.35	2.35	2.35
281510	14.09	14.09	14.09	14.09	30.16	30.16	30.16	30.16	39.33	39.33	39.33	39.33	43.89	43.89	43.89	43.89	67.83	67.83	67.83	67.83
281520	13.99	13.99	13.99	13.99	28.57	28.57	28.57	28.57	36.83	36.83	36.83	36.83	40.94	40.94	40.94	40.94	62.53	62.53	62.53	62.53
281600	22.13	22.13	22.13	22.13	37.37	37.37	37.37	37.37	42.2	42.2	42.2	42.2	47.01	47.01	47.01	47.01	61.06	61.06	61.06	61.06
281610	65.05	65.05	65.05	65.05	140.56	140.58	140.58	140.58	175.55	175.55	175.55	175.55	192.14	192.14	192.14	192.14	274.38	274.38	274.38	274.38
281620	31.27	31.3	31.3	31.3	64.5	64.59	64.59	64.59	80.26	80.26	80.26	80.26	88.28	88.28	88.28	88.28	115.44	115.44	115.44	115.44
281630	59.34	59.37	59.37	59.37	118.32	118.38	118.38	118.38	149.76	149.76	149.76	149.76	161.33	161.33	161.33	161.33	221.7	221.7	221.7	221.7
281640	5.18	5.18	5.18	5.18	7.51	7.5	7.5	7.5	8.68	8.68	8.68	8.68	10.07	10.07	10.07	10.07	13.62	13.62	13.62	13.62
281650	21.65	21.67	21.67	21.67	41.06	41.09	41.09	41.09	52.4	52.4	52.4	52.4	58.12	58.12	58.12	58.12	88.15	88.15	88.15	88.15
281660	9.47	9.48	9.48	9.48	18.92	18.95	18.95	18.95	24.48	24.48	24.48	24.48	27.51	27.51	27.51	27.51	30.12	30.12	30.12	30.12
281670	10.68	10.69	10.69	10.69	20.83	20.85	20.85	20.85	26.6	26.6	26.6	26.6	29.49	29.49	29.49	29.49	33.92	33.92	33.92	33.92
281680	10.93	10.93	10.93	10.93	21.17	21.17	21.17	21.17	26.98	26.98	26.98	26.98	29.88	29.88	29.88	29.88	45.1	45.1	45.1	45.1
281690	23.21	23.23	23.23	23.23	45.55	45.59	45.59	45.59	48.2	48.2	48.2	48.2	47.75	47.75	47.75	47.75	46.59	46.59	46.59	46.59
281700	8.07	8.07	8.07	8.07	17.73	17.73	17.73	17.73	19.83	19.83	19.83	19.83	20.41	20.41	20.41	20.41	22.11	22.11	22.11	22.11
281710	19.87	19.87	19.87	19.87	37.45	37.45	37.45	37.45	47.37	47.37	47.37	47.37	52.31	52.31	52.31	52.31	78.34	78.34	78.34	78.34
281720	15.68	15.68	15.68	15.68	29.86	29.86	29.86	29.86	37.86	37.86	37.86	37.86	41.84	41.84	41.84	41.84	62.83	62.83	62.83	62.83
281800	27.12	27.13	27.13	27.13	62.86	62.87	62.87	62.87	86.05	86.05	86.05	86.05	97.48	97.48	97.48	97.48	163.56	163.56	163.56	163.56
281810	13.82	13.83	13.83	13.83	32.74	32.74	32.74	32.74	40.65	40.65	40.65	40.65	43.13	43.13	43.13	43.13	55.05	55.05	55.05	55.05
281820	5.69	5.69	5.69	5.69	13.28	13.28	13.28	13.28	16.67	16.64	16.64	16.64	18.6	18.51	18.51	18.51	34.37	34.37	34.37	34.37
281830	14.32	14.32	14.32	14.32	33.44	33.44	33.44	33.44	44.56	44.56	44.56	44.56	50.13	50.13	50.13	50.13	79.4	79.4	79.4	79.4

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
281840	6.07	6.07	6.07	6.07	20.63	20.64	20.64	20.64	31.39	31.39	31.39	31.39	37.98	37.98	37.98	37.98	73.54	73.54	73.54	73.54
281850	5.92	5.92	5.92	5.92	19.93	19.93	19.93	19.93	30.26	30.26	30.26	30.26	36.69	36.69	36.69	36.69	71.84	71.84	71.84	71.84
281860	5.89	5.89	5.89	5.89	19.89	19.89	19.89	19.89	30.21	30.21	30.21	30.21	36.64	36.64	36.64	36.64	71.78	71.78	71.78	71.78
281870	354.79	354.82	354.82	354.82	627.04	627.05	627.05	627.05	772.3	772.3	772.3	772.3	842.91	842.91	842.91	842.91	1187.77	1187.77	1187.77	1187.77
281880	82.6	82.6	82.6	82.6	158.02	158.02	158.02	158.02	199.85	199.85	199.85	199.85	220.35	220.35	220.35	220.35	334.67	334.67	334.67	334.67
281890	29.69	29.7	29.7	29.7	52.72	52.73	52.73	52.73	65.84	65.84	65.84	65.84	71.84	71.84	71.84	71.84	107.95	107.95	107.95	107.95
281900	29.69	29.7	29.7	29.7	52.73	52.73	52.73	52.73	65.85	65.85	65.85	65.85	71.86	71.86	71.86	71.86	108.06	108.06	108.06	108.06
281910	56.93	56.93	56.93	56.93	105.23	105.23	105.23	105.23	130.16	130.16	130.16	130.16	144.37	144.37	144.37	144.37	230.92	230.92	230.92	230.92
281915	7.92	7.92	7.92	7.92	10.34	10.34	10.34	10.34	14.48	14.48	14.48	14.48	15.96	15.96	15.96	15.96	22.33	22.33	22.33	22.33
281920	28.79	28.81	28.81	28.81	65.78	65.78	65.78	65.78	95.57	95.57	95.57	95.57	112.36	112.36	112.36	112.36	198.21	198.21	198.21	198.21
281930	5.7	5.7	5.7	5.7	7.29	7.29	7.29	7.29	8.06	8.06	8.06	8.06	8.5	8.5	8.5	8.5	11.3	11.3	11.3	11.3
281940	3.02	3.02	3.02	3.02	6.59	6.58	6.58	6.58	7.06	7.06	7.06	7.06	7.94	7.94	7.94	7.94	11.14	11.14	11.14	11.14
281950	4.24	4.24	4.24	4.24	5.62	5.62	5.62	5.62	6.71	6.71	6.71	6.71	7.81	7.81	7.81	7.81	10.79	10.79	10.79	10.79
281960	9.02	9.02	9.02	9.02	22.02	22.02	22.02	22.02	29.1	29.1	29.1	29.1	32.52	32.52	32.52	32.52	52.16	52.16	52.16	52.16
281970	5.15	5.15	5.15	5.15	10.42	10.42	10.42	10.42	12.3	12.3	12.3	12.3	13.1	13.1	13.1	13.1	44.37	44.37	44.37	44.37
281980	2.99	2.99	2.99	2.99	3.65	3.65	3.65	3.65	3.75	3.75	3.75	3.75	3.77	3.77	3.77	3.77	4.43	4.43	4.43	4.43
281990	16.25	16.25	16.25	16.25	35.86	35.86	35.86	35.86	47.24	47.24	47.24	47.24	52.92	52.92	52.92	52.92	90.05	90.05	90.05	90.05
282000	1.21	1.21	1.21	1.21	5.39	5.39	5.39	5.39	8.92	8.92	8.92	8.92	10.83	10.83	10.83	10.83	16.41	16.41	16.41	16.41
282010	1.24	1.24	1.24	1.24	7.11	7.11	7.11	7.11	8.84	8.84	8.84	8.84	10.24	10.24	10.24	10.24	14.91	14.91	14.91	14.91
282020	1.24	1.24	1.24	1.24	7.15	7.15	7.15	7.15	10.25	10.25	10.25	10.25	10.85	10.85	10.85	10.85	14.98	14.98	14.98	14.98
282100	4.66	4.67	4.67	4.67	4.34	4.34	4.34	4.34	3.78	3.78	3.78	3.78	3.54	3.54	3.54	3.54	3.59	3.59	3.59	3.59
282110	14.28	14.29	14.29	14.29	17.32	17.32	17.32	17.32	17.04	17.04	17.04	17.04	17.23	17.23	17.23	17.23	20.46	20.46	20.46	20.46
282120	14.97	14.97	14.97	14.97	16.44	16.44	16.44	16.44	12.6	12.6	12.6	12.6	11.91	11.91	11.91	11.91	11.73	11.73	11.73	11.73
282130	28.54	28.55	28.55	28.55	53.45	53.47	53.47	53.47	66.91	66.91	66.91	66.91	73.05	73.05	73.05	73.05	100.6	100.6	100.6	100.6
282140	16.41	16.42	16.42	16.42	28.49	28.5	28.5	28.5	32.8	32.8	32.8	32.8	34.29	34.29	34.29	34.29	38.1	38.1	38.1	38.1
282150	57.19	57.22	57.22	57.22	105.1	105.16	105.16	105.16	129.7	129.7	129.7	129.7	141.13	141.13	141.13	141.13	191.56	191.56	191.56	191.56
282160	15.83	15.83	15.83	15.83	29.73	29.73	29.73	29.73	37.58	37.58	37.58	37.58	41.49	41.49	41.49	41.49	62.1	62.1	62.1	62.1
282170	6.74	6.74	6.74	6.74	14.91	14.91	14.91	14.91	19.7	19.7	19.7	19.7	22.09	22.09	22.09	22.09	34.66	34.66	34.66	34.66
282180	14.4	14.4	14.4	14.4	33.05	33.05	33.05	33.05	44.08	44.08	44.08	44.08	49.6	49.6	49.6	49.6	85.64	85.64	85.64	85.64
282190	1.77	1.77	1.77	1.77	5.21	5.21	5.21	5.21	6.53	6.53	6.53	6.53	7.11	7.11	7.11	7.11	13.09	13.09	13.09	13.09
282200	7.24	7.24	7.24	7.24	14.83	14.83	14.83	14.83	19.12	19.12	19.12	19.12	21.26	21.26	21.26	21.26	32.47	32.47	32.47	32.47
282210	0	0	0	0	0.86	0.86	0.86	0.86	1.78	1.78	1.78	1.78	2.43	2.43	2.43	2.43	9.3	9.3	9.3	9.3
282220	8.76	8.76	8.76	8.76	17.25	17.25	17.25	17.25	22.03	22.03	22.03	22.03	24.41	24.41	24.41	24.41	42.02	42.02	42.02	42.02
282230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
282240	93.13	93.13	93.13	93.13	138.41	138.41	138.41	138.41	156.88	156.88	156.88	156.88	165.21	165.21	165.21	165.21	202.15	202.15	202.15	202.15
282245	0	0	0	0	2.43	2.43	2.43	2.43	3.07	3.07	3.07	3.07	3.33	3.33	3.33	3.33	3.95	3.95	3.95	3.95
282250	34.57	34.57	34.57	34.57	69.85	69.85	69.85	69.85	90.1	90.1	90.1	90.1	100.21	100.21	100.21	100.21	153.69	153.69	153.69	153.69
282260	0.99	0.99	0.99	0.99	2.66	2.66	2.66	2.66	3.76	3.76	3.76	3.76	4.31	4.31	4.31	4.31	6.91	6.91	6.91	6.91
282270	11.88	11.88	11.88	11.88	24.37	24.37	24.37	24.37	31.44	31.44	31.44	31.44	34.96	34.96	34.96	34.96	53.42	53.42	53.42	53.42
282280	68.1	68.1	68.1	68.1	134.11	134.11	134.11	134.11	171.34	171.34	171.34	171.34	189.84	189.84	189.84	189.84	287.16	287.16	287.16	287.16
282290	11.31	11.31	11.31	11.31	21.61	21.61	21.61	21.61	27.41	27.41	27.41	27.41	30.3	30.3	30.3	30.3	45.52	45.52	45.52	45.52
282300	0	0	0	0	1.23	1.23	1.23	1.23	2.29	2.29	2.29	2.29	2.88	2.88	2.88	2.88	6.34	6.34	6.34	6.34
282310	29.29	29.29	29.29	29.29	59.55	59.55	59.55	59.55	76.66	76.66	76.66	76.66	85.17	85.17	85.17	85.17	129.85	129.85	129.85	129.85
282320	13.31	13.31	13.31	13.31	28.04	28.04	28.04	28.04	30.41	30.41	30.41	30.41	31.04	31.04	31.04	31.04	31.47	31.47	31.47	31.47
282330	18.84	18.84	18.84	18.84	37.65	37.65	37.65	37.65	45.6	45.6	45.6	45.6	49.07	49.07	49.07	49.07	65.55	65.55	65.55	65.55
282340	15.74	15.74	15.74	15.74	31.47	31.47	31.47	31.47	36.73	36.73	36.73	36.73	38.76	38.76	38.76	38.76	47.2	47.2	47.2	47.2
282350	27.23	27.23	27.23	27.23	56.05	56.05	56.05	56.05	72.38	72.38	72.38	72.38	80.49	80.49	80.49	80.49	123.11	123.11	123.11	123.11
282360	12.43	12.43	12.43	12.43	23.82	23.82	23.82	23.82	30.25	30.25	30.25	30.25	33.44	33.44	33.44	33.44	50.28	50.28	50.28	50.28
282400	0.59	0.59	0.59	0.59	1.31	1.31	1.31	1.31	1.47	1.47	1.47	1.47	2.77	2.77	2.77	2.77	19.43	19.43	19.43	19.43
282420	9.93	9.93	9.93	9.93	18.74	18.74	18.74	18.74	23.71	23.71	23.71	23.71	27.63	27.63	27.63	27.63	50.05	50.05	50.05	50.05
282430	38.37	38.37	38.37	38.37	77.72	77.72	77.72	77.72	98.43	98.43	98.43	98.43	110.42	110.42	110.42	110.42	179.96	179.96	179.96	179.96
282440	45.61	45.61	45.61	45.61	83.9	83.9	83.9	83.9	105.52	105.52	105.52	105.52	116.28	116.28	116.28	116.28	175.48	175.48	175.48	175.48
282500	23.61	23.61	23.61	23.61	68.3	68.3	68.3	68.3	99.31	99.31	99.31	99.31	115.39	115.39	115.39	115.39	216.29	216.29	216.29	216.29
282510	13.63	13.64	13.64	13.64	25.01	25.01	25.01	25.01	34.4	34.4	34.4	34.4	45.24	45.24	45.24	45.24	85.27	85.27	85.27	85.27
282520	4.44	4.44	4.44	4.44	12.9	12.9	12.9	12.9	33.87	33.87	33.87	33.87	44.58	44.58	44.58	44.58	82.91	82.91	82.91	82.91
282530	2.2	2.2	2.2	2.2	14.91	14.92	14.92	14.92	33.12	33.12	33.12	33.12	43.74	43.74	43.74	43.74	81.69	81.69	81.69	81.69
282540	4.24	4.24	4.24	4.24	15.98	15.99	15.99	15.99	38.3	38.3	38.3	38.3	45.92	45.92	45.92	45.92	83.19	83.19	83.19	83.19
282550	12.02	12.02	12.02	12.02	42.71	42.71	42.71	42.71	64.8	64.8	64.8	64.8	75.35	75.35	75.35	75.35	127.65	127.65	127.65	127.65
282560	12.08	12.08	12.08	12.08	24.68	24.68	24.68	24.68	26.99	26.99	26.99	26.99	27.77	27.77	27.77	27.77	29.68	29.68	29.68	29.68
282570	37.26	37.26	37.26	37.26	71.67	71.67	71.67	71.67	91.08	91.08	91.08	91.08	100.73	100.73	100.73	100.73	151.59	151.59	151.59	151.59
282580	12.46	12.46	12.46	12.46	19	19	19	19	19.82	19.82	19.82	19.82	20.34	20.34	20.34	20.34	44.67	44.67	44.67	44.67
282590	15.76	15.76	15.76	15.76	39	39.01	39.01	39.01	62.72	62.72	62.72	62.72	74.08	74.08	74.08	74.08	131.53	131.53	131.53	131.53
282600	2.56	2.56	2.56	2.56	2.36	2.37	2.37	2.37	5.94	5.94	5.94	5.94	7.94	7.94	7.94	7.94	16.02	16.02	16.02	16.02
282610	4.27	4.27	4.27	4.27	8.11	8.11	8.11	8.11	10.27	10.27	10.27	10.27	11.35	11.35	11.35	11.35	17.02	17.02	17.02	17.02
282620	11.04	11.04	11.04	11.04	21.76	21.76	21.76	21.76	27.8	27.8	27.8	27.8	30.81	30.81	30.81	30.81	46.6	46.6	46.6	46.6
282700	30.77	30.77	30.77	30.77	60.31	60.31	60.31	60.31	76.97	76.97	76.97	76.97	85.25	85.25	85.25	85.25	128.81	128.81	128.81	128.81
282710	1.99	1.99	1.99	1.99	5.36	5.36	5.36	5.36	10.98	10.98	10.98	10.98	14.41	14.41	14.41	14.41	30.68	30.68	30.68	30.68
282720	1.45	1.45	1.45	1.45	6.32	6.32	6.32	6.32	10.99	10.99	10.99	10.99	13.99	13.99	13.99	13.99	50.69	50.69	50.69	50.69
282730	10.05	10.05	10.05	10.05	19.34	19.34	19.34	19.34	24.58	24.58	24.58	24.58	27.19	27.19	27.19	27.19	40.91	40.91	40.91	40.91
282740	2.25	2.25	2.25	2.25	4.37	4.37	4.37	4.37	4.99	4.99	4.99	4.99	5.06	5.06	5.06	5.06	4.68	4.68	4.68	4.68
282750	9.06	9.06	9.06	9.06	18.51	18.51	18.51	18.51	23.59	23.59	23.59	23.59	26	26	26	26	36.29	36.29	36.29	36.29
282760	8.17	8.17	8.17	8.17	14.9	14.9	14.9	14.9	18.72	18.72	18.72	18.72	20.63	20.63	20.63	20.63	30.84	30.84	30.84	30.84
282770	7.01	7.01	7.01	7.01	22.47	22.47	22.47	22.47	30.75	30.75	30.75	30.75	34.51	34.51	34.51	34.51	51.38	51.38	51.38	51.38
282780	17.49	17.49	17.49	17.49	37.43	37.43	37.43	37.43	48.44	48.44	48.44	48.44	53.96	53.96	53.96	53.96	84.9	84.9	84.9	84.9
282800	9.48	9.48	9.48	9.48	24.97	24.98	24.98	24.98	34.49	34.49	34.49	34.49	38.59	38.59	38.59	38.59	57.98	57.98	57.98	57.98
282810	33.57	33.57	33.57	33.57	62.29	62.29	62.29	62.29	75.24	75.24	75.24	75.24	82.49	82.49	82.49	82.49	120.7	120.7	120.7	120.7
282820	38.25	38.25	38.25	38.25	69.25	69.25	69.25	69.25	85.62	85.62	85.62	85.62	93.73	93.73	93.73	93.73	140.55	140.55	140.55	140.55
282830	7.34	7.34	7.34	7.34	15.96	15.96	15.96	15.96	23.34	23.34	23.34	23.34	26.86	26.86	26.86	26.86	38.13	38.13	38.13	38.13
282840	41.94	41.94	41.94	41.94	99.21	99.24	99.24	99.24	134.08	134.08	134.08	134.08	150.67	150.67	150.67	150.67	233.03	233.03	233.03	233.03
282850	65.75	65.6	65.6	65.6	65.75	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6	65.6
282860	2.55	2.55	2.55	2.55	7.04	7.04	7.04	7.04	9.79	9.79	9.79	9.79	11.04	11.04	11.04	11.04	22.69	22.69	22.69	22.69
282870	17.73	17.73	17.73	17.73	38.82	38.82	38.82	38.82	50.81	50.81	50.81	50.81	56.31	56.31	56.31	56.31	88	88	88	88
282880	4.03	4.03	4.03	4.03	9.91	9.91	9.91	9.91	12.81	12.81	12.81	12.81	13.89	13.89	13.89	13.89	24.53	24.53	24.53	24.53
282890	29.9	29.9	29.9	29.9	55.84	55.84	55.84	55.84	70.48	70.48	70.48	70.48	77.78	77.78	77.78	77.78	116.27	116.27	116.27	116.27
282900	28.55	28.55	28.55	28.55	54.58	54.58	54.58	54.58	69.26	69.26	69.26	69.26	76.56	76.56	76.56	76.56	115.02	115.02	115.02	115.02
282910	6.78	6.78	6.78	6.78	6.78	6.78	6.78	6.78	7.54	7.54	7.54	7.54	8.55	8.55	8.55	8.55	12.74	12.74	12.74	12.74
282920	8.8	8.8	8.8	8.8	19.58	19.58	19.58	19.58	25.77	25.77	25.77	25.77	28.86	28.86	28.86	28.86	45.08	45.08	45.08	45.08
282930	11.05	11.05	11.05	11.05	20.99	20.99	20.99	20.99	26.59	26.59	26.59	26.59	29.38	29.38	29.38	29.38	44.07	44.07	44.07	44.07
282940	0.81	0.81	0.81	0.81	1.26	1.26	1.26	1.26	1.44	1.44	1.44	1.44	2.17	2.17	2.17	2.17	10.23	10.23	10.23	10.23
282950	6.31	6.31	6.31	6.31	12.2	12.2	12.2	12.2	15.52	15.52	15.52	15.52	17.17	17.17	17.17	17.17	25.86	25.86	25.86	25.86
282960	13.52	13.52	13.52	13.52	18.94	18.94	18.94	18.94	19	19	19	19	18.86	18.86	18.86	18.86	18.37	18.37	18.37	18.37
282970	16.1	16.1	16.1	16.1	26.97	26.97	26.97	26.97	31.39	31.39	31.39	31.39	33.11	33.11	33.11	33.11	40.07	40.07	40.07	40.07
282980	86	86	86	86	160.99	160.99	160.99	160.99	195.02	195.02	195.02	195.02	211.29	211.29	211.29	211.29	282.11	282.11	282.11	282.11
282990	25.7	25.7	25.7	25.7	49.41	49.41	49.41	49.41	62.79	62.79	62.79	62.79	69.45	69.45	69.45	69.45	104.5	104.5	104.5	104.5
283000	2.97	2.97	2.97	2.97	6.69	6.69	6.69	6.69	8.68	8.68	8.68	8.68	9.67	9.67	9.67	9.67	14.19	14.19	14.19	14.19
283010	12.4	12.4	12.4	12.4	23.78	23.78	23.78	23.78	30.19	30.19	30.19	30.19	33.38	33.38	33.38	33.38	50.18	50.18	50.18	50.18

DRAFT

Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
283020	7.76	7.76	7.76	7.76	16.23	16.23	16.23	16.23	19.98	19.98	19.98	19.98	22.31	22.31	22.31	22.31	26.38	26.38	26.38	26.38
283030	25.51	25.51	25.51	25.51	48.47	48.47	48.47	48.47	61.42	61.42	61.42	61.42	67.86	67.86	67.86	67.86	101.83	101.83	101.83	101.83
283100	33.36	33.36	33.36	33.36	65.03	65.03	65.03	65.03	81.71	81.71	81.71	81.71	89.95	89.95	89.95	89.95	134.2	134.2	134.2	134.2
283110	9.57	9.57	9.57	9.57	19.34	19.34	19.34	19.34	24.95	24.95	24.95	24.95	27.78	27.78	27.78	27.78	41.98	41.98	41.98	41.98
283120	14.22	14.22	14.22	14.22	26.56	26.56	26.56	26.56	33.53	33.53	33.53	33.53	37	37	37	37	55.31	55.31	55.31	55.31
283130	20.09	20.09	20.09	20.09	42.4	42.4	42.4	42.4	55.28	55.28	55.28	55.28	61.69	61.69	61.69	61.69	95.39	95.39	95.39	95.39
283200	7.43	7.43	7.43	7.43	11.66	11.66	11.66	11.66	12.21	11.42	11.42	11.42	12.59	12	12	12	13.89	13.47	13.47	13.47
283210	28.25	28.25	28.25	28.25	52.44	52.44	52.44	52.44	66.41	66.41	66.41	66.41	73.39	73.39	73.39	73.39	116.53	116.53	116.53	116.53
283220	44.49	44.49	44.49	44.49	77.53	77.53	77.53	77.53	95.67	95.67	95.67	95.67	104.72	104.72	104.72	104.72	169.76	169.76	169.76	169.76
283230	9.64	9.64	9.64	9.64	9.62	9.62	9.62	9.62	9.53	9.53	9.53	9.53	9.48	9.48	9.48	9.48	9.78	9.46	9.46	9.46
283240	24.79	24.79	24.79	24.79	53.39	53.39	53.39	53.39	69.96	69.96	69.96	69.96	78.27	78.27	78.27	78.27	126.7	126.7	126.7	126.7
283250	18.15	18.15	18.15	18.15	33.13	33.13	33.13	33.13	41.62	41.62	41.62	41.62	45.85	45.85	45.85	45.85	68.24	68.24	68.24	68.24
283260	7.4	7.4	7.4	7.4	15.11	15.11	15.11	15.11	19.48	19.48	19.48	19.48	21.65	21.65	21.65	21.65	34.09	34.09	34.09	34.09
283300	29.68	29.68	29.68	29.68	63.52	63.52	63.52	63.52	78.21	78.21	78.21	78.21	86.72	86.72	86.72	86.72	125.26	125.26	125.26	125.26
283310	13.84	13.84	13.84	13.84	27.65	27.65	27.65	27.65	30.17	30.17	30.17	30.17	30.47	30.47	30.47	30.47	28.68	28.68	28.68	28.68
283320	29.66	29.66	29.66	29.66	63.43	63.43	63.43	63.43	78.24	78.24	78.24	78.24	86.75	86.75	86.75	86.75	125.28	125.28	125.28	125.28
283330	410.34	410.37	410.37	410.37	744.07	744.09	744.09	744.09	917.19	917.19	917.19	917.19	995.85	995.85	995.85	995.85	1383.19	1383.19	1383.19	1383.19
283340	53.09	53.11	53.11	53.11	90.39	90.41	90.41	90.41	106.14	106.14	106.14	106.14	110.2	110.2	110.2	110.2	120.92	120.92	120.92	120.92
283350	59.91	59.92	59.92	59.92	105.61	105.63	105.63	105.63	128.13	128.13	128.13	128.13	138.42	138.42	138.42	138.42	185.51	185.51	185.51	185.51
283360	41.27	41.27	41.27	41.27	74.04	74.08	74.08	74.08	86.57	86.57	86.57	86.57	92.7	92.7	92.7	92.7	121.87	121.87	121.87	121.87
283370	24.48	24.48	24.48	24.48	41.97	41.72	41.72	41.72	43.88	43.88	43.88	43.88	46.94	46.94	46.94	46.94	79.76	79.76	79.76	79.76
283380	4.39	4.39	4.39	4.39	8.06	8.06	8.06	8.06	9.07	9.07	9.07	9.07	9.5	9.5	9.5	9.5	25.4	25.4	25.4	25.4
283390	20.45	20.45	20.45	20.45	37.98	37.98	37.98	37.98	47.89	47.89	47.89	47.89	52.83	52.83	52.83	52.83	78.89	78.89	78.89	78.89
283400	46.18	46.18	46.18	46.18	59.46	59.45	59.45	59.45	59.94	59.94	59.94	59.94	59.81	59.81	59.81	59.81	57.25	57.25	57.25	57.25
283410	49.97	49.97	49.97	49.97	96.17	96.17	96.17	96.17	122.24	122.24	122.24	122.24	135.22	135.22	135.22	135.22	203.52	203.52	203.52	203.52
283420	19.56	19.56	19.56	19.56	37.63	37.63	37.63	37.63	48.14	48.14	48.14	48.14	51.08	51.08	51.08	51.08	55.98	55.98	55.98	55.98
283430	20.14	20.14	20.14	20.14	38.87	38.87	38.87	38.87	49.45	49.45	49.45	49.45	54.71	54.71	54.71	54.71	82.44	82.44	82.44	82.44
283440	14.49	14.49	14.49	14.49	27.83	27.83	27.83	27.83	31.49	31.49	31.49	31.49	32.02	32.02	32.02	32.02	29.87	29.87	29.87	29.87
283450	16.69	16.69	16.69	16.69	31.73	31.73	31.73	31.73	40.21	40.21	40.21	40.21	44.43	44.43	44.43	44.43	66.66	66.66	66.66	66.66
283460	19.99	19.99	19.99	19.99	34.38	34.38	34.38	34.38	34.46	34.46	34.46	34.46	34.2	34.2	34.2	34.2	30.83	30.83	30.83	30.83
283470	20.94	20.94	20.94	20.94	40.47	40.47	40.47	40.47	51.49	51.49	51.49	51.49	56.97	56.97	56.97	56.97	85.83	85.83	85.83	85.83
283480	6.78	6.78	6.78	6.78	12.94	12.94	12.94	12.94	16.45	16.45	16.45	16.45	17.99	17.99	17.99	17.99	18.01	18.01	18.01	18.01
283490	8.87	8.87	8.87	8.87	15.6	15.6	15.6	15.6	19.89	19.89	19.89	19.89	22.02	22.02	22.02	22.02	33.24	33.24	33.24	33.24
283500	25.94	25.94	25.94	25.94	48.11	48.11	48.11	48.11	56.09	56.09	56.09	56.09	57.53	57.53	57.53	57.53	61.04	61.04	61.04	61.04
283510	34.29	34.29	34.29	34.29	65.53	65.53	65.53	65.53	77.28	77.28	77.28	77.28	83.62	83.62	83.62	83.62	125.2	125.2	125.2	125.2
283520	9.13	9.13	9.13	9.13	17.64	17.64	17.64	17.64	20.02	20.02	20.02	20.02	21.08	21.08	21.08	21.08	31.54	31.54	31.54	31.54
283530	62.73	62.73	62.73	62.73	118.58	118.58	118.58	118.58	149.28	149.28	149.28	149.28	170.6	170.6	170.6	170.6	254	254	254	254
283540	23.56	23.56	23.56	23.56	44.73	44.73	44.73	44.73	56.67	56.67	56.67	56.67	62.61	62.61	62.61	62.61	93.92	93.92	93.92	93.92
283550	22.9	22.9	22.9	22.9	43.74	43.74	43.74	43.74	51.64	51.64	51.64	51.64	53.83	53.83	53.83	53.83	58.33	58.33	58.33	58.33
283560	15.82	15.82	15.82	15.82	35.84	35.84	35.84	35.84	42.69	42.69	42.69	42.69	44.85	44.85	44.85	44.85	50.18	50.18	50.18	50.18
283600	44.62	44.62	44.62	44.62	91.96	91.96	91.96	91.96	121.92	121.92	121.92	121.92	136.75	136.75	136.75	136.75	205.8	205.8	205.8	205.8
283610	37.73	37.73	37.73	37.73	63.54	63.54	63.54	63.54	79.54	79.54	79.54	79.54	87.98	87.98	87.98	87.98	132.06	132.06	132.06	132.06
283620	22.31	22.31	22.31	22.31	36.93	36.93	36.93	36.93	47.74	47.74	47.74	47.74	53.12	53.12	53.12	53.12	81.35	81.35	81.35	81.35
283630	9.95	9.92	9.92	9.92	11.8	11.8	11.8	11.8	12.4	12.4	12.4	12.4	12.62	12.62	12.62	12.62	15.39	15.39	15.39	15.39
283640	11.11	10.8	10.8	10.8	21.99	21.99	21.99	21.99	29.26	29.26	29.26	29.26	33.2	33.2	33.2	33.2	53.91	53.91	53.91	53.91
283650	25.71	25.71	25.71	25.71	49.17	49.17	49.17	49.17	61.71	61.71	61.71	61.71	67.85	67.85	67.85	67.85	97.63	97.63	97.63	97.63
283660	19.67	19.67	19.67	19.67	40.67	40.67	40.67	40.67	52.58	52.58	52.58	52.58	58.5	58.5	58.5	58.5	89.57	89.57	89.57	89.57
283670	23.31	23.31	23.31	23.31	44.99	44.99	44.99	44.99	56.69	56.69	56.69	56.69	62.35	62.35	62.35	62.35	93.44	93.44	93.44	93.44
283680	7.03	7.03	7.03	7.03	13.54	13.54	13.54	13.54	17.21	17.21	17.21	17.21	19.03	19.03	19.03	19.03	28.64	28.64	28.64	28.64
283700	65.82	65.82	65.82	65.82	117.97	117.97	117.97	117.97	127.38	127.38	127.38	127.38	130.42	130.42	130.42	130.42	139.7	139.7	139.7	139.7
283710	3.04	3.04	3.04	3.04	14.43	14.43	14.43	14.43	19.02	19.02	19.02	19.02	20.59	20.59	20.59	20.59	31.55	31.55	31.55	31.55
283720	23.33	23.33	23.33	23.33	51.22	51.22	51.22	51.22	67.39	67.39	67.39	67.39	75.45	75.45	75.45	75.45	116.9	116.9	116.9	116.9
283730	32.64	32.64	32.64	32.64	63.58	63.58	63.58	63.58	81.02	81.02	81.02	81.02	89.7	89.7	89.7	89.7	135.33	135.33	135.33	135.33
283740	41.13	41.13	41.13	41.13	71.99	71.99	71.99	71.99	76.86	76.86	76.86	76.86	78.23	78.23	78.23	78.23	76.09	76.09	76.09	76.09
283750	55.16	55.16	55.16	55.16	114.96	114.96	114.96	114.96	145.34	145.34	145.34	145.34	159.6	159.6	159.6	159.6	231.36	231.36	231.36	231.36
283760	3.75	3.75	3.75	3.75	16.61	16.61	16.61	16.61	24.26	24.26	24.26	24.26	25.77	25.77	25.77	25.77	29.71	29.71	29.71	29.71
283770	23.2	23.2	23.2	23.2	43.35	43.35	43.35	43.35	54.73	54.73	54.73	54.73	60.4	60.4	60.4	60.4	90.29	90.29	90.29	90.29
283780	1.25	1.25	1.25	1.25	7.91	7.91	7.91	7.91	11.7	11.7	11.7	11.7	13.11	13.11	13.11	13.11	17.03	17.03	17.03	17.03
283790	1.25	1.25	1.25	1.25	7.45	7.45	7.45	7.45	11.11	11.11	11.11	11.11	12.18	12.18	12.18	12.18	15.51	15.51	15.51	15.51
283800	9.6	9.6	9.6	9.6	27.23	27.23	27.23	27.23	34.88	34.88	34.88	34.88	37.81	37.81	37.81	37.81	48.42	48.42	48.42	48.42
283810	33.95	33.95	33.95	33.95	69.89	69.89	69.89	69.89	89.5	89.5	89.5	89.5	99.1	99.1	99.1	99.1	160.88	160.88	160.88	160.88
283820	15.15	15.15	15.15	15.15	29.97	29.97	29.97	29.97	38.33	38.33	38.33	38.33	42.49	42.49	42.49	42.49	64.37	64.37	64.37	64.37
283830	8.85	8.85	8.85	8.85	16.69	16.69	16.69	16.69	21.12	21.12	21.12	21.12	23.32	23.32	23.32	23.32	34.94	34.94	34.94	34.94
283840	47.61	47.62	47.62	47.62	76.01	76.03	76.03	76.03	89.19	89.19	89.19	89.19	95.1	95.1	95.1	95.1	123.35	123.35	123.35	123.35
283850	8.47	8.47	8.47	8.47	14.73	14.68	14.68	14.68	15.39	15.39	15.39	15.39	15.6	15.6	15.6	15.6	24.62	24.62	24.62	24.62
283860	13.73	13.73	13.73	13.73	27.47	27.47	27.47	27.47	35.23	35.23	35.23	35.23	39.08	39.08	39.08	39.08	59.35	59.35	59.35	59.35
283900	4.73	4.74	4.74	4.74	13.8	13.81	13.81	13.81	17.57	17.57	17.57	17.57	18.66	18.66	18.66	18.66	22.6	22.6	22.6	22.6
283910	22.97	22.97	22.97	22.97	52.68	52.7	52.7	52.7	68.48	68.48	68.48	68.48	75.77	75.77	75.77	75.77	111.36	111.36	111.36	111.36
283920	24.78	24.78	24.78	24.78	46.93	46.93	46.93	46.93	59.54	59.54	59.54	59.54	67.28	67.28	67.28	67.28	104.35	104.35	104.35	104.35
283930	4.98	4.98	4.98	4.98	9.4	9.4	9.4	9.4	11.89	11.89	11.89	11.89	13.13	13.13	13.13	13.13	19.67	19.67	19.67	19.67
283940	8.24	8.24	8.24	8.24	15.65	15.65	15.65	15.65	19.83	19.83	19.83	19.83	21.92	21.92	21.92	21.92	32.88	32.88	32.88	32.88
283950	7.87	7.87	7.87	7.87	15.41	15.41	15.41	15.41	19.66	19.66	19.66	19.66	21.78	21.78	21.78	21.78	32.89	32.89	32.89	32.89
283960	10.26	10.26	10.26	10.26	16.54	16.54	16.54	16.54	17.6	17.6	17.6	17.6	17.8	17.8	17.8	17.8	19.28	19.28	19.28	19.28
283970	24.95	24.95	24.95	24.95	51.95	51.95	51.95	51.95	67.28	67.28	67.28	67.28	74.9	74.9	74.9	74.9	114.94	114.94	114.94	114.94
283990	6.64	6.64	6.64	6.64	12.1	12.1	12.1	12.1	15.2	15.2	15.2	15.2	16.75	16.75	16.75	16.75	24.91	24.91	24.91	24.91
284000	32.31	32.31	32.31	32.31	48.65	48.73	48.73	48.73	62.02	62.02	62.02	62.02	64.81	64.81	64.81	64.81	75.98	75.98	75.98	75.98
284010	23.62	23.47	23.47	23.47	48.75	48.82	48.82	48.82	67.05	67.05	67.05	67.05	72.16	72.16	72.16	72.16	115.43	115.43	115.43	115.43
284020	3.88	3.93	3.93	3.93	24.11	24.15	24.15	24.15	39.68	39.68	39.68	39.68	51.37	51.37	51.37	51.37	115.65	115.65	115.65	115.65
284030	22.36	22.38	22.38	22.38	46.5	46.52	46.52	46.52	62.36	62.36	62.36	62.36	80.45	80.45	80.45	80.45	170.08	170.08	170.08	170.08
284040	3.99	3.99	3.99	3.99	15.84	15.84	15.84	15.84	24.6	24.6	24.6	24.6	29.21	29.21	29.21	29.21	44.71	44.71	44.71	44.71
284050	4.82	4.82	4.82	4.82	16.51	16.52	16.52	16.52	25.33	25.33	25.33	25.33	29.89	29.89	29.89	29.89	45.21	45.21	45.21	45.21
284060	11.59	11.6	11.6	11.6	22.36	22.36	22.36	22.36	28.51	28.51	28.51	28.51	31.11	31.11	31.11	31.11	43.44	43.44	43.44	43.44
284070	9.87	9.86	9.86	9.86	20.41	20.41	20.41	20.41	26.49	26.49	26.49	26.49	32.43	32.43	32.43	32.43	56.16	56.16	56.16	56.16
284080	6.04	6.04	6.04	6.04	12.15	12.15	12.15	12.15	15.64	15.64	15.64	15.64	17.38	17.38	17.38	17.38	26.5	26.5	26.5	26.5
284090	15.54	15.54	15.54	15.54	36.8	36.8	36.8	36.8	49.28	49.28	49.28	49.28	54.93	54.93	54.93	54.93	82.43	82.43	82.43	82.43
284100	3.01	3.01	3.01	3.01	1.72	1.72	1.72	1.72	1.74	1.74	1.74	1.74	1.78	1.78	1.78	1.78	1.99	1.99	1.99	1.99
284110	15.61	15.61	15.61	15.61	36.56	36.56	36.56	36.56	47.81	47.81	47.81	47.81	53.39	53.39	53.39	53.39	82.11	82.11	82.11	82.11
284120	8.6	8.6	8.6	8.6	18.32	18.32	18.32	18.32	23.87	23.87	23.87	23.87	26.63	26.63	26.63	26.63	41.14	41.14	41.14	41.14
284210	54.03	54.03	54.03	54.03	96.16	96.16	96.16	96.16	120.23	120.23	120.23	120.23	132.26	132.26	132.26	132.26	196.01	196.01	196.01	196.01
284220	90.49	90.49	90.49	90.49	137.34	137.34	137.34	137.34	157.03	157.03	157.03	157.03	166.82	166.82	166.82	166.82	218.63	218.63	218.63	218.63
284230	346.38	346.38	346.38	346.38	656.44	656.44	656.44	656.44	831.32	831.32	831.32	831.32	918.37	918.37	918.37	918.37	1377.09	1377.09	1377.09	1377.09
284240	241.97	241.97	241.97	241.97	452.42	452.42	452.42	452.42	571.25	571.25	571.25	571.25	630.44	630.44	630.44	630.44	942.67	942.67	942.67	942.67
300010			9.16	9.16			16.39	16.39			20.51	20.51			22.57	22.57			33.47	33.47
300012			15.78	15.78			29.09	29.09			36.52	36.52			40.09	39.62			56.75	56.7
300014			5.46	5.46			13.69	13.54			16.2	15.92			17.31	15.76			25.67	25.41
300020			43.33	43.33			47.17	47.08			47.75	47.51			47.53	47.18			43.97	43.09

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Summary of Flow Results at all Nodes

Node	2.33YR24HR				25YR24HR				50YR24HR				100YR24HR				500YR24HR			
	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)	Effective Model (cfs)	Corrected Effective Model (cfs)	Proposed Bridge (cfs)	Proposed Box Culverts (cfs)
300022			39.94	39.94			42.48	42.44			42.59	42.47			42.28	42.01			38.2	37.37
300024			1.35	1.35			2.41	2.41			3.01	3.01			3.32	3.32			4.92	4.92
300026			47.79	47.79			55.81	55.71			58.43	58.12			59.13	58.7			58.89	57.82
300028			41.92	41.8			40.41	39.64			36.81	35.57			35.23	33.99			36.35	35.1
300030			9.18	9.18			16.42	16.42			20.55	20.55			22.61	22.61			33.53	33.53
300032			27.09	27.09			45.6	45.6			54.66	54.66			58.65	58.65			75.14	75.14
300034			18.41	18.41			18.41	18.41			18.7	18.7			20.11	20.11			24.83	24.83
230202		8.51	8.11	8.11		15.42	14.86	14.86		18.8	17.92	17.92		20.12	19	19		24.17	21.92	21.92

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Corrected Effective Model

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Corrections for Revised Existing Conditions Model (Corrected Effective Model)

1) Corrected CBC dimensions for Delaney Creek Cross Drain under US 41 based on survey

SWMM	Survey		Width		Height		Flow lines		Manning's	
Pipe	From	To	From	To	From	To	From	To	From	To
P210050A	ST-28	ST-27	9.25	8	12	11	-4.0/-4.1	-3.54/-3.57	0.02	0.012
P210050B	ST-28	ST-27	9.25	8	12	11	-4.0/-4.1	-3.63/-3.69	0.02	0.012
P210050C	ST-28	ST-27	9.25	8	12	11	-4.0/-4.1	-3.61/-3.70	0.02	0.012

2) Corrected Unnamed creek cross drain under US 41 based on survey

SWMM	Survey		Length		Flow lines	
Pipe	From	From	From	To	From	To
P230040A	ST-80	ST-78	112	118	-0.43/-0.51	-0.43/-0.88
P230040B	ST-80	ST-78	112	118	-0.43/-0.51	-0.43/-0.81

3) Corrected Nothernmost cross drain under US 41 based on survey

SWMM	Survey		Length		Flow lines		Barrels		Diameter	
Pipe	From	From	From	To	From	To	From	To	From	To
P250070A	ST-97	ST-95	130	120.6	3.6/3.5	0.81/0.85	1	3	42	36

4) Corrected cross drain under CSX just west of US 41 based on survey

SWMM	Survey		Length		Flow lines		Roughness	
Pipe	From	From	From	To	From	To	From	To
P210790A	ST-44	ST-43	65	82	1.23/1.22	1.47/1.41	0.013	0.012
P210790B	ST-44	ST-43	65	82	1.25/1.14	1.40/1.35	0.013	0.012
P210790C	ST-44	ST-43	65	82	1.18/1.17	1.36/1.24	0.013	0.012

5) Corrected cross drain under Causeway just east of intersection at US 41

SWMM	Survey		Length		Flow lines		Depth	
Pipe	From	From	From	To	From	To	From	To
P230200A	ST-259	ST-263	112	63	3.92/3.77	3.88/3.62	1.58	1.583
P230202A*	ST-263	ST-275		63		3.58/3.63		2.00

*Added dummy node to show change in pipe size

6) Corrected weir lengths and elevations along US 41 based on surveyed elevations and LiDAR

SWMM	Type		Slope		Length		Inlet Offset		Discharge Coefficient	
Weir	From	To	From	To	From	To	From	To	From	To
W210050A	Transverse	V-Notch	0	764	40	917	7	7.3		
W210050C	Transverse	V-Notch	0	580	40	754	7	7.3		
W210930A	Transverse	V-Notch	0	269	40	565	7	7.2		
W210960B	Transverse	V-Notch	0	490	50	784	7	7.5		
W250070A	Transverse	V-Notch	0	502	40	653	7.05	7.5	2.0	2.5
W210800B	Transverse	V-Notch	0	417	30	1043	5.2	5.0		
W210970B	Transverse	V-Notch	0	202	20	384	5.77	7.3	2.0	2.5

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7) Added a weir at Unnamed Creek across US 41

SWMM	Node		Type	Slope	Length	Inlet Offset	Discharge Coefficient
Weir	From	To					
W230040A	230040	230030	V-Notch	456	730	7.3	2.5

8) Revised the cross sections and roughness factors within Delaney Creek based on survey and field review.

SWMM	From		To		Bank Stations				Roughness					
					Left Bank		Right Bank		Left Bank		Right Bank		Channel	
Transect	Station	Elev.	Station	Elev.	From	To	From	To	From	To	From	To	From	To
C210040A	-0.1	15.1	-0.1	15.10	0	0	26	44.8	0.065	0.12	0.065	0.12	0.045	0.055
	0	2.25	0.0	1.59										
	7	-1.5	8.8	-0.78										
	15	-3.7	18.6	-2.60										
	26	-3.9	26.0	-3.97										
	56	5.1	32.3	-2.49										
	56.1	15.1	41.2	-0.93										
			43.4	0.28										
			44.8	1.04										
			48.2	2.63										
			52.6	4.64										
			56.0	5.27										
			56.0	5.28										
			56.1	15.10										
C210060A	-0.1	16.4	-0.1	16.40	12	1.2	37	49.2	0.065	0.120	0.065	0.05	0.045	0.055
	0	6.4	0.0	3.84										
	12	-2.9	0.8	3.49										
	23	-4	1.2	2.96										
	37	-1.1	2.9	-0.55										
	55	6	25.1	-2.56										
			30.0	-3.16										
			33.0	-2.44										
			44.4	-0.15										
			49.2	1.81										
			50.7	2.65										
			51.5	2.82										
			55.0	3.68										
			55.1	16.40										

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9) Stage Area Updated for nodes within the project area. A merged mesh including the 2011 Hillsborough County LiDAR and survey provided for the project was used to calculate the stage storage within the GIS software.

Node	Effective Model		Corrected		Node	Effective Model		Corrected	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230010	0.1	78969	0.00	436	230180	0	500	0.00	436
	0.2	82008	0.22	109212		1.1	3800	0.66	25
	0.3	84323	0.72	117437		1.2	7307	1.16	7030
	0.4	86260	1.22	152112		1.3	12100	1.66	31256
	0.5	87978	1.72	163987		1.4	16801	2.16	55480
	0.6	89609	2.22	185075		1.5	21835	2.66	83640
	0.7	91179	2.72	231518		1.6	27127	3.16	114487
	0.8	92714	3.22	285424		1.7	32603	3.66	160195
	0.9	94233	3.72	345114		2	46892	4.16	233652
	1.2	99567	4.22	426125		3	103514	4.66	341993
	2.2	124554	4.72	544247		4	201684	5.16	506606
	3.2	223319	5.22	726867		5	447761	5.66	680179
	4.2	353111	5.72	974319		6	776502	6.16	806851
	5.2	661517	6.22	1249706		7	866047	6.66	852813
	6.2	1348648	6.72	1519438		8	887378	7.16	870625
	7.2	1664890	7.22	1697691		9	892464	7.66	886022
	8.2	1695974	7.72	1768076		9.56	893900	8.16	898225
	8.98	1697550	8.22	1787178		998	893900	8.66	903768
	1000.2	1697550	8.72	1790687				9.16	905895
			9.22	1791426				9.74	906869
			9.72	1791906				999.00	906869
			10.22	1792313					
			10.72	1792501					
			11.22	1792532					
			11.72	1792585					
			12.22	1792604					
			12.72	1792620					
			13.22	1792645					
			13.72	1792647					
			14.30	1792676					
			999.00	1792676					

Node	Effective Model		Corrected		Node	Effective Model		Corrected	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230040	0	436	0.00	436	230030	0.1	837	0.00	436
	1.52	436	0.55	436		0.2	1106	0.20	1636
	1.53	445	1.05	436		0.3	1428	0.70	38034
	2.43	2037	1.55	877		0.7	36151	1.20	51082
	3.43	6946	2.05	1859		1.7	82198	1.70	84395
	4.43	20244	2.55	2814		2.7	153215	2.20	119451
	5.43	82448	3.05	4374		3.7	301369	2.70	151167
	6.43	258994	3.55	7167		4.7	608580	3.20	203844
	7.43	508998	4.05	12721		5.7	828999	3.70	299483
	8.43	750269	4.55	21022		6.7	928952	4.20	476858
	9.43	869600	5.05	42128		7.7	959567	4.70	601177
	10.43	882472	5.55	85236		8.7	970500	5.20	711344
	11.43	883668	6.05	159856		8.97	970550	5.70	812785
	11.87	883825	6.55	267761		999.7	970550	6.20	879506
	999.43	883825	7.05	402346				6.70	899776
			7.55	513495				7.20	910641

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			8.05	655338				7.70	923854
			8.55	762208				8.20	938067
			9.05	851417				8.70	962949
			9.55	882009				9.36	982349
			10.05	894436				999.00	982349
			10.55	895702					
			11.05	895914					
			11.57	895936					
			999.00	895936					

	Effective Model		Corrected			Effective Model		Corrected	
Node	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)	Node	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230200	0	436	0.00	436	230100	0	436	0.00	436
	1.77	436	0.76	436		2.97	436	2.62	25
	1.78	570	1.26	436		2.98	451	3.12	1831
	1.88	1073	1.76	436		3.08	1094	3.62	18775
	1.98	1567	2.26	1689		3.18	2248	4.12	71974
	2.08	2222	2.76	4214		3.28	3771	4.62	139058
	2.18	3078	3.26	21259		3.38	6196	5.12	207341
	2.28	4517	3.76	46247		3.48	9338	5.62	242020
	2.38	7163	4.26	58516		4.58	140199	6.12	279395
	2.48	10042	4.76	66784		5.58	265815	6.62	320731
	3.08	38513	5.26	81511		6.58	331963	7.12	345554
	4.08	61896	5.76	106667		7.58	352893	7.62	358986
	5.08	85066	6.26	128848		7.99	352950	8.12	360356
	6.08	125080	6.76	137565		998.58	352950	8.47	360380
	7.08	133825	7.26	140292				999.00	360380
	8.08	135445	7.76	141782					
	8.82	135500	8.26	142836					
	995.08	135500	8.76	143386					
			9.26	143598					
			9.67	143674					
			999.00	143674					

	Effective Model		Corrected			Effective Model		Corrected	
Node	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)	Node	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
210790	0	436	0.00	436	210750	0.1	1186	0.00	436
	1.41	436	0.15	436		0.2	1853	0.17	2196
	1.42	1071	0.65	446		0.3	2951	0.67	15971
	1.52	1381	1.15	674		0.4	4683	1.17	34766
	1.62	1719	1.65	3334		0.5	7440	1.67	56255
	1.72	2239	2.15	10480		0.6	11535	2.17	76240
	1.82	3568	2.65	16864		0.7	15792	2.67	102042
	1.92	5396	3.15	27484		1.5	47219	3.17	131667
	2.02	6922	3.65	42866		2.5	84684	3.67	179839
	2.12	8130	4.15	60808		3.5	138187	4.17	271444
	2.22	9328	4.65	96822		4.5	365267	4.67	470913
	2.32	10592	5.15	243107		5.5	806420	5.17	715769
	2.82	17538	5.65	484800		6.5	1010952	5.67	874721
	3.82	46981	6.15	643861		7.5	1047767	6.17	979416
	4.82	176550	6.65	736748		8.39	1049400	6.67	1063929
	5.82	615818	7.15	786241		998.5	1049400	7.17	1096017
	6.82	777496	7.65	814979				7.67	1104926
	7.82	822335	8.15	833701				8.17	1108647
	8.82	836175	8.65	845771				8.46	1109180
	8.83	836175	9.15	848059				999.00	1109180

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	997.82	836175	9.65	848121					
			10.08	848141					
			999.00	848141					
Node	**Effective Model**		**Corrected**		**Node**	**Effective Model**		**Corrected**	
	Depth (ft)	**Area (sqft)**	**Depth (ft)**	**Area (sqft)**		**Depth (ft)**	**Area (sqft)**	**Depth (ft)**	**Area (sqft)**
210800	0	436	0.00	436	210030	0	436	0.00	436
	1.29	436	0.74	436		2.69	436	0.22	2606
	1.3	471	1.24	595		2.7	9299	0.72	5255
	1.4	688	1.74	3972		2.8	10434	1.22	8439
	1.5	1020	2.24	16118		2.9	11500	1.72	11968
	1.6	1602	2.74	65097		3	12598	2.22	15869
	1.7	2437	3.24	154875		3.1	13600	2.72	44258
	1.8	3542	3.74	342555		3.2	14476	3.22	51182
	2.5	35597	4.24	687855		3.3	15275	3.72	57959
	3.5	319074	4.74	953383		3.4	16006	4.22	66321
	4.5	937969	5.24	1131089		3.5	16701	4.72	89276
	5.5	1169798	5.74	1188241		3.6	17395	5.22	129259
	6.5	1235361	6.24	1216482		3.7	18094	5.72	193563
	7.5	1284438	6.74	1249734		4	20349	6.22	268804
	8.5	1301843	7.24	1280430		5	51770	6.72	346045
	8.56	1301850	7.74	1306789		6	159045	7.22	432056
	997.5	1301850	8.24	1315183		7	303483	7.72	560046
			8.57	1315965		8	592667	8.22	736347
			999.00	1315965		9	1290506	8.72	1020645
						10	1959085	9.22	1385486
						11	2227366	9.72	1773259
						12	2303437	10.22	2036797
						13	2319152	10.72	2214468
						14	2325124	11.22	2334415
						15	2332802	11.72	2403099
						16	2345700	12.22	2421886
						17	2351941	12.72	2431754
						17.48	2352725	13.22	2438801
						1003	2352725	13.72	2442687
								14.22	2446030
								14.72	2449754
								15.22	2454662
								15.72	2460321
								16.22	2467071
								16.72	2470096
								17.22	2472321
								17.56	2472646
								999.00	2472646
Node	**Effective Model**		**Corrected**		**Node**	**Effective Model**		**Corrected**	
	Depth (ft)	**Area (sqft)**	**Depth (ft)**	**Area (sqft)**		**Depth (ft)**	**Area (sqft)**	**Depth (ft)**	**Area (sqft)**
210900	0	436	0.00	436	210810	0	436	0.00	436
	2.49	436	1.89	436		1.99	436	1.65	436
	2.5	464	2.39	436		2	842	2.15	4000
	2.6	609	2.89	2849		2.1	1508	2.65	13752
	2.7	810	3.39	14070		2.2	2537	3.15	27030
	3.5	18155	3.89	48730		2.3	4439	3.65	47380
	4.5	123403	4.39	100630		2.4	6557	4.15	87600
	5.5	375391	4.89	179865		2.5	8699	4.65	152253
	6.5	940565	5.39	286698		2.6	10966	5.15	239881

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	7.5	1377490	5.89	505147		3.4	35600	5.65	324836
	8.5	1471845	6.39	866343		4.4	116019	6.15	448271
	9.5	1506928	6.89	1193192		5.4	286967	6.65	646470
	10.5	1516776	7.39	1418451		6.4	555942	7.15	843561
	11.5	1521179	7.89	1513561		7.4	924847	7.65	981743
	12.5	1524819	8.39	1556316		8.4	1098578	8.15	1062431
	13.5	1529185	8.89	1585802		9.4	1146203	8.65	1118416
	14.5	1531364	9.39	1599222		10.4	1148304	9.15	1148838
	15.5	1533162	9.89	1605660		11.05	1148425	9.65	1158785
	16.5	1534947	10.39	1611213		1000.4	1148425	10.15	1160490
	17.5	1535812	10.89	1613712				10.65	1160565
	18.5	1536473	11.39	1615489				11.15	1160665
	19.5	1536973	11.89	1617165				11.45	1160715
	20.5	1537284	12.39	1618574				999.00	1160715
	21.13	1537375	12.89	1619930					
	998.5	1537375	13.39	1622146					
			13.89	1623103					
			14.39	1624129					
			14.89	1625030					
			15.39	1625896					
			15.89	1626709					
			16.39	1627348					
			16.89	1628082					
			17.39	1628847					
			17.89	1629697					
			18.39	1630556					
			18.89	1631450					
			19.39	1632349					
			19.89	1633206					
			20.39	1634058					
			20.89	1634978					
			21.39	1635984					
			21.89	1637029					
			22.39	1637862					
			23.00	1638262					
			999.00	1638262					

	Effective Model		Corrected			Effective Model		Corrected	
Node	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)	Node	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
200280	0	436	0.00	436	210050	0	436	0.00	436
	0.57	436	0.47	436		3.17	436	0.34	11031
	0.58	734	0.97	7920		3.18	1211	0.84	15185
	0.68	3129	1.47	17755		3.28	1471	1.34	19681
	0.78	4878	1.97	26626		3.38	1852	1.84	24430
	0.88	6212	2.47	37479		3.48	2379	2.34	28522
	0.98	7210	2.97	58819		3.58	3325	2.84	30567
	1.08	8113	3.47	92441		3.68	4067	3.34	35881
	1.18	8976	3.97	139944		3.78	4973	3.84	62518
	1.28	10122	4.47	251345		3.88	5903	4.34	71561
	1.38	11518	4.97	443302		3.98	6739	4.84	84636
	1.48	12918	5.47	604728		4.08	7750	5.34	97697
	2.08	19870	5.97	740818		4.78	20487	5.84	110226
	3.08	45791	6.47	836698		5.78	39227	6.34	125079
	4.08	135477	6.97	870933		6.78	69895	6.84	150347
	5.08	496472	7.47	881981		7.78	186832	7.34	185269
	6.08	783595	7.97	884085		8.78	739490	7.84	255586

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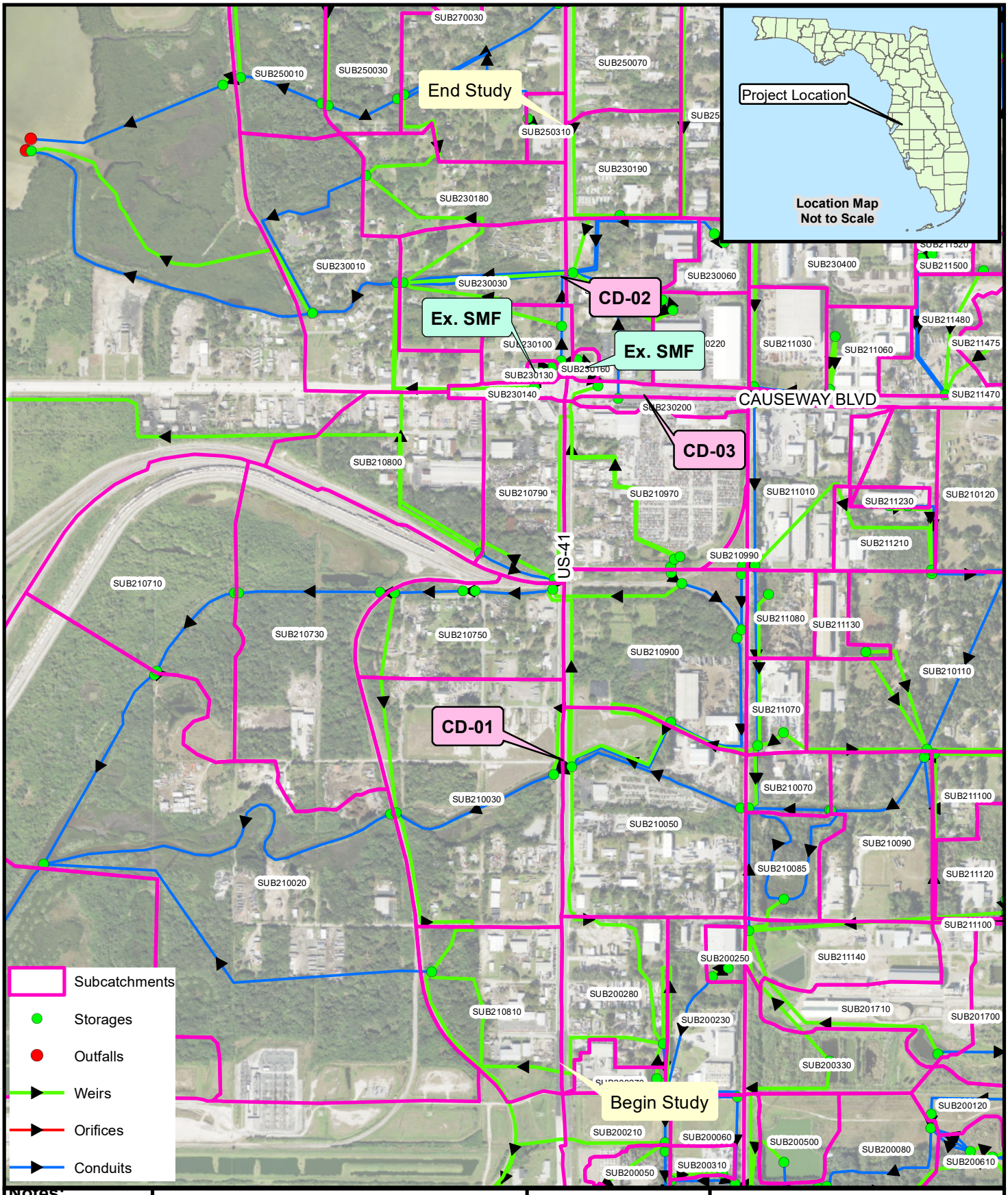


Notes:

A- Project: 18033

B- Data From - Imagery, Esri
Dalaney Creek Model

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 1,000

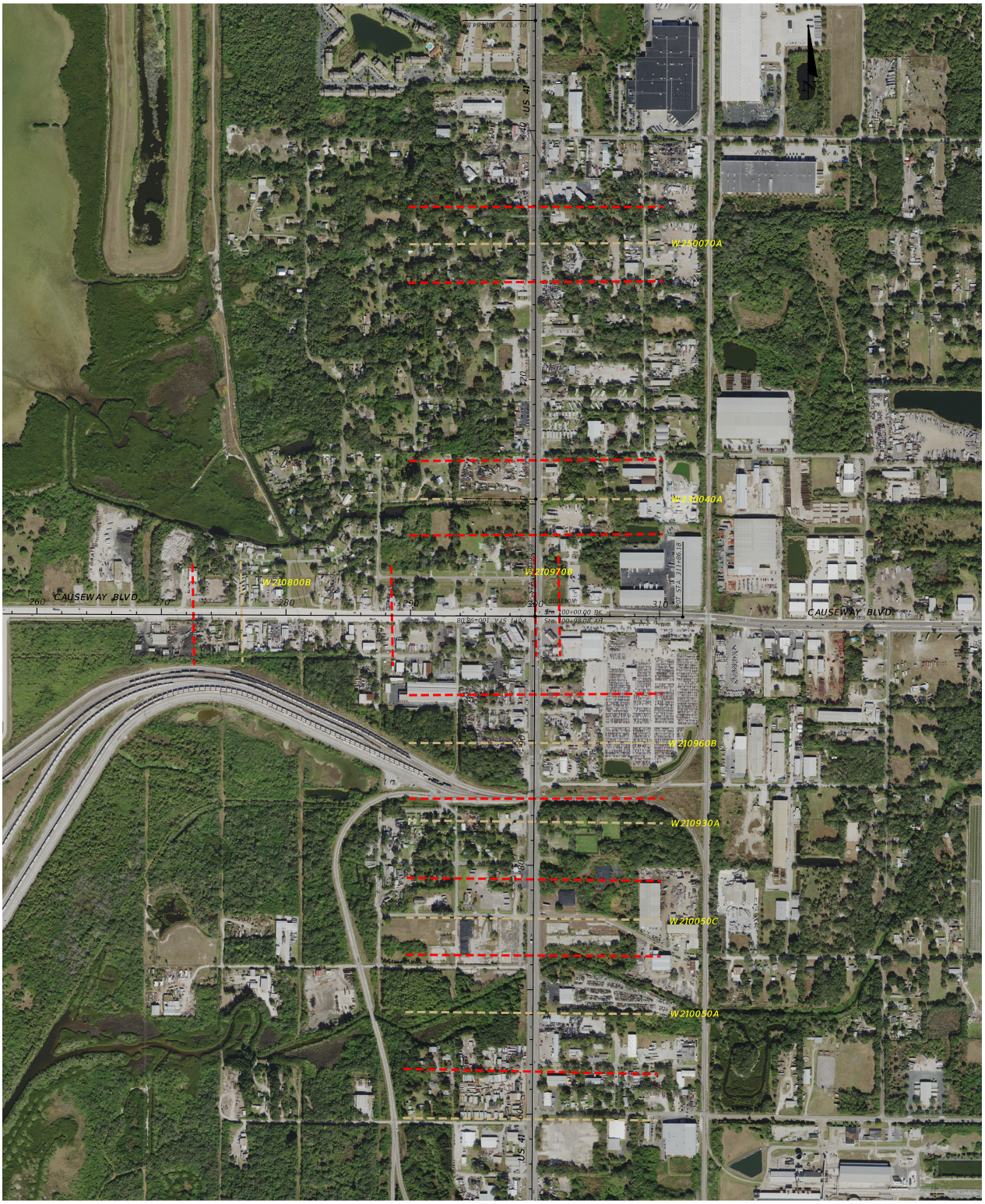
1" = 1000'

RK&K

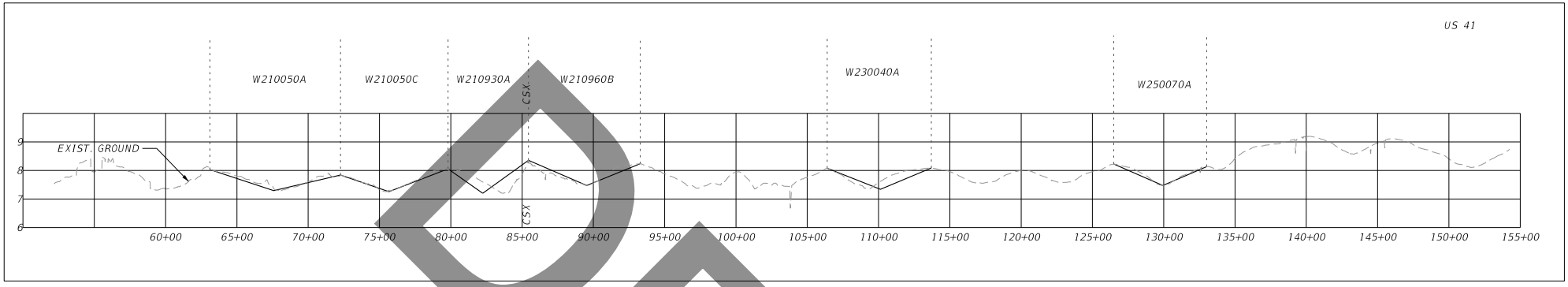
Existing Drainage Map
US41 at CSX
440749-1
Hillsbourough County, FL

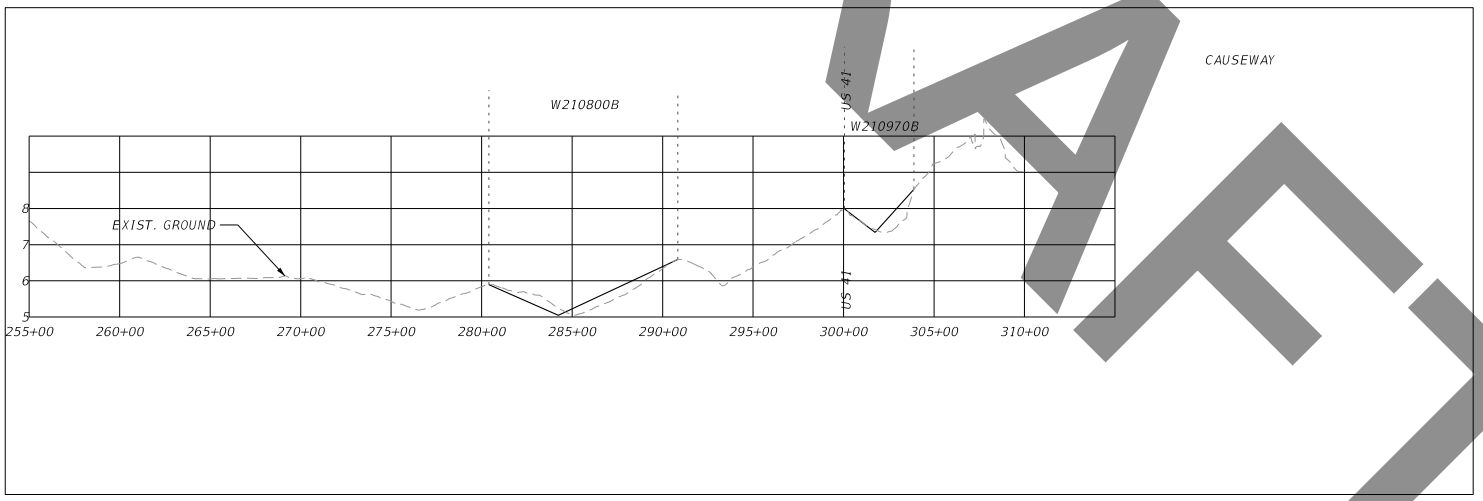
Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\ExistingDrainageMap2.mxd

Modeled Weir Locations



Roadway Profiles





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Revised Model

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Corrections for Proposed Model (Revised Model)

1) New subcatchments were added for the roadway improvements and the proposed ponds. Basin 2 was subdivided into 3 basins due to the proposed bridges at 36th Avenue and CSX. All pond CNs were calculated by assuming CN of 100 for pond at the control elevation and 80 for the rest of the basin. The areas shown in the table have been rounded.

Element	Subcatchment	Area (acres)	TC (minutes)	CN
Basin 1	SUB300010	5.858	30	98.00
Pond 1	SUB300012	3.996	20	91.18
Basin 2B	SUB300020	2.184	30	98.00
Basin 2C	SUB300022	4.010	30	98.00
Basin 2A	SUB300024	0.861	30	98.00
Pond 2	SUB300026	3.005	20	90.45
Basin 3	SUB300030	5.291	25	98.00
Pond 3	SUB300032	3.997	20	91.27

2) The existing subcatchment areas and curve numbers were updated to reflect the insertion of the new roadway and pond basins. The areas shown in the table have been rounded. The revised values in the model were verified to balance with the existing model when added to the new basins and ponds. SUB230170 was increased to reflect the roadway widening within the existing basin. SUB230130 was the existing pond on the NW corner of the US 19 and Causeway intersection and has been combined with Pond 3. SUB230140 was replaced with SUB300030.

Subcatchment	Area (acres)		Curve Number	
	From	To	From	To
SUB200280	20.320	18.851	94.71	93.18
SUB210030	56.768	49.814	88.8	82.25
SUB210050	46.835	44.111	93.66	90.58
SUB210750	25.463	24.667	86.45	81.97
SUB210790	19.471	20.225	90.51	90.66
SUB210800	30.211	30.110	87.53	87.09
SUB210810	26.646	25.272	87.83	87.86
SUB210900	37.611	34.687	83.97	84.97
SUB210970	36.825	32.608	94.94	94.17
SUB230010	41.154	36.817	91.33	86.47
SUB230030	22.552	22.552	83.6	85.59
SUB230040	20.572	20.434	92.01	93.01
SUB230100	8.275	7.018	87.3	82.43
SUB230140	2.433	--	92.19	--
SUB230160	1.032	0.837	97.76	97.76
SUB230170	8.588	8.731	92.01	98.00
SUB230180	20.819	20.819	84.52	78.40
SUB230200	3.296	3.195	94.88	93.96
SUB230130	0.857	--	97.95	--

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3) Weirs were modified and removed to reflect the profile changes along US 41 and Causeway.

SWMM	Name		Node				Length		Inlet Offset		Slope	
			Inlet		Outlet							
Weir	From	To	From	To	From	To	From	To	From	To	From	To
W210050A							917	149.8				
W210930A							565	414				
W210970B	W210970B	W21970B	210970	210970	230170	300022	384	50	7.3	6	202	0
W210960B	W210960B	W300022A	210960	300022	210790	230170	784	784	7.5	7.5	490	490
W210050C	Removed from model due to profile changes along US 41.											
W210960B	Removed from model due to profile changes along Causeway.											
W210800B	Removed from model due to profile changes along Causeway.											
W230140A	Removed from model due to changes in proposed design.											
W230160A	Removed from model due to pond reconfiguration in proposed design.											
W230160B	Removed from model due to pond reconfiguration in proposed design.											
W230130B	Removed from model due to pond reconfiguration in proposed design.											
W230130A	Removed from model due to pond reconfiguration in proposed design.											

4) New weirs were added for the proposed ponds.

Name	Node		Type	Height	Length	Invert
	Inlet	Outlet				
W300012A	300012	300014	Transverse	1.57	0.5	4.15
W300012B	300012	300014	Transverse	999	14.32	5.8
W300026A	300026	300028	Transverse	2.97	8	4.03
W300026B	300026	300028	Transverse	999	14.32	7
W300032A	300032	300034	Transverse	1.66	8	3.2
W300032B	300032	300034	Transverse	999	14.32	4.86

5) New orifices were added for the proposed ponds.

Name	Node		Type	Height	Length	Invert
	Inlet	Outlet				
O300012A	300012	300014	Bottom	0.33	0	3.8
O300026	300026	300028	Bottom	0.33	0	3.6

6) The following pipes were removed from the model to accommodate the proposed design changes.

Link	Description
P210050A	Existing pipe at Delaney Creek
P210050B	Existing pipe at Delaney Creek
P210050C	Existing pipe at Delaney Creek
P230150A	Existing outfall pipe from pond at NE corner of Causeway and US 41

7) The following pipes were updated to accommodate the proposed roadway widening and the revisions to the existing ponds.

SWMM	Name		Node				Depth		Length	
			Inlet		Outlet					
Pipe	From	To	From	To	From	To	From	To	From	To
P230140A	P230140A	P300030A	230140	300030	230130	300032	2.5	2.5	41	41

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P230120A	P230120A	P300034A	230120	300034	230110	230110	2.5	2.5	74	74
P230040A			230040	230040	230030	230030	3.5	4	118	150
P230040B			230040	230040	230030	230030	3.5	4	118	150

8) New Pipes Links were added to drain the new basins to the ponds and to drain the ponds to the outfall locations

Name	Node		Depth (ft)	Length (ft)	Roughness	US invert (ft)	DS invert (ft)
	From	To					
P300010A	300010	300012	3	110	0.012	1.7	1.2
P300014A	300014	210030	3	290	0.012	1	-0.5
P300020A	300020	300026	4	200	0.012	-0.67	-1
P300028A	300028	210040	4	900	0.012	-1	-1.3
P300024A	300024	300020	3	78	0.012	-0.61	-0.69
P300022A	300022	300020	3.5	310	0.012	0.66	0.36
P230160A	230160	300032	2.5	200	0.012	1.83	1.83

9) New Channel Link was added for the bridge over Delaney Creek

Name	From	To	Shape	Depth (ft)	Length (ft)	US invert (ft)	DS Invert (ft)
C210050A	210050	210040	IRREGULAR	14.9	325	-3.9	-4.1

Station	Elevation	Roughness
0	11	0.035
8	7	0.035
18	7	0.035
39.8	-3.9	0.055
50.8	-3.9	0.055
72.6	7	0.035
82.6	7	0.035
90.6	11	0.035

10) The upstream and downstream channel links at Delaney Creek were updated to remove the length of the new channel link at the bridge. The overall total length is constant between the revised existing and proposed models.

Link	Length		US Invert (ft)		DS Invert (ft)	
	From	To	From	To	From	To
C210060A	1400	1215			-4	-4.2
C210040A	1320	1300	-3.9	-4.5		

11) Storage Unit 210040 invert elevation was lowered from -3.9 to -4.5 to match the revised channel bottom.

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12) Stage Area Updated for nodes within the project area. A merged mesh including the 2011 Hillsborough County LiDAR, survey and proposed surface for the project was used to calculate the stage storage within the GIS software.

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230010	0.00	436	0.00	436
	0.22	109212	0.22	109212
	0.72	117437	0.72	117437
	1.22	152112	1.22	152112
	1.72	163987	1.72	163987
	2.22	185075	2.22	185075
	2.72	231518	2.72	231518
	3.22	285424	3.22	285424
	3.72	345114	3.72	345053
	4.22	426125	4.22	425936
	4.72	544247	4.72	544027
	5.22	726867	5.22	726455
	5.72	974319	5.72	971789
	6.22	1249706	6.22	1220724
	6.72	1519438	6.72	1425681
	7.22	1697691	7.22	1542145
	7.72	1768076	7.72	1582537
	8.22	1787178	8.22	1596444
	8.72	1790687	8.72	1601964
	9.22	1791426	9.22	1602687
	9.72	1791906	9.72	1603121
	10.22	1792313	10.22	1603504
	10.72	1792501	10.72	1603665
	11.22	1792532	11.22	1603676
	11.72	1792585	11.72	1603711
	12.22	1792604	12.22	1603718
	12.72	1792620	12.72	1603734
	13.22	1792645	13.22	1603759
	13.72	1792647	13.72	1603761
	14.30	1792676	14.30	1603790
	999.00	1792676	999.00	1603790

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230030	0.00	436	0.00	436
	0.20	1636	0.20	1535
	0.70	38034	0.70	37873
	1.20	51082	1.20	50717
	1.70	84395	1.70	83790
	2.20	119451	2.20	118569
	2.70	151167	2.70	149821

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230180	0.00	436	0.00	436
	0.66	436	0.66	436
	1.16	7030	1.16	7030
	1.66	31256	1.66	31256
	2.16	55480	2.16	55480
	2.66	83640	2.66	83640
	3.16	114487	3.16	114487
	3.66	160195	3.66	160195
	4.16	233652	4.16	233652
	4.66	341993	4.66	341993
	5.16	506606	5.16	506587
	5.66	680179	5.66	679636
	6.16	806851	6.16	805138
	6.66	852813	6.66	848695
	7.16	870625	7.16	863407
	7.66	886022	7.66	881810
	8.16	898225	8.16	896676
	8.66	903768	8.66	903768
	9.16	905895	9.16	905895
	9.74	906869	9.74	906869
	999.00	906869	999.00	906869

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230040	0.00	436	0.00	436
	0.55	436	0.55	436
	1.05	436	1.05	436
	1.55	877	1.55	824
	2.05	1859	2.05	1740
	2.55	2814	2.55	2577
	3.05	4374	3.05	3940
	3.55	7167	3.55	6486
	4.05	12721	4.05	11822
	4.55	21022	4.55	19786
	5.05	42128	5.05	40548
	5.55	85236	5.55	83543
	6.05	159856	6.05	158278
	6.55	267761	6.55	264513
	7.05	402346	7.05	396555
	7.55	513495	7.55	510846
	8.05	655338	8.05	656244

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	3.20	203844	3.20	201591
	3.70	299483	3.70	296186
	4.20	476858	4.20	472239
	4.70	601177	4.70	594602
	5.20	711344	5.20	702584
	5.70	812785	5.70	801935
	6.20	879506	6.20	867693
	6.70	899776	6.70	887512
	7.20	910641	7.20	899513
	7.70	923854	7.70	919348
	8.20	938067	8.20	946082
	8.70	962949	8.70	966897
	9.36	982349	9.32	982349
	999.00	982349	999.00	982349

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230100	0.00	436	0.00	436
	2.62	25	1.65	436
	3.12	1831	2.15	436
	3.62	18775	2.65	650
	4.12	71974	3.15	3323
	4.62	139058	3.65	22344
	5.12	207341	4.15	77098
	5.62	242020	4.65	140516
	6.12	279395	5.15	188969
	6.62	320731	5.65	209822
	7.12	345554	6.15	225771
	7.62	358986	6.65	246233
	8.12	360356	7.15	275906
	8.47	360380	7.65	297834
	999.00	360380	8.15	305662
			8.65	305662
			8.93	305673
			999.00	305673

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
210800	0.00	436	0.00	436
	0.74	436	0.74	436
	1.24	595	1.24	595
	1.74	3972	1.74	3972
	2.24	16118	2.24	16118
	2.74	65097	2.74	65087
	3.24	154875	3.24	153775
	3.74	342555	3.74	334428
	4.24	687855	4.24	675487
	4.74	953383	4.74	940859
	8.55	762208	8.55	757745
	9.05	851417	9.05	845331
	9.55	882009	9.55	875452
	10.05	894436	10.05	888091
	10.55	895702	10.55	889689
	11.05	895914	11.05	889901
	11.57	895936	11.57	889923
	999.00	895936	999.00	889923

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
230200	0.00	436	0.00	436
	0.76	436	1.56	436
	1.26	436	2.06	436
	1.76	436	2.56	1930
	2.26	1689	3.06	8160
	2.76	4214	3.56	33660
	3.26	21259	4.06	48186
	3.76	46247	4.56	57179
	4.26	58516	5.06	68211
	4.76	66784	5.56	89640
	5.26	81511	6.06	116760
	5.76	106667	6.56	132018
	6.26	128848	7.06	134775
	6.76	137565	7.56	136920
	7.26	140292	8.06	138027
	7.76	141782	8.56	138845
	8.26	142836	9.06	139100
	8.76	143386	9.67	139248
	9.26	143598	999.00	139248
	9.67	143674		
	999.00	143674		

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
210790	0.00	436	0.00	436
	0.15	436	0.15	436
	0.65	446	0.65	446
	1.15	674	1.15	674
	1.65	3334	1.65	3334
	2.15	10480	2.15	10479
	2.65	16864	2.65	16855
	3.15	27484	3.15	27491
	3.65	42866	3.65	42854
	4.15	60808	4.15	61077
	4.65	96822	4.65	98830
	5.15	243107	5.15	246244
	5.65	484800	5.65	486648

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	5.24	1131089	5.24	1119922
	5.74	1188241	5.74	1182297
	6.24	1216482	6.24	1212069
	6.74	1249734	6.74	1245321
	7.24	1280430	7.24	1276017
	7.74	1306789	7.74	1302376
	8.24	1315183	8.24	1310770
	8.57	1315965	8.57	1311552
	999.00	1315965	999.00	1311552

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
210970	0.00	436	0.00	436
	0.70	4625	0.70	4625
	1.20	31900	1.20	31900
	1.70	47067	1.70	47067
	2.20	58896	2.20	59038
	2.70	90375	2.70	90400
	3.20	252344	3.20	242050
	3.70	580951	3.70	522357
	4.20	971471	4.20	805394
	4.70	1256644	4.70	1060770
	5.20	1427930	5.20	1226952
	5.70	1510849	5.70	1309680
	6.20	1544248	6.20	1343547
	6.70	1569158	6.70	1368877
	7.20	1582235	7.20	1382307
	7.70	1589310	7.70	1389705
	8.20	1596846	8.20	1397521
	8.70	1599856	8.70	1400786
	9.20	1601604	9.20	1402766
	9.70	1602331	9.70	1403716
	10.20	1602736	10.20	1404341
	10.70	1603119	10.70	1404928
	11.20	1603467	11.20	1405482
	11.70	1603792	11.70	1406028
	12.15	1604026	12.20	1406547
	999.00	1604026	12.70	1406987
			13.20	1407409
			13.70	1407821
			14.20	1408226
			14.70	1408620
			15.20	1408986
			15.70	1409337
			16.20	1409682
			16.70	1410005
			17.20	1410321

6.15	643861	6.15	650477
6.65	736748	6.65	750289
7.15	786241	7.15	807472
7.65	814979	7.65	838969
8.15	833701	8.15	857884
8.65	845771	8.65	870132
9.15	848059	9.15	872596
9.65	848121	9.65	872817
10.08	848141	10.15	873000
999.00	848141	10.65	873139
		11.15	873275
		11.65	873411
		12.15	873529
		12.65	873657
		13.15	873780
		13.65	873887
		14.15	874010
		14.65	874125
		15.15	874251
		15.65	874370
		16.15	874491
		16.65	874613
		17.15	874722
		17.65	874835
		18.15	874943
		18.65	875055
		19.15	875165
		19.65	875319
		20.15	875441
		20.65	875562
		21.15	875677
		21.65	875790
		22.15	875903
		22.65	876015
		23.15	876128
		23.65	876240
		24.15	876363
		24.65	876482
		25.15	876606
		25.65	876725
		26.15	876845
		26.65	876963
		27.15	877073
		27.65	877182
		28.15	877295
		28.65	877417

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			17.70	1410624				29.15	877538
			18.20	1410917				29.65	877659
			18.70	1411194				30.15	877783
			19.20	1411455				30.65	877909
			19.70	1411703				31.15	878041
			20.20	1411941				31.65	878171
			20.70	1412143				32.15	878301
			21.20	1412322				32.65	878422
			21.70	1412486				33.15	878542
			22.20	1412637				33.65	878652
			22.70	1412784				34.15	878762
			23.20	1412940				34.65	878872
			23.70	1413093				35.15	878996
			24.20	1413245				35.65	879126
			24.70	1413428				36.15	879259
			25.20	1413692				36.65	879397
			25.70	1413989				37.15	879544
			26.20	1414297				37.65	879698
			26.70	1414618				38.15	879858
			27.20	1414932				38.65	880018
			27.70	1415256				39.15	880179
			28.20	1415580				39.65	880340
			28.70	1415833				40.15	880500
			29.20	1416067				40.65	880683
			29.70	1416282				41.15	880842
			30.20	1416480				41.65	880853
			30.70	1416667				41.99	880859
			31.20	1416842				999.00	880859
			31.70	1417036	Node	Corrected Model		Revised Model	
			32.20	1417229		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
			32.70	1417418	210750	0.00	436	0.00	436
			33.20	1417607		0.17	2196	0.17	2196
			33.70	1417815		0.67	15971	0.67	15971
			34.20	1418031		1.17	34766	1.17	34766
			34.70	1418279		1.67	56255	1.67	56255
			35.20	1418505		2.17	76240	2.17	76240
			35.70	1418737		2.67	102042	2.67	102042
			36.20	1418972		3.17	131667	3.17	131667
			36.70	1419211		3.67	179839	3.67	179239
			37.20	1419473		4.17	271444	4.17	266381
			37.70	1419743		4.67	470913	4.67	462909
			38.20	1420019		5.17	715769	5.17	701998
			38.70	1420275		5.67	874721	5.67	848584
			39.20	1420333		6.17	979416	6.17	927445
			39.70	1420338		6.67	1063929	6.67	1009714
			40.36	1420344		7.17	1096017	7.17	1048696

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			999.00	1420344		7.67	1104926	7.67	1061772

Node	Corrected Model		Revised Model						
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)					
210900	0.00	436	0.00	436					
	1.89	436	1.91	436					
	2.39	436	2.41	436					
	2.89	2849	2.91	1872					
	3.39	14070	3.41	13244					
	3.89	48730	3.91	48382					
	4.39	100630	4.41	100990					
	4.89	179865	4.91	177857					
	5.39	286698	5.41	283502					
	5.89	505147	5.91	491646					
	6.39	866343	6.41	820904					
	6.89	1193192	6.91	1106976					
	7.39	1418451	7.41	1305450					
	7.89	1513561	7.91	1383018					
	8.39	1556316	8.41	1422045					
	8.89	1585802	8.91	1451012					
	9.39	1599222	9.41	1463993					
	9.89	1605660	9.91	1470290					
	10.39	1611213	10.41	1475722					
	10.89	1613712	10.91	1478162					
	11.39	1615489	11.41	1479942					
	11.89	1617165	11.91	1481606					
	12.39	1618574	12.41	1483020					
	12.89	1619930	12.91	1484415					
	13.39	1622146	13.41	1486611					
	13.89	1623103	13.91	1487564					
	14.39	1624129	14.41	1488580					
	14.89	1625030	14.91	1489489					
	15.39	1625896	15.41	1490368					
	15.89	1626709	15.91	1491184					
	16.39	1627348	16.41	1491822					
	16.89	1628082	16.91	1492563					
	17.39	1628847	17.41	1493337					
	17.89	1629697	17.91	1494191					
	18.39	1630556	18.41	1495061					
	18.89	1631450	18.91	1495962					
	19.39	1632349	19.41	1496871					
	19.89	1633206	19.91	1497722					
	20.39	1634058	20.41	1498588					
	20.89	1634978	20.91	1499514					
	21.39	1635984	21.41	1500528					
						8.17	1108647	8.17	1068766
						8.46	1109180	8.67	1069570
						999.00	1109180	9.17	1069572
								9.67	1069577
								10.17	1069580
								10.67	1069583
								11.17	1069588
								11.67	1069590
								12.17	1069596
								12.67	1069600
								13.17	1069600
								13.67	1069606
								14.17	1069609
								14.67	1069612
								15.17	1069617
								15.67	1069620
								16.17	1069623
								16.67	1069627
								17.17	1069632
								17.67	1069633
								18.17	1069640
								18.67	1069642
								19.17	1069646
								19.67	1069650
								20.17	1069655
								20.67	1069657
								21.17	1069661
								21.67	1069666
								22.17	1069672
								22.67	1069673
								23.17	1069678
								23.67	1069681
								24.17	1069688
								24.67	1069691
								25.17	1069693
								25.67	1069698
								26.17	1069701
								26.67	1069707
								27.17	1069710
								27.67	1069713
								28.17	1069719
								28.67	1069722
								29.17	1069726

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21.89	1637029	21.91	1501583				29.67	1069731
22.39	1637862	22.41	1502404				30.17	1069734
23.00	1638262	22.91	1502770				30.67	1069739
999.00	1638262	23.41	1502788				31.17	1069745
		23.91	1502790				31.67	1069748
		24.41	1502795				32.17	1069753
		24.91	1502802				32.67	1069756
		25.41	1502811				33.17	1069765
		25.91	1502828				33.67	1069830
		26.41	1502856				34.17	1069953
		26.91	1502886				34.67	1070076
		27.41	1502930				35.17	1070203
		27.91	1502964				35.67	1070325
		28.41	1503016				36.17	1070454
		28.91	1503200				36.67	1070575
		29.41	1503381				37.17	1070773
		29.91	1503569				37.67	1070891
		30.41	1503749				38.17	1071017
		30.91	1503939				38.67	1071147
		31.41	1504133				39.17	1071291
		31.91	1504319				39.67	1071435
		32.41	1504507				40.17	1071584
		32.91	1504700				40.67	1071751
		33.41	1504894				41.17	1071932
		33.91	1505081				41.67	1072151
		34.41	1505267				42.17	1072383
		34.91	1505455				42.67	1072604
		35.41	1505644				43.17	1072821
		35.91	1505824				43.67	1073069
		36.41	1505991				44.17	1073385
		36.91	1506162				44.67	1073762
		37.41	1506343				45.17	1074214
		37.91	1506528				45.67	1074429
		38.41	1506715				46.14	1074457
		38.91	1506930				999.00	1074457
		39.41	1507132	Node	Corrected Model		Revised Model	
		39.91	1507335		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
		40.41	1507551	210030	0.00	436	0.00	436
		40.91	1507775		0.22	2606	0.22	2606
		41.41	1507992		0.72	5255	0.72	5255
		41.91	1508218		1.22	8439	1.22	8439
		42.41	1508475		1.72	11968	1.72	11968
		42.91	1508766		2.22	15869	2.22	15869
		43.41	1509046		2.72	44258	2.72	44258
		43.91	1509360		3.22	51182	3.22	51182
		44.41	1509759		3.72	57959	3.72	57959

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			44.91	1510220		4.22	66321	4.22	66317
			45.41	1510814		4.72	89276	4.72	89253
			45.91	1510877		5.22	129259	5.22	129191
			46.41	1510891		5.72	193563	5.72	193342
			46.91	1510900		6.22	268804	6.22	267769
			47.42	1510906		6.72	346045	6.72	344145
			999.00	1510906		7.22	432056	7.22	429504
Node	Corrected Model		Revised Model			7.72	560046	7.72	557081
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)		8.22	736347	8.22	732431
210050	0.00	436	0.00	436		8.72	1020645	8.72	1010318
	0.34	11031	0.34	14975		9.22	1385486	9.22	1354216
	0.84	15185	0.84	19453		9.72	1773259	9.72	1671807
	1.34	19681	1.34	24185		10.22	2036797	10.22	1834267
	1.84	24430	1.84	28260		10.72	2214468	10.72	1920683
	2.34	28522	2.34	30290		11.22	2334415	11.22	1995156
	2.84	30567	2.84	35589		11.72	2403099	11.72	2043915
	3.34	35881	3.34	62208		12.22	2421886	12.22	2063186
	3.84	62518	3.84	71227		12.72	2431754	12.72	2078450
	4.34	71561	4.34	84259		13.22	2438801	13.22	2090750
	4.84	84636	4.84	97266		13.72	2442687	13.72	2098743
	5.34	97697	5.34	109731		14.22	2446030	14.22	2106032
	5.84	110226	5.84	124455		14.72	2449754	14.72	2114380
	6.34	125079	6.34	149128		15.22	2454662	15.22	2124039
	6.84	150347	6.84	183323		15.72	2460321	15.72	2134730
	7.34	185269	7.34	251246		16.22	2467071	16.22	2146789
	7.84	255586	7.84	444461		16.72	2470096	16.72	2154602
	8.34	454033	8.34	741920		17.22	2472321	17.22	2160621
	8.84	767510	8.84	1143419		17.56	2472646	17.72	2162641
	9.34	1214415	9.34	1443523		999.00	2472646	18.22	2163259
	9.84	1553347	9.84	1609629				18.72	2163753
	10.34	1748586	10.34	1672926				19.22	2164051
	10.84	1829803	10.84	1729807				19.72	2164318
	11.34	1881125	11.34	1768972				20.22	2164522
	11.84	1917019	11.84	1792368				20.72	2164754
	12.34	1937784	12.34	1820689				21.22	2165054
	12.84	1967269	12.84	1837606				21.72	2165291
	13.34	1987991	13.34	1872151				22.22	2165513
	13.84	2030898	13.84	1884304				22.72	2165756
	14.13	2040150	14.34	1889405				23.22	2165984
	999.00	2040150	14.84	1894532				23.72	2166188
			15.34	1899585				24.22	2166400
			15.84	1904327				24.72	2166591
			16.34	1906234				25.22	2166794
			16.84	1907193				25.72	2166982
			17.34	1908320				26.22	2167170
			17.84	1909461				26.72	2167353

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			18.34	1910506				27.22	2167533
			18.84	1911502				27.72	2167650
			19.34	1912419				28.22	2167725
			19.84	1913276				28.72	2167736
			20.34	1914064				29.22	2167782
			20.84	1914792				29.72	2167813
			21.34	1915482				30.22	2167924
			21.84	1916123				30.72	2168243
			22.34	1916730				31.22	2168586
			22.84	1917297				31.72	2168660
			23.34	1917813				32.22	2168664
			23.84	1918297				32.72	2168676
			24.34	1918727				33.22	2168781
			24.84	1919119				33.72	2168900
			25.34	1919489				34.22	2169031
			25.84	1919804				34.72	2169155
			26.34	1919981				35.22	2169282
			26.84	1920095				35.72	2169408
			27.34	1920180				36.22	2169536
			27.84	1920244				36.72	2169665
			28.34	1920295				37.22	2169784
			28.84	1920528				37.72	2169896
			29.34	1920965				38.10	2169940
			29.84	1921379				999.00	2169940
			30.17	1921382	Node	Corrected Model		Revised Model	
			999.00	1921382		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
Node	Corrected Model		Revised Model		210810	0.00	436	0.00	436
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)		1.65	436	1.65	436
200280	0.00	436	0.00	436		2.15	4000	2.15	4000
	0.47	436	0.47	436		2.65	13752	2.65	13487
	0.97	7920	0.97	7920		3.15	27030	3.15	26027
	1.47	17755	1.47	17755		3.65	47380	3.65	45745
	1.97	26626	1.97	26626		4.15	87600	4.15	85377
	2.47	37479	2.47	37479		4.65	152253	4.65	149803
	2.97	58819	2.97	58819		5.15	239881	5.15	237771
	3.47	92441	3.47	92261		5.65	324836	5.65	322537
	3.97	139944	3.97	139609		6.15	448271	6.15	445017
	4.47	251345	4.47	248760		6.65	646470	6.65	641100
	4.97	443302	4.97	434809		7.15	843561	7.15	835463
	5.47	604728	5.47	588138		7.65	981743	7.65	968738
	5.97	740818	5.97	707018		8.15	1062431	8.15	1029777
	6.47	836698	6.47	784898		8.65	1118416	8.65	1069041
	6.97	870933	6.97	808802		9.15	1148838	9.15	1090551
	7.47	881981	7.47	818666		9.65	1158785	9.65	1099207
	7.97	884085	7.97	820200		10.15	1160490	10.15	1100624
	8.47	884544	8.47	820596		10.65	1160565	10.65	1100699

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	8.97	884745	8.97	820797		11.15	1160665	11.15	1100799
	9.47	884945	9.47	820997		11.45	1160715	11.45	1100849
	9.86	885145	9.86	821197		999.00	1160715	999.00	1100849
	999.00	885145	999.00	821197	Node	Corrected Model		Revised Model	
Node	Corrected Model		Revised Model			Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)	300012			0	70487.0389
300010			0.00	436				5.52	97250.6547
			2.98	436				6.52	123810.6378
			3.48	796				999	123810.6378
			3.98	2334				0	70487.0389
			4.48	7744	Node	Corrected Model		Revised Model	
			4.98	13990		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
			5.48	39882	300026			0	31318.78
			5.98	90871				9	68389.54
			6.48	145472				10	92517.88
			6.98	186551				999	92517.88
			7.48	207892	Node	Corrected Model		Revised Model	
			7.98	220378		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
			8.48	227046	300032			0	48622.24
			8.98	232368				5.74	100459.76
			9.48	237163				6.74	136815.07
			9.98	242061				999	136815.07
			10.48	247037					
			10.98	251131	Node	Corrected Model		Revised Model	
			11.48	253971		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
			11.93	255204	300030			0.00	436
			999.00	255204				3.20	436
Node	Corrected Model		Revised Model					3.70	436
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)				4.20	436
300020			0.00	436				4.70	753
			3.60	436				5.20	4273
			4.10	436				5.70	16022
			4.60	436				6.20	43235
			5.10	436				6.70	91695
			5.60	436				7.20	163043
			6.10	931				7.70	211011
			6.60	3326				8.20	226366
			7.10	6349				8.48	230475
			7.60	14106				999.00	230475
			8.10	20467	Node	Corrected Model		Revised Model	
			8.60	23461		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
			9.10	25452	230170	0.00	436	0.00	436
			9.60	25504		5.97	436	3.09	436
			10.10	25505		5.98	3185	3.59	436
			10.60	25506		6.98	28780	4.09	436
			11.10	25506		7.98	79123	4.59	436

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			11.60	25507		8.98	108044	5.09	641
			12.10	25507		9.98	129287	5.59	891
			12.60	25508		10.98	168025	6.09	1447
			13.10	25509		11.98	305273	6.59	3539
			13.60	25510		12.98	353075	7.09	12970
			14.10	25510		998.98	353075	7.59	39041
			14.60	25510				8.09	57465
			15.10	25512				8.59	69025
			15.60	25512				9.09	92717
			16.10	25512				9.59	124678
			16.60	25512				10.09	160559
			17.10	25513				10.59	192276
			17.60	25514				11.09	229124
			18.10	25514				11.59	288286
			18.60	25515				12.09	331708
			19.10	25515				12.59	360872
			19.60	25516				13.09	376157
			20.10	25516				13.57	380285
			20.60	25517				999.00	380285
			21.10	25517	Node	Corrected Model		Revised Model	
			21.60	25517		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
			22.10	25519	230160	0.00	436	0.00	2425.373
			22.60	25519		0.07	436	1.90	15793.6
			23.10	25519		0.08	2127	4.20	20602.12
			23.60	25519		0.18	2262	6.10	29711.77
			24.10	25521		0.28	2381	8.70	33161.49
			24.60	25521		0.38	2492	999.00	33161.49
			25.10	25521		0.48	2603		
			25.60	25522		0.58	2712		
			26.10	25523		0.68	2811		
			26.60	25524		0.78	2903		
			27.10	25529		0.88	2994		
			27.60	25816		0.98	3085		
			28.10	26662		2.08	22912		
			28.60	28209		3.08	25973		
			29.10	29825		4.08	28733		
			29.60	31394		5.08	33201		
			30.10	32746		6.08	38024		
			30.60	34091		7.08	40420		
			31.10	35443		8.08	42257		
			31.60	36801		8.69	42650		
			32.10	38134		999.08	42650		
			32.60	39479	Node	Corrected Model		Revised Model	
			33.10	40826		Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
			33.60	42170	300022			0.00	436
			34.10	43512				4.62	436

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			34.60	44870
			35.10	46228
			35.60	47563
			36.10	48905
			36.60	50255
			37.10	51604
			37.60	52955
			38.10	54316
			38.60	55676
			39.10	57024
			39.60	58409
			40.10	59840
			40.60	61342
			41.10	62865
			41.60	64479
			42.10	66131
			42.60	67885
			43.10	69733
			43.60	71683
			44.10	73771
			44.60	76037
			45.10	78492
			45.60	81215
			46.10	84353
			46.60	88182
			47.10	92516
			47.55	95135
			999.00	95135

Node	Corrected Model		Revised Model	
	Depth (ft)	Area (sqft)	Depth (ft)	Area (sqft)
300024			0.00	436
			6.20	436
			6.70	436
			7.20	436
			7.70	436
			8.20	436
			8.70	436
			9.20	436
			9.70	436
			10.20	436
			10.70	436
			11.20	436
			11.70	436
			12.20	436
			12.70	436
			13.20	436

		5.12	436
		5.62	2564
		6.12	12004
		6.62	30149
		7.12	45449
		7.62	52682
		8.12	56816
		8.62	59830
		9.12	62533
		9.62	65047
		10.12	67395
		10.62	69635
		11.12	71719
		11.62	73716
		12.12	75628
		12.62	77461
		13.12	79243
		13.62	80962
		14.12	82645
		14.62	84314
		15.12	85984
		15.62	87658
		16.12	89319
		16.62	90978
		17.12	92638
		17.62	94307
		18.12	95981
		18.62	97655
		19.12	99330
		19.62	101008
		20.12	102683
		20.62	104356
		21.12	106030
		21.62	107709
		22.12	109379
		22.62	111057
		23.12	112734
		23.62	114422
		24.12	116122
		24.62	117825
		25.12	119530
		25.62	121219
		26.12	122908
		26.62	124596
		27.12	126265
		27.62	127886

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			13.70	436				28.12	129450
			14.20	436				28.62	130964
			14.70	436				29.12	132413
			15.20	788				29.62	133839
			15.70	1557				30.12	135265
			16.20	3406				30.62	136681
			16.70	5383				31.12	138098
			17.20	7252				31.62	139514
			17.70	9040				32.12	140930
			18.20	10763				32.62	142340
			18.70	12399				33.12	143760
			19.20	13982				33.62	145187
			19.70	15510				34.12	146613
			20.20	16985				34.62	148028
			20.70	18420				35.12	149450
			21.20	19807				35.62	150892
			21.70	21174				36.12	152354
			22.20	22516				36.62	153836
			22.70	23866				37.12	155361
			23.20	25208				37.62	156890
			23.70	26547				38.12	158586
			24.20	27907				38.62	160298
			24.70	29484				39.12	162023
			25.20	31098				39.62	163801
			25.70	32704				40.12	165626
			26.20	34326				40.62	167532
			26.70	35893				41.12	169503
			27.20	37050				41.62	171475
			27.70	37525				42.12	173470
			28.20	37529				42.62	174834
			28.58	37532				999.00	174834
			999.00	37532					

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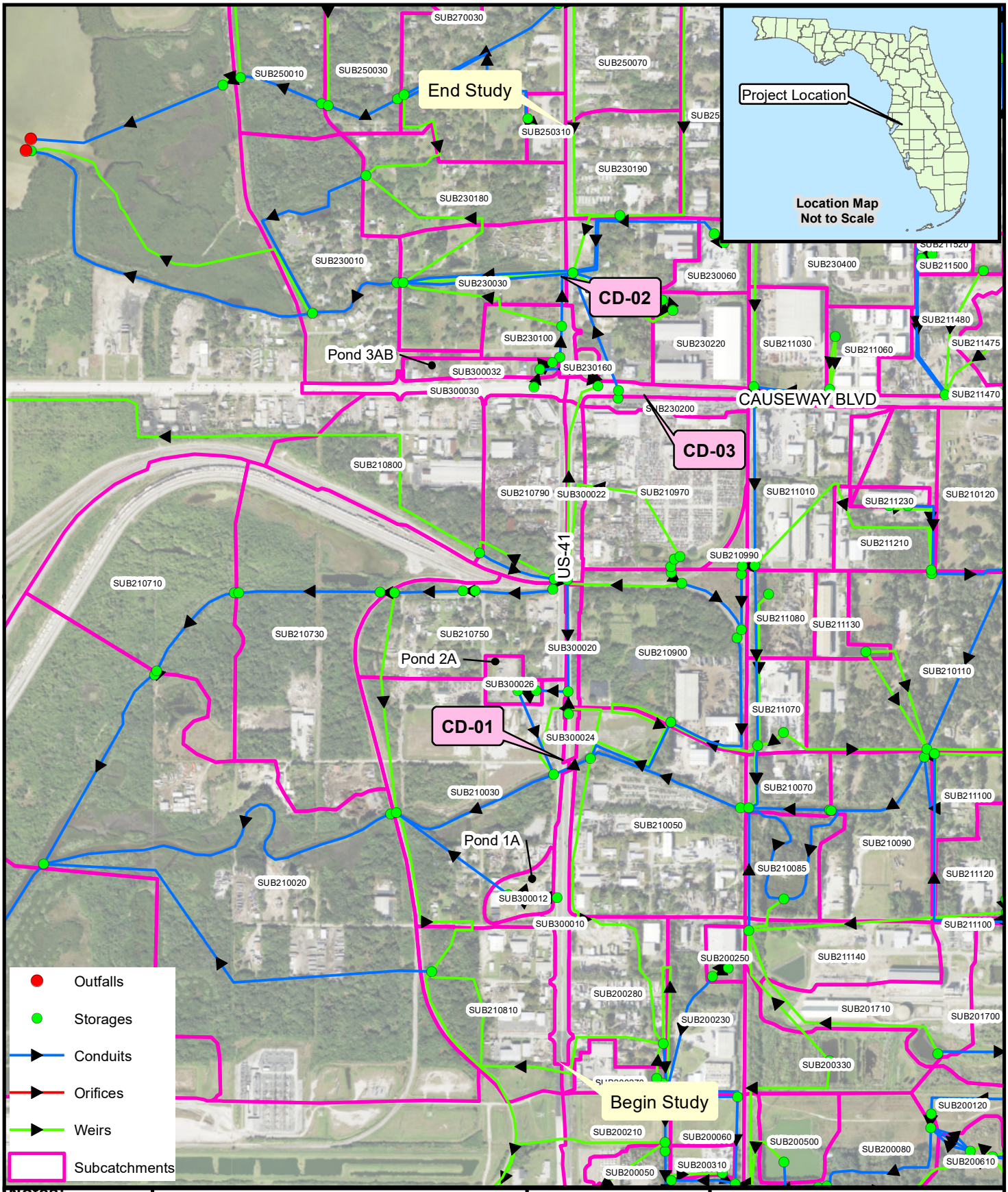

Notes:

A- Project: 18033

B- Data From - Imagery, Esri
Dalaney Creek Model

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 1,000
1" = 1000'

RK&K

Proposed Drainage Map
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\For Liz\ProposedDrainageMap.mxd

APPENDIX H

Environmental Desktop Review

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Pond Site ID	Feature	Land Use	Wetland and Other Surface Water Involvement	Wetland and Other Surface Water Acreage	Estimated Wetland Mitigation Cost[1]	Protected Species Involvement
Basin 1						
1A	Parcel (3.39 Total Acres)	Commercial and Transportation	Moderate (only at outfall to Delaney Creek)	0	$0	Moderate (outfall at Delaney Creek)
	Pond (2.84 Total Acres)	Commercial and Transportation		**0**	$0	
	Outfall (0.44 Total Acres)	Commercial, Residential, Transportation, and Mangrove Swamp		**0.01 (Wetlands)**	$1,468.82	
1B	Parcel (2.98 Total Acres)	Commercial and Roadside Ditches	Low	0.02 (Roadside Ditch)[2]	$0	None
	Pond (2.51 Total Acres)	Commercial	Low	**0**	$0	
1C	Parcel (7.06 Total Acres)	Commercial, Delaney Creek, and Mixed Wetland Hardwoods	Low	0.19 (Delaney Creek), 0.04 (Wetlands)	$0	Moderate (proximity to Delaney Creek)
	Pond (2.55 Total Acres)	Commercial		**0.002 (Delaney Creek)**	$0[3]	

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Basin 2						
2A	Parcel (3.01 Total Acres)	Commercial	Moderate (only at outfall to Delaney Creek)	0.16 (Drainage Ditches)	$0	Moderate (Outfall at Delaney Creek)
	Pond (2.53 Total Acres)	Commercial		**0**	$0	
	Outfall (1.01 Total Acres)	Commercial, Transportation, Drainage Ditches, and Mangrove Swamp		**0.002 (Delaney Creek), 0.08 (Drainage Ditch), 0.07 (Wetlands)**	$10,281.74	
2B	Parcel (4.23 Total Acres)	Commercial	None	0	$0	Low
	Pond (2.46 Total Acres)	Commercial		**0**	$0	
Basin 3						
3A	Parcel (1.66 Total Acres)	Commercial, Transportation, and Stormwater Pond	Low (Existing Stormwater Pond)	0.07 (Existing Stormwater Pond)	$0	Low
	Pond (1.36 Total Acres)	Commercial, Transportation, and Stormwater Pond		**0.56 (Existing Stormwater Pond)**	$0	
3B	Parcel (2.06 Total Acres)	Commercial and Transportation	None	0	$0	None

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	Pond (1.71 Total Acres)	Commercial and Transportation		**0**	$0	
3C	Parcel (2.08 Total Acres)	Commercial	Moderate (Outfall at Unnamed Creek)	0	$0	Moderate (Outfall at Unnamed Creek)
	Pond (1.77 Total Acres)	Commercial		**0**	$0	
	Outfall (0.66 Total Acres)	Commercial, Transportation, Roadside Ditches, and Mangrove Swamp		**0.03 (Drainage Ditches), 0.01 (wetlands)**	$1,468.82	
3D	Parcel (1.88 Total Acres)	Commercial	Moderate (Outfall at Unnamed Creek)	0	$0	Moderate (Outfall at Unnamed Creek)
	Pond (1.57 Total Acres)	Commercial		**0**	$0	
	Outfall (0.66 Total Acres)	Commercial, Transportation, Roadside Ditches, and Mangrove Swamp		**0.03 (Drainage Ditches), 0.01 (wetlands)**	$1,468.82	

1: Prices based on the FDOT Work Program Instructions (9/9/2022) for wetland mitigation estimates for FY 2025/2026. Costs are subject to change based on credit availability, bank used, and alternative mitigation methods (such as applicant-responsible mitigation).

2: Assumes wetlands and other surface waters that occur within a pond parcel, but not the limits of the proposed pond or outfall will not be impacted.

3: Mitigation credit purchase is only required for impacts to wetlands, not other surface waters.

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APPENDIX I

Cultural Resources Desktop Review

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MAIN OFFICE
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JANUS RESEARCH

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Memorandum

To: Gordon Mullen, RK&K
From: Janus Research
Date: November 3, 2022
Re: Updated Cultural Resources Desktop Analysis of Potential Pond Site Alternatives for the US 41/SR 45/S. 50th Street at CSX Grade Separation PD&E Study from South of Causeway Boulevard to North of Causeway Boulevard (FPID No. 440749-1-22-01), Hillsborough County, Florida

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At the request of the Florida Department of Transportation (FDOT) District 7, and in association with RK&K, Janus Research conducted an updated cultural resources desktop analysis of the final pond site alternatives for the US 41/SR 45/S. 50th Street at CSX Grade Separation Project Development and Environment (PD&E) Study from south of Causeway Boulevard to north of Causeway Boulevard in Hillsborough County, Florida (Attachment 1). A cultural resources assessment survey (CRAS) for the associated PD&E study improvements is ongoing, and available information from that effort is included within this updated desktop memorandum. This updated desktop analysis is intended to inform the cultural resources information included in the associated Pond Siting Report (PSR) by providing information regarding the locations of previously recorded (or recently recorded) cultural resources within the study areas for the alternatives, and to determine preliminary zones of archaeological site potential for each pond site and outfall. The proposed pond site alternatives consist of nine pond locations, and three areas of public right of way (ROW) associated with proposed drainage outfall pipes, located in Sections 28, 33, and 34 of Township 29 South, Range 19 East, on the Tampa (1956 Photorevised [PR] 1981) U.S. Geological Survey (USGS) quadrangle map.

STUDY AREA

To account for both potential ground disturbance and changes in ownership, the study area for archaeological resources consisted of the footprints of the parcel containing each of the pond siting alternatives, as well as the footprints of the area of ROW containing the drainage outfalls (Attachment 2). The study area for historic resources also consisted of the footprints of the parcels and ROW containing the pond siting alternatives and drainage outfalls, as well as a 150-foot buffer off of the proposed pond footprints to account for potential visual effects to any previously recorded or potentially historic resources proximate to the pond siting locations (Attachment 3).

METHODS

An updated archaeological and historical literature and background information search was conducted to determine the types, chronological placement, and locational patterning of cultural resources proximate to the pond siting alternatives. This included a search of the Florida Master Site File (FMSF)[1] and unpublished cultural resource management (CRM) reports. In addition, land use history and environmental variables known to be associated with prehistoric and historic sites were reviewed. Background research methods included a search of the FMSF to identify cultural resources that are listed, eligible, or potentially eligible for listing in the *National Register of Historic Places* (National Register) and resources with potential or confirmed human remains. The soil types and environmental characteristics of the proposed pond sites and outfalls were also evaluated to assess previous disturbances in the study area for archaeological resources and the potential for intact archaeological deposits and significant sites. A review of General Land Office (GLO) historic plat maps, aerial photographs, and topographic maps was also conducted to establish the pre-development environment and land use history of the pond site alternatives, assess previous levels of disturbance and identify any additional extant potential historic resources within the study area. Hillsborough County property appraiser data were also reviewed to identify potential historic resources.

DESKTOP ANALYSIS

An updated review of previous and ongoing cultural resource survey work was done to gain an understanding of the types of precontact and historic period sites that could be expected to occur within the study area. A search of pertinent literature and records was also conducted to determine the locations of previously recorded National Register–listed, eligible, and potentially eligible resources within the study area.

Previously Conducted Cultural Resources Surveys

An updated FMSF search identified six previously conducted cultural resource surveys that intersect the pond siting study area (Table 1). The review of these surveys determined that the majority of the Pond Siting study areas have not been previously surveyed for archaeological resources, nor recently surveyed for historic resources.

Table 1. Previous Cultural Resource Surveys that Intersect the Pond Siting Study Area

FMSF Survey No.	Report Title	Author	Date
816	A Preliminary Archaeological and Historical Survey of the Tampa-Hillsborough 201 Plan	Miller, James J.	1979
3515	An Archaeological and Historical Resource Assessment of the 22nd Street/22nd Street Causeway Boulevard (S.R. 676) PD&E Corridor (from U.S. 301 to S.R. 60), City of Tampa and Hillsborough County	HDR Engineering, Inc.	1992

[1] The FMSF is an important planning tool that assists in identifying potential cultural resources issues and resources that may warrant further investigation and protection. It can be used as a guide but should not be used to determine the official position of the State Historic Preservation Officer (SHPO) regarding the significance of a resource. Due to COVID-19 safety protocols, the FMSF data may not be current.

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FMSF Survey No.	Report Title	Author	Date
11590	Cultural Resource Assessment Survey, Technical Memorandum, SR 676 (Causeway Boulevard) From US 41 to US 301, Recommended Pond and Floodplain Compensation (FPC) Alternative Sites, Hillsborough County, Florida	ACI	2004
20682	Cultural Resource Assessment Survey US 41 (SR 45) from Kracker Avenue to South of SR 676 (Causeway Boulevard), Project Development and Environment (PD&E) Study, Hillsborough County, Florida, WPI Segment No. 530056 1	ACI	2013
22377	State Road 676 from South Approach of 22nd Street Causeway Bridge to State Road 45 (US 41)	William Browning	1974
22378	US 41 Grade Separation at Seaboard Coastline Railroad Crossing at Port Sutton	William Browning	1974

A pedestrian survey was conducted along US 41 and 22nd Street near Ponds 2A, 2B, 3A, 3B, 3C, and 3D during *An Archaeological and Historical Resource Assessment of the 22nd Street/22nd Street Causeway Boulevard (SR 676) PD&E Corridor (from US 301 to SR 60)* (HDR Engineering, Inc./ACI 1992; FMSF Manuscript No. 3515). However due to the age of the report, the information provided, and the scale of the mapping included in the CRAS document, it is not clear whether any subsurface testing was conducted within or adjacent to the current archaeological study area. Regardless, no archaeological sites were identified within or adjacent to any of the current pond siting alternatives as a result of the 1992 field efforts.

The *Cultural Resource Assessment Survey, US 41 (SR 45) from Kracker Avenue to South of SR 676 (Causeway Boulevard), PD&E Study, Hillsborough County, Florida* (ACI 2013; FMSF Manuscript No. 20682) was conducted along US 41 and partially overlapped with portions of the current historic resources study area. The 2013 survey recorded four historic resources within the current study area including three buildings (8HI12105–8HI12107) and a portion of US 41 (8HI12129). These previously recorded resources were determined ineligible for listing in the National Register by the SHPO on February 10, 2014. While no archaeological field survey was conducted within the current archaeological survey area during the 2013 survey, four shovel tests were excavated within the US 41 ROW in the vicinity of Ponds 1A and 1B, and the parcel containing Pond 1C. No cultural material was recovered within these four shovel tests.

Archaeological fieldwork conducted recently as part of the ongoing CRAS effort resulted in the pedestrian survey of the southern half of the ROW containing the drainage outfall associated with Pond 1A, the westernmost quarter of Pond 2B, the eastern half of Pond 3A, and a very small portion of Pond 3B. Except for two shovel tests excavated within the westernmost quarter of Pond 2B (both of which were negative for cultural material) no subsurface testing was feasible within these areas due to the presence of existing hardscape, underground utilities, standing water, and exiting retention ponds. The ongoing CRAS efforts have also identified six newly identified historic buildings (8HI15326, 8HI15330, 8HI15335–8HI15338) and the previously unrecorded segment of US 41 (8HI12129) to the North of Causeway Boulevard within the study area for historic resources. These resources are discussed in further detail within the *Search of In-House Data Related to Ongoing CRAS Survey* section of the current memorandum.

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The review of past survey work indicated that the majority of the archaeological study area is within areas where no archaeological survey work meeting current legal standards has occurred. In addition, the review noted that much of the historic resources study area has not been recently surveyed for historic resources and that numerous cultural resources have become historic within the historic resources study area since the past survey work occurred, due to the time that has passed since the previous surveys were conducted.

Previously Recorded Archaeological Sites
An updated search of the FMSF data confirmed there are still no previously recorded archaeological sites recorded within or adjacent to the archaeological study area for the proposed pond sites. In addition, no archaeological sites or occurrences were identified within or adjacent to the archaeological study area as a result of the ongoing CRAS work.

Previously Recorded and Potential Historic Resources

Updated Search of FMSF Data
An updated search of the FMSF data identified four previously recorded historic resources within the historic resources study area (Table 2), including one road segment (8HI12129) and three previously recorded structures (8HI12105–8HI12107). The segment of US 41 (8HI12129) within the study area located south of its intersection with Causeway Boulevard, as well as the three previously recorded structures, were recorded by ACI in 2013 as a result of the survey work for FMSF Manuscript No. 20682. Each of these four historic resources was determined National Register–ineligible by the SHPO on February 10, 2014. The locations of these resources relative to the historic resources study area are illustrated on aerial mapping in Attachment 3.

No previously recorded historic resources were identified within the direct footprints of the proposed pond sites. However, the previously recorded resources are located within the historic resource study areas established for four of the proposed ponds (Ponds 1A, 1B, 2A, and 2B).

- 2 Previously Recorded Resources Within the Parcel and/or Historic Resources Study Area for Pond 1A
  - 3825 S US 41 (8HI12105)
  - US 41 (8HI12129)
- 2 Previously Recorded Resources Within the Parcel and/or Historic Resources Study Area for Pond 1B
  - 3630 S US 41 (8HI12106)
  - US 41 (8HI12129)
- 2 Previously Recorded Resources Within the Historic Resources Study Area for Pond 2A
  - 3309 S US 41 (8HI12107)
  - US 41 (8HI12129)
- 1 Previously Recorded Resource Within the Historic Resources Study Area for Pond 2B
  - US 41 (8HI12129)

No previously recorded historic resources were identified within the historic resources study areas established for Ponds 1C, 3A, 3B, 3C, or 3D.

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Table 2. Previous Recorded and Recently Recorded Historic Resources Within the Study Area

FMSF No.	Resource Name / Address	Year Built	Style/Type	National Register Evaluation	Relevant Pond/Outfall/Buffer (Bolded if Within Pond Footprint)
8HI12105	3825 S US 41	c. 1948	Masonry Vernacular	Determined National Register–Ineligible by the SHPO	Within Parcel Containing Pond 1A; Within 150-Feet of Pond 1A
8HI12106	3630 S US 41	c. 1950	Masonry Vernacular	Determined National Register–Ineligible by the SHPO	Within or Directly Adjacent to Parcel Containing Pond 1B; Within 150 Feet of Pond 1B
8HI12107	3309 S US 41	c. 1958	Masonry Vernacular	Determined National Register–Ineligible by the SHPO	Within 150 Feet of Pond 2A
8HI12129	US 41	c. 1915	Road Segment	Portions Determined National Register–Ineligible by the SHPO	Within 150 Feet of Ponds 1A, 1B, 2A, and 2B
				Portions Considered National Register–Ineligible as Part of Ongoing CRAS	Within 150 Feet of Pond 3A
8HI15326	3900 S 50th Street	c. 1973	Industrial Vernacular	Considered National Register–Ineligible as Part of Ongoing CRAS	Within 150 Feet of Pond 1B
8HI15330	4920 Trenton Street	c. 1957	Masonry Vernacular	Considered National Register–Ineligible as Part of Ongoing CRAS	Within 150 Feet of Pond 1A
8HI15335	**4702 E Causeway Boulevard**	**c. 1959**	**Masonry Vernacular**	**Considered National Register–Ineligible as Part of Ongoing CRAS**	**Within Footprint of Pond 3B/Parcel Containing Pond 3B; Within 150 Feet of Pond 3C**
8HI15336	**4711 El Camino Boulevard**	**c. 1959**	**Masonry Vernacular**	**Considered National Register–Ineligible as Part of Ongoing CRAS**	**Within Footprint of Pond 3B/Parcel Containing Pond 3B**
8HI15337	**4714 Causeway Boulevard**	**c. 1970**	**Masonry Vernacular**	**Considered National Register–Ineligible as Part of Ongoing CRAS**	**Within Footprint of Pond 3B/Parcel Containing Pond 3B; Within 150 Feet of Pond 3A**
8HI15338	**4916 Causeway Boulevard**	**c. 1974**	**Industrial Vernacular**	**Considered National Register–Ineligible as Part of Ongoing CRAS**	**Within Footprint of Pond 3A/Parcel Containing Pond 3A**

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Search of In-House Data Related to Ongoing CRAS Survey
The review of in-house data identified six additional historic structures (8HI15326, 8HI15330, and 8HI15335–8HI15338) that were recently recorded within the historic resources study area as a result of the ongoing CRAS (see Table 2). An additional segment of US 41 (8HI12129) located to the north of its intersection with Causeway Boulevard was also recorded as a result of the ongoing CRAS effort. Preliminary research suggests that each of these six buildings, as well as the newly recorded segment of US 41, will be considered National Register–ineligible. However, please note that coordination with the SHPO regarding the National Register eligibility of these seven resources has not yet occurred.

Four of the six buildings are located within the footprints of two proposed ponds: Ponds 3A and 3B:

- 1 Newly Identified Resources Within the Footprint of Pond 3A
  - 4916 Causeway Boulevard (8HI15338)
- 3 Recently Identified Resources Within the Footprint of Pond 3B
  - 4702 E Causeway Boulevard (8HI15335)
  - 4711 El Camino Boulevard (8HI15336)
  - 4714 Causeway Boulevard (8HI15337)

Four of the six buildings, and the one historic linear road segment, also fall within the historic resources study areas established for four of the ponds, Ponds 1A, 1B, 3A, and 3C.

- 1 Recently Identified Resource Within the Historic Resources Study Area for Pond 1A
  - 4920 Trenton Street (8HI15330)
- 1 Recently Identified Resource Within the Historic Resources Study Area for Pond 1B
  - 3900 S 50th Street (8HI15326)
- 2 Recently Identified Resources Within the Historic Resources Study Area for Pond 3A
  - US 41 (8HI12129) (to the North of Causeway Boulevard)
  - 4714 Causeway Boulevard (8HI15337)
- 1 Recently Identified Resource Within the Historic Resources Study Area for Pond 3C
  - 4702 E Causeway Boulevard (8HI15335)

No recently identified resources were noted within the historic resources study areas for Ponds 1C, 2A, 2B, and 3D.

Parcels with Potential Unrecorded Historic Resources
An updated search of the Hillsborough County Property Appraiser data identified 29 parcels with historic Actual Year Built (AYRB) dates (of 1974 or earlier) that were intersected by the historic resources study area (Table 3). The locations of these parcels relative to the historic resources study area are illustrated on aerial mapping in Attachment 3. Nine (9) of these 29 parcels already contain a previously recorded, or recently identified historic structure, leaving 20 parcels with the potential for unrecorded historic buildings. A review of these 20 parcels relative to the currently proposed pond locations identified only one unrecorded historic building located directly within the footprint of a proposed pond.

- 1 Building within the Footprint of Pond 1B
  - 5108 Trenton Street: c. 1945 warehouse/distribution building

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The review of the parcel data also determined that an additional 9 historic buildings are expected to fall within the historic resources study areas for the proposed ponds, but outside of the footprint of any proposed ponds or outfalls:

- 2 Buildings Within the Historic Resources Study Area for Pond 1B
  - 5026 Trenton Street: c. 1949 commercial building
  - 5020 Trenton Street: c. 1963 warehouse/distribution building
- 3 Buildings Within the Historic Resources Study Area for Pond 2A
  - 4721 S 34th Avenue: c. 1959 residential building
  - 4915 S 34th Avenue: c. 1966 residential building
  - 4917 S 34th Avenue: c. 1962 residential building
- 3 Buildings Within the Historic Resources Study Area for Both Ponds 3C and 3D
  - 4505 S 26th Avenue: c. 1959 residential building
  - 4507 S 26th Avenue: c. 1959 residential building
  - 4509 S 26th Avenue: c. 1959 residential building
- 1 Building Within the Historic Resources Study Area for Pond 3D
  - 4511 S 26th Avenue: c. 1959 residential building

Lastly, the review identified no expected extant historic buildings within the historic resources study areas established for Ponds 1A, 1C, 2B, 3A, or 3B.

Table 3. Parcels with Historic Build Dates Intersected by the Historic Resources Study Area

Parcel Address	AYRB Date	Relevant Pond/Outfall/Buffer	Building Type	Expected Extant Historic Building Within Study Area?[1]
Pond 1A				
4906 Trenton Street	c. 1955	Parcel Within 150-Foot Buffer of Pond 1A; Adjacent to but Outside Associated Outfall	Residential	No; Expected Extant Historic Building is Outside of Study Area for Pond 1A to the North
Pond 1B				
5018 Trenton Street	**c. 1945**	**Parcel Within Footprint of Pond 1B/Parcel Containing Pond 1B**	**Warehouse/ Distribution**	**Yes; Extant Historic Building Expected Within Footprint of Pond 1B**
5026 Trenton Street	c. 1949	Parcel Within 150-Foot Buffer of Pond 1B	Commercial	Yes; Extant Historic Building Expected On Parcel Adjacent to but Outside of Pond 1B
Ponds 1B and 1C				
5020 Trenton Street	c. 1963	Parcel Within 150-Foot Buffer of Ponds 1B and 1C	Warehouse/ Distribution	Yes; Extant Historic Building Expected Within Study Area for Pond 1B (Just Outside Study Area for Pond 1C to South)
Pond 1C				
5132 Trenton Street	c. 1964	Parcel Within 150-Foot Buffer of Pond 1C	Warehouse/ Distribution	No; Expected Extant Historic Building is Outside of Study Area for Pond 1C to the South
5103 36th Avenue	c. 1973	Parcel Within 150-Foot Buffer of Pond 1C	Commercial	No; Expected Extant Historic Building is Outside of Study Area for Pond 1C to the North

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Parcel Address	AYRB Date	Relevant Pond/Outfall/Buffer	Building Type	Expected Extant Historic Building Within Study Area?[1]
Pond 2A				
4721 S 34th Avenue	c. 1959	Parcel Within 150-Foot Buffer of Pond 2A	Residential	Possible; Expected Extant Historic Building May Just Touch the Edge of the Study Area for Pond 2A
4915 S 34th Avenue	c. 1966	Parcel Within 150-Foot Buffer of Pond 2A	Residential	Yes; Extant Historic Building Expected On Parcel Adjacent to but Outside of Pond 2A
4917 S 34th Avenue	c. 1962	Parcel Within 150-Foot Buffer of Pond 2A	Residential	Yes; Extant Historic Building Expected On Parcel Adjacent to but Outside of Pond 2A
4724 S 34th Avenue	c. 1956	Parcel Within 150-Foot Buffer of Pond 2A	Residential	No; Expected Extant Historic Building is Outside of Study Area for Pond 2A to the Northwest
3314 Dorothy's Dream Place	c. 1968	Parcel Within 150-Foot Buffer of Pond 2A	Residential	No; Expected Extant Historic Building is Outside of Study Area for Pond 2A to the Northeast
Pond 2B				
3330 S 50th Street	c. 1974	Parcel Within 150-Foot Buffer of Pond 2B	Warehouse/ Distribution	No; Ongoing CRAS Suggests Building is in Ruinous Condition on Parcel Located Adjacent to Pond 2B
Ponds 3A and 3B				
4720 El Camino Blanco Boulevard	c. 1949	Parcel Within 150-Foot Buffer of Ponds 3A and 3B	Residential	No; Expected Extant Historic Building on Parcel is Outside of Study Area for Ponds 3A and 3B to the North
4902 El Camino Blanco Boulevard	c. 1953	Parcel Within 150-Foot Buffer of Ponds 3A and 3B	Residential	No; Expected Extant Historic Building on Parcel is Outside of Study Area for Ponds 3A and 3B to the North
4904 El Camino Blanco Boulevard	c. 1951	Parcel Within 150-Foot Buffer of Ponds 3A and 3B	Residential	No; Expected Extant Historic Building on Parcel is Outside of Study Area for Ponds 3A and 3B to the North
Pond 3C				
4515 S 26th Avenue	c. 1965	Parcel Within 150-Foot Buffer of Pond 3C	Residential	No; Expected Extant Historic Building on Parcel is Outside of Study Area for Pond 3C to the North
Ponds 3C and 3D				
4505 S 26th Avenue	c. 1959	Parcel Within 150-Foot Buffer of Ponds 3D and 3C	Residential	Yes; Extant Historic Building Expected On Parcel Adjacent to but Outside of Pond 3D

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Parcel Address	AYRB Date	Relevant Pond/Outfall/Buffer	Building Type	Expected Extant Historic Building Within Study Area?[1]
Ponds 3C and 3D (continued)				
4507 S 26th Avenue	c. 1959	Parcel Within 150-Foot Buffer of Ponds 3D and 3C	Residential	Yes; Extant Historic Building Expected On Parcel Adjacent to but Outside of Ponds 3C and 3D
4509 S 26th Avenue	c. 1959	Parcel Within 150-Foot Buffer of Ponds 3D and 3C	Residential	Yes; Extant Historic Building Expected On Parcel Adjacent to but Outside of Ponds 3C and 3D
4511 S 26th Avenue	c. 1959	Parcel Within 150-Foot Buffer of Ponds 3D and 3C	Residential	Yes; Extant Historic Building Expected On Parcel Adjacent to but Outside of Ponds 3C and 3D

[1] Orange highlighting with bold text indicates a historic building located within the parcel is located within the footprint of a proposed pond. Blue highlighting indicates that a historic building located within the parcel is located within the historic resources study area for the proposed ponds. This is based on a review of Google Earth and other aerial imagery and would need to be confirmed via a field survey.

Environmental Setting

An updated review of the GLO historic plat maps and surveyor's field notes (Florida Department of Environmental Protection [FDEP] 1852a, 1852b) was conducted to examine past environmental conditions within the vicinity of the pond siting alternatives (Attachment 4). The pond siting alternatives are primarily located within an area generally described as saw palmetto country. The presence of pine is also evident based on the review of the surveyor's notes; albeit to a lesser degree.

Portions of Ponds 1B and the Pond 2A Drainage Outfall are shown on the plat map as being intersected by an unlabeled creek (noted on later mapping as Delaney Creek). Portions of Ponds 1A, 1B, and 2A, as well as the Pond 1A Drainage Outfall, are located less than 200 meters from the course of the creek depicted on the 1852 map. Pond 2B is located over 200 meters north of the creek. Each of the ponds described above is at least 0.75 miles east of Hillsborough Bay.

The northern grouping of pond siting alternatives (Ponds 3A, 3B, 3C, and 3D), as well as the associated Pond 3C - 3D Outfall, are approximately one-half mile north of Delaney Creek and one-half mile east of Hillsborough Bay. A former sawgrass pond is illustrated on the plat map intersecting the locations of Ponds 3B and 3C and is also adjacent to the eastern boundary of Pond 3D. No hammock vegetation or areas of increased elevation were noted within or adjacent to the archaeological study area on the plat maps or surveyor's notes. The historic plat maps and surveyor's notes were also reviewed for evidence of early settlement and no structures, military forts, roads, encampments, battlefields, homesteads, fields, or historic Native American villages or trails were noted in the vicinity of the pond siting alternatives.

An updated review of aerial photographs from 1938, 1948, 1957, 1965, 1968, 1973, 1976, 1980, and 1987 (FDOT, Surveying and Mapping Office 1996-2021; University of Florida, George A. Smathers Libraries 2021) was conducted to examine past land use and identify

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environmental features indicative of increased archaeological site potential. In 1938, the southernmost and central pond siting locations are all visible within 200 meters of meandering portions of, and additional channelized portions of, Delaney Creek (Attachment 5). While portions of Pond 1C and 2B are in low, wet areas, Ponds 1A, 1B, and 2A, as well as the Pond 1A and Pond 2A Drainage Outfalls are in open grassy areas containing scattered vegetation. While several ponds and wetlands are visible within the vicinity of the northern pond siting locations, the large sawgrass pond from the plat maps is not visible within or adjacent to Ponds 3A, 3B, 3C, and 3D, nor the Pond 3C - 3D Drainage Outfall. Ponds 3A, 3C, and 3D, as well as the Pond 3C - 3D Drainage Outfall, are within open grassy areas containing sparse, scattered vegetation. Ponds 3C and 3D, and their associated drainage outfall, appear to be within an area that is low, wet, and potentially containing standing water. Sporadic development is already visible within and adjacent to the archaeological study area in 1938, as evidenced by the presence of US 41, 22nd Street Causeway, intermittent access drives, buildings, and small unimproved paths. No hammock vegetation was noted within or adjacent to any of the pond siting alternatives during the review of the 1938 aerial photographs. While individual photo tiles were not available from the 1948 flight path in this area, the review of the 1948 aerial flight index suggested minor areas of increased development near Ponds 3A and 3B. No major changes within the archaeological study area were noted between 1938 and 1948.

By 1957 (Attachment 5), various roadways, accessways, and structures are visible within and near the southern and central pond siting alternatives, and evidence of vegetation clearing is visible within Pond 2B. Portions of Pond 1C still appear low and wet in the late-1950s. Evidence of land modification and disturbance associated with residential development and structures is visible within portions of each of the northern pond siting alternatives.

As evidenced by aerials from 1965 and 1968, by the mid-to-late 1960s (Attachment 5), the majority of the previously meandering portions of Delaney Creek in the vicinity of the southern and central pond siting alternatives have been filled and leveled, while the channelized portion is still visible adjacent to but outside of the archaeological study area and remains today. Numerous buildings are visible within Pond 2A in the late-1960s, likely associated with a former mobile home park. Except for Pond 2B, evidence of structures is also present within portions of all of the southern and central pond siting alternatives. The previously cleared portion of Pond 2B has become overgrown and an outbuilding is visible outside of Pond 2B, to the south of the previously cleared area. Additional buildings, access drives, and parked vehicles are present within the northernmost pond sites by 1965, with a large number of vehicles and storage materials visible within what is now 4510 and 4512 Causeway Boulevard. In addition, a transmission line corridor is visible running primarily north-south within and adjacent to the Pond 3C - 3D Drainage Outfall, west of Ponds 3C and 3D.

In the 1970s and early-1980s (Attachment 5), Pond 1A had been cleared and structures and storage containers are visible. Additional modifications are visible within the northern half of Pond 1B and Pond 1C, and numerous vehicles are often parked within these pond siting alternatives. The mobile home park formerly located within Pond 2A is no longer extant by 1980. Land modifications are visible extending slightly into the southern portions of Pond 2B starting in 1973 and expanding through 1980. There is minimal change visible within the northernmost pond siting alternatives during this time, within which these ponds contain a mixture of what appear to be primarily residential and commercial structures. Several former structures are no longer extant within Pond 3A by 1976, and many of the vehicles have been removed from the areas of Ponds 3C and 3D by this time.

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Minimal change is visible within the areas containing the other pond siting alternatives and their associated drainage outfalls by 1987 (Attachment 5). Only the area containing Pond 1B exhibits any changes, as it has been further modified and new non-historic structures and storage containers are visible by 1987.

The review of more recent aerial imagery available from Google Earth (2022) ranging from 1995 through 2022 was conducted to identify additional land modification occurring since the late-1980s (see Attachments 2 and 3 for the study areas illustrated on more recent aerial imagery). Pond 1A exhibited minimal observable changes, with a small area of remaining vegetation cleared in the northeast corner in 2015, and all of the storage being removed from the area sometime in 2017, before it resumes use for storage in 2018. Episodes of land medication were noted within the Pond 1A Drainage Outfall (primarily within the northern half) in 2003, 2006, 2017, 2020, 2021, and 2022; and occasionally the storage from the adjacent lot containing Pond 1A appears to extend into the road ROW/utility corridor. Ponds 1B, 1C, and 2A contain far more hardscape, and some of the previous structures located within these pond siting alternatives have been demolished and replaced with newer buildings. Various episodes of clearing and land modification are visible within portions of these ponds in 1998, 2002, 2006, and 2009. A small portion of Pond 2B was cleared in 2003, while more major clearing was conducted in 2014. The cleared areas contained a paintball operation until as recently as 2021, while other portions remain forested. Land clearing and modification were also visible within portions of the Pond 2A Drainage Outfall in 1995, 2010, 2013, 2017, 2019, and 2020. Within Ponds 3A, 3B, 3C, and 3D several of the former historic buildings have been demolished, and additional non-historic buildings have been constructed since the late-1980s. Episodes of land modification were noted within Pond 3A in 2002, 2005, 2006, and 2009. In addition, an existing retention area was excavated within the eastern portion of Pond 3A in 2009. No major changes were identified within the ROW containing the Pond 3C-3D Drainage Outfall since the late-1980s.

The review of topographic maps from 1944, 1956, and 1981 (Attachment 6) was consistent with both the low wet nature of much of the archaeological study area visible on the historic aerials before development, as well as the slow and steady development of the area within and surrounding many of the pond siting alternatives. The early topographic maps from 1944 and 1956 show the southern and central pond siting alternatives within and near areas associated with Delaney Creek, former intermittent ponds, and artificial drainageways connecting some of these former intermittent ponds. They also show the majority of the northern pond siting alternatives initially within, or near, numerous intermittent ponds and wetlands, some of which appear to be undergoing drainage via drainage ditches connecting the small bodies of water, before the surrounding area is drained.

While modern development and drainage within and surrounding the archaeological study area have altered the elevation within many of the pond sites, the review of the Tampa (1944) and Tampa (1956) USGS topographic maps (see Attachment 6) suggest that before reaching modern levels of development, the majority of the proposed pond siting alternatives likely exhibited elevations of between 5–10 feet above mean sea level (AMSL). Areas closest to Delaney Creek (like Pond 1C), the former tidal marshland to the northwest (Pond 1C - 1D Drainage Outfall), and those ponds located near the intermittent ponds, also contained areas that were likely formerly under 5 feet AMSL.

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Updated reviews of the 1918, 1958, and 1989 county soil surveys (United States Department of Agriculture [USDA] 1918, 1958, 1989) were also conducted to help determine the predevelopment environment, assess the level of land modification, and identify natural features within the archaeological study area indicative of increased archaeological site potential. The natural drainage characteristics and environmental associations for each detailed soil type identified within the archaeological study area are included in Table 4.

Soil types identified within the archaeological study area as a result of the review of the 1918 soil survey (Attachment 7) were primarily poorly or very poorly drained soils associated with Tidal marsh or flatwoods. One small area of well-drained soil associated with low, marl hammocks and semi-swampy areas located between the tidal marsh and flatwoods was identified within the northern extent of the Pond 3C - 3D Outfall. However, this area currently consists of cleared road ROW and utility easement leading to a channelized portion of Delaney Creek.

The 1958 soil survey identified five detailed soil types within the archaeological study area (Attachment 7). Each of these five soil types is associated with poorly drained areas of flatwoods or areas that are subject to frequent tidal flooding (Table 4). None of these soils are noted as being associated with hammock vegetation.

The 1989 soil survey identified three detailed soil types within the archaeological study area (Attachment 7; Table 4). The Pinellas fine sand and Myakka fine sand are poorly drained soils found in flatwoods. The 1989 survey describes the primary concern regarding using these soils for building sites was excessive wetness and high water tables (USDA 1989). The Myakka fine sand, frequently flooded soil type is very poorly drained and subject to shallow flooding by normal high tides. Small ponds and tidal channels are also associated with this soil type. The 1989 soil survey describes tidal flooding as the main concern pertaining to site development within areas of this soil type (USDA 1989:33).

Table 4. Characteristics of Detailed Soil Types within the Pond Siting Alternatives

Natural Drainage Characteristics	Soil Type	Environmental Association	Relevant Pond/ Outfall
Detailed Soil Types Identified in the 1918 Soil Survey			
Well drained	Parkwood fine sandy loam	Found in low marl hammocks bordering tidal mashes and in areas with semi-swampy conditions. Ranges from flat and hummocky to sloping and ridgy. Natural vegetation consists of live oak, magnolia, cabbage palmetto, cedar, and holly with scattered cypress, saw palmetto, and longleaf pine.	Pond 3C - 3D Outfall
Poorly drained	Parkwood fine sandy loam, Flatwoods phase	Most extensively found along the shores of Tampa bay. The soils are level or nearly level to gently sloping. Natural vegetation consists of longleaf pine, saw palmetto, wire grass, and broom sedge.	Pond 1A; Pond 1A Outfall; Pond 1B; Pond 1C; Pond 3A; Pond 3B

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Natural Drainage Characteristics	Soil Type	Environmental Association	Relevant Pond/ Outfall
Poorly drained	Leon fine sand	Principal flatwoods soil type within the County. The surface is generally flat, with numerous depressions of varying sizes. Natural vegetation consists of longleaf pine, saw palmetto, wire grass, and broom sedge.	Pond 1C; Pond 2A; Pond 2A Outfall; Pond 2B
Very poorly drained	Tidal marsh	Occupies low, flat, marshy areas surrounding Tampa Bay and extending up the streams. Natural vegetation consists of marsh grasses.	Pond 1A Outfall; Pond 1B; Pond 1C; Pond 3C; Pond 3D; Pond 3C - 3D Outfall
Detailed Soil Types Identified in the 1958 Soil Survey			
Somewhat poorly drained	Keri fine sand	Areas near the coast with marl at depths of 18–30 in. Natural vegetation consists of saw palmetto, pine, runner oak, and gallberry with few cabbage palmettos.	Pond 1A; Pond 1A Outfall; Pond 1B;
	Leon fine sand	Flatwoods with natural vegetation consisting of wiregrass, saw palmetto, and pine.	Pond 1A Pond 1A Outfall; Pond 1B; Pond 1C; Pond 2A; Pond 2A Outfall; Pond 2B;
	Leon fine sand, light-colored surface phase	Slightly higher areas of flatwoods relative to standard Leon fine sand, with sparser natural vegetation consisting of wiregrass, saw palmetto, and pine with some areas containing scrub live oak.	Pond 1B; Pond 1C
	Ruskin fine sand	Areas near the coast with fine sand overlaying clay and shell marl. Natural vegetation consists of saw palmetto, runner oak, and pine with occasional cabbage palmetto.	Pond 3A; Pond 3B; Pond 3C; Pond 3D

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Natural Drainage Characteristics	Soil Type	Environmental Association	Relevant Pond/ Outfall
Tidal flooding	Tidal marsh	Areas only a few feet above sea level along the coast that are covered or affected by salt water or brackish water during high tides. Natural vegetation consists of salt-tolerant grasses.	Pond 1C; Pond 2A Outfall; Pond 2B; Pond 3B; Pond 3C; Pond 3D; Pond 3C – 3D Outfall
Detailed Soil Types Identified in the 1989 Soil Survey			
Poorly drained	Pinellas fine sand	Broad plains on flatwoods with natural vegetation consisting of cabbage palmetto, longleaf pine, slash pine, saw palmetto, running oak, Indiangrass, pineland threeawn, and wax myrtle.	Pond 1A; Pond 1A Outfall; Pond 1B; Pond 2A Outfall; Pond 3A; Pond 3B; Pond 3C; Pond 3D
	Myakka fine sand	Broad plains on flatwoods with natural vegetation consisting of longleaf pine, slash pine, saw palmetto, gallberry, running oak, pineland threeawn, and wax myrtle.	Pond 1A Pond 1A Outfall; Pond 1B; Pond 1C; Pond 2B;
Very poorly drained	Myakka fine sand, frequently flooded	Tidal areas and areas of small ponds and tidal channels with natural vegetation consisting of mangrove trees, Saltgrass, glasswort, needlegrass rush, and marsh hay cordgrass.	Pond 1A Outfall; Pond 1C; Pond 2A; Pond 2A Outfall; Pond 2B; Pond 3C; Pond 3D; Pond 3C - 3D Outfall

USDA 1918:25, 31–33, 38; 1958:23, 26, 27, 34, 39; USDA 1989:33, 39

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Archaeological Probability

The site file search and literature review, in conjunction with pertinent environmental variables and the review of the land use history, contributed to the updated determination of archaeological site potential within the archaeological study area. Typically, four environmental factors are employed in predicting site locations: distance to fresh water, distance to hardwood hammocks, relative topography, and soil drainage characteristics. Before modern drainage, the archaeological study area was primarily within areas of low

flatwoods that were seasonally wet and adjacent to a freshwater creek and areas of brackish water associated with tidal drainage. Before development, Delaney Creek and numerous scattered intermittent ponds located in the vicinity would have served as the primary freshwater sources.

Hardwood hammocks (hydric, mesic, or xeric) provide a variety of resources that would have been exploited by the aboriginal inhabitants of this region. Often, areas of higher relative elevation correspond with better-drained soils or the presence of hardwood hammocks (xeric and mesic). While one soil type identified within the 1918 soil survey suggested the potential for low marl hammock within the northern extent of the Pond 3C - 3D Drainage Outfall, no hammock vegetation was identified within or adjacent to the archaeological study area during the review of the plat maps, surveyor's notes, topographic maps, or aerial photographs.

Relative elevation is the most difficult variable to quantify because of the topographic diversity of the area. This variable has greater potential to locate sites in poorly to somewhat poorly drained areas of flatwoods than it does in typically undulating sandhill scrub environments. A slight topographic rise within a flatwood area adjacent to a wetland slough has a much greater potential for containing a precontact archaeological site than the summit of a large, well-drained sand hill; even when both are the highest elevations within their respective environments. Prior to development, the archaeological study area was generally level, and primarily located between 5 and 10 feet AMSL (or lower), and no knolls, ridges, or other areas of higher relative elevation were identified during the review of the plat maps, surveyor's notes, topographic maps, or aerial photographs.

Numerous researchers have successfully used drainage characteristics of soil in the formulation of site location predictive models. In general, archaeological sites are associated with better-drained soils and relatively elevated locations (hammocks, ridges, etc.). Although low, wet areas can contain abundant wildlife and plant resources, they make poor habitation areas. As previously discussed, and shown in Table 4, the soils within the study area generally exhibit poor drainage characteristics associated with flatwoods or tidally inundated or affected areas of land near the coast. The majority of the proposed pond siting alternatives formerly fell within the floodplain of a drainageway, within low areas affected by tidal fluctuations, or partially within wetlands.

The review of the historic and modern aerials determined that portions of each of the proposed ponds sites and the related drainage outfalls have undergone some level of land modification. These episodes range from smaller areas of clearing and leveling associated with residential development, to the excavation of retention ponds, to the filling in of former creek path, to the repeated clearing, leveling, and the construction and demolition of buildings.

Due to the low, poorly drained nature of the majority of the archaeological study area prior to development, the lack of topographic relief or hammock vegetation, and the numerous episodes of land modification associated with the filling in of creeks and wetlands; construction associated with residential, commercial, and industrial development; and road construction, most of the pond siting alternatives exhibit low potential for intact archaeological deposits. Based on these factors, the entirety of the footprints of Ponds 1B, 3A, 3B, 3C, and 3D, and the Pond 1A, 2A, and 3C - 3D Drainage Outfalls, exhibit low archaeological site potential. Due to their proximity to the former route of Delaney Creek, the portions of Ponds 1A, 1C, 2A, and 2B that were not formerly located within drainageways and have not undergone significant previous episodes of land modification were determined to exhibit moderate archaeological

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site potential. The formerly inundated and modified portions of these ponds, as well as the previously surveyed portion of Pond 2B, also exhibit low archaeological site potential. The archaeological probability associated with each of the pond siting alternatives is listed in Table 5 in the *Summary* section of the current memorandum and illustrated on aerial mapping in Attachment 2.

SUMMARY

The updated cultural resources desktop analysis of the potential pond site alternatives confirmed that the majority of the pond siting alternatives have not been previously surveyed for archaeological resources, nor recently surveyed for historic resources.

The updated review identified no previously recorded archaeological sites within the archaeological study area. As noted in the previous section of this memorandum, most of the pond siting alternatives exhibit low potential for intact archaeological deposits. The portion of Pond 2B, where no cultural material was identified during the systematic subsurface testing nor the pedestrian survey conducted as part of the ongoing CRAS effort, was also considered to exhibit low archaeological site potential. Archaeological probability is listed by Pond Alternative/Drainage Outfall in Table 5, and the zones of archaeological site potential are illustrated on aerial imagery in Attachment 2. Ponds 1A, 1C, 2A, and 2B exhibit a mix of low and moderate site potential for identifying intact archaeological deposits (Table 5; see Attachment 2).

Table 5. Archaeological Probability of the Proposed Pond Siting Alternatives

Proposed Pond Siting Alternative*	Archaeological Probability
Pond 1A	Low to Moderate Site Potential
Pond 1B	Low Site Potential
Pond 1C	Low to Moderate Site Potential
Pond 1A Outfall	Low Site Potential
Pond 2A	Low to Moderate Site Potential
Pond 2B	Low to Moderate Site Potential
Pond 2A Outfall	Low Site Potential
Pond 3A	Low Site Potential
Pond 3B	Low Site Potential
Pond 3C	Low Site Potential
Pond 3D	Low Site Potential
Pond 3C - 3D Outfall	Low Site Potential

** The pond siting alternatives are generally listed by subgroup from south to north*

Four previously recorded historic resources are located within the historic resources study area (see Tables 2 and 6; see Attachment 3). The previously recorded resources consist of three previously recorded buildings (8HI12105–8HI12107) and one historic road segment (8HI12129). The three buildings and the portion of US 41 (8HI12129) located south of

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Causeway Boulevard were determined ineligible for listing in the National Register by the SHPO on February 10, 2014. Six additional historic buildings (8HI15326, 8HI15330, and 8HI15335–8HI15338) and a previously unevaluated segment of US 41 (8HI12129) located north of Causeway Boulevard were recorded as a result of the ongoing CRAS effort were also identified within the historic resources study area (see Tables 2 and 6; see Attachment 3). While preliminary research suggests each of these seven resources will be considered National Register–ineligible, their eligibility has not yet been evaluated by the SHPO.

Table 6. Summary of Previously Recorded and Potential Historic Resources Within the Historic Resources Study Area

Proposed Pond Siting Alternative[1]	Number of Previously Recorded / Recently Identified Historic Resources Within the Study Area[2]	Number of Parcels with Historic Build Date Containing or Partially Containing Study Area[3, 4]	Number of Unrecorded Historic Resources Expected Within Footprint	Number of Unrecorded Historic Resources Expected Within the Historic Resources Study Area
Pond 1A	3: 8HI12105, 8HI12129, and 8HI15330	1	0	0
Pond 1B	3: 8HI12106, 8HI12129, and 8HI15326	3	1	3
Pond 1C	0	3	0	0
Pond 1A Outfall	0	0	0	0
Pond 2A	2: 8HI12107 and 8HI12129	5	0	3
Pond 2B	1: 8HI12129	1	0	0
Pond 2A Outfall	0	0	0	0
Pond 3A	3: 8HI12129, 8HI15337, and **8HI15338**	3	0	0
Pond 3B	3: **8HI15335–8HI15337**	3	0	0
Pond 3C	1: 8HI15335	5	0	3
Pond 3D	0	4	0	4
Pond 3C - 3D Outfall	0	0	0	0

[1] The pond siting alternatives are generally listed by subgroup from south to north
[2] Bolded FMSF site identification numbers indicate the resource falls within the footprint of the proposed pond/outfall
[3] Any unrecorded historic resources within these parcels that fall within the historic resources area of potential effect (APE) established for the final pond locations will require an evaluation of National Register–eligibility as part of a Pond CRAS Addendum
[4] Please note that the counts in this column do not add up to 20 as many parcels fall within the historic resources study areas established for multiple ponds

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A search of the Hillsborough County Property Appraiser GIS data identified 29 parcels within the historic resources study area with historic AYRB dates of 1974 or earlier. Twenty (20) of the parcels had the potential for unrecorded historic buildings, as the historic building within their limits was not already recorded or recently identified (see Attachment 3). Only one unrecorded historic building, located on the parcel at 5108 Trenton Street, is anticipated within the direct footprint of a proposed pond (Pond 1B) (Table 6; see Attachment 3). A review of Google Earth data and aerial photographs suggests that many of the parcels are not expected to contain buildings within the study area and that there is the potential for an additional nine unrecorded historic buildings within the historic resources study areas established for Ponds 1B, 2A, 3C, and 3D (Table 6; see Attachment 3).

REFERENCES

Archaeological Consultants, Inc. (ACI)
2013 *Cultural Resource Assessment Survey US 41 (SR 45) from Kracker Avenue to South of SR 676 (Causeway Boulevard), Project Development and Environment (PD&E) Study, Hillsborough County, Florida; WPI Segment No. 530056 1.* On file, Division of Historical Resources, Tallahassee, FL.

Florida Department of Environmental Protection (FDEP)
1852a Survey Plat Map for Township 29 South, Range 19 East. Land Boundary Information System (LABINS). Land Records. Electronic document, https://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed May 3, 2021.
1852b Surveyor's Notes for Township 29 South, Range 19 East. Land Boundary Information System (LABINS). Land Records. Electronic document, https://www.labins.org/survey_data/landrecords/landrecords.cfm, accessed May 3, 2021.

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2022 Aerial photographs from 1995–2022. 27.918223°, -82.402958°. Google Earth Pro, November 2, 2022.

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1958 *Soil Survey, Hillsborough County, Florida*. Electronic Document, https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/florida/hillsboroughFL1958/hillsboroughFL1958.pdf accessed May 12, 2021.

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1989 *Soil Survey of Hillsborough County, Florida*. Electronic Document, https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/florida/FL057/0/hillsborough.pdf, accessed May 12, 2021.

University of Florida, George A. Smathers Libraries
2021 Aerial Photography: Florida. University of Florida Digital Collections. Electronic documents, https://ufdc.ufl.edu/aerials, accessed May 3, 2021.

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Attachment 1:

General Location of Proposed Ponds

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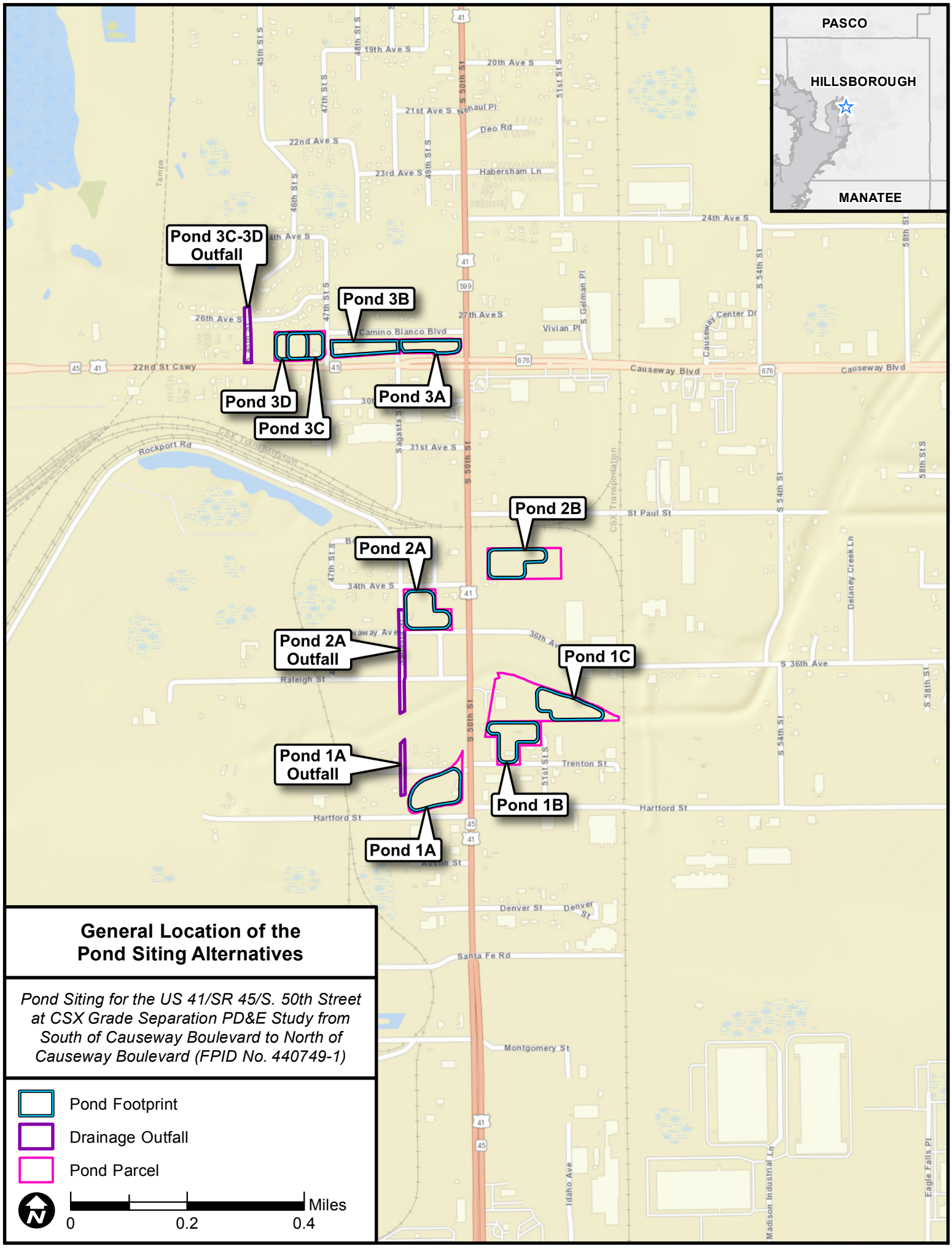
PASCO
HILLSBOROUGH
MANATEE
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
Pond 2B
Pond 2A
Pond 2A Outfall
Pond 1C
Pond 1A Outfall
Pond 1B
Pond 1A
General Location of the Pond Siting Alternatives
Pond Siting for the US 41/SR 45/S. 50th Street at CSX Grade Separation PD&E Study from South of Causeway Boulevard to North of Causeway Boulevard (FPID No. 440749-1)
Pond Footprint
Drainage Outfall
Pond Parcel
Miles
0
0.2
0.4

Attachment 2:

Archaeological Study Area and Zones of Archaeological Probability Illustrated on an Aerial Photograph

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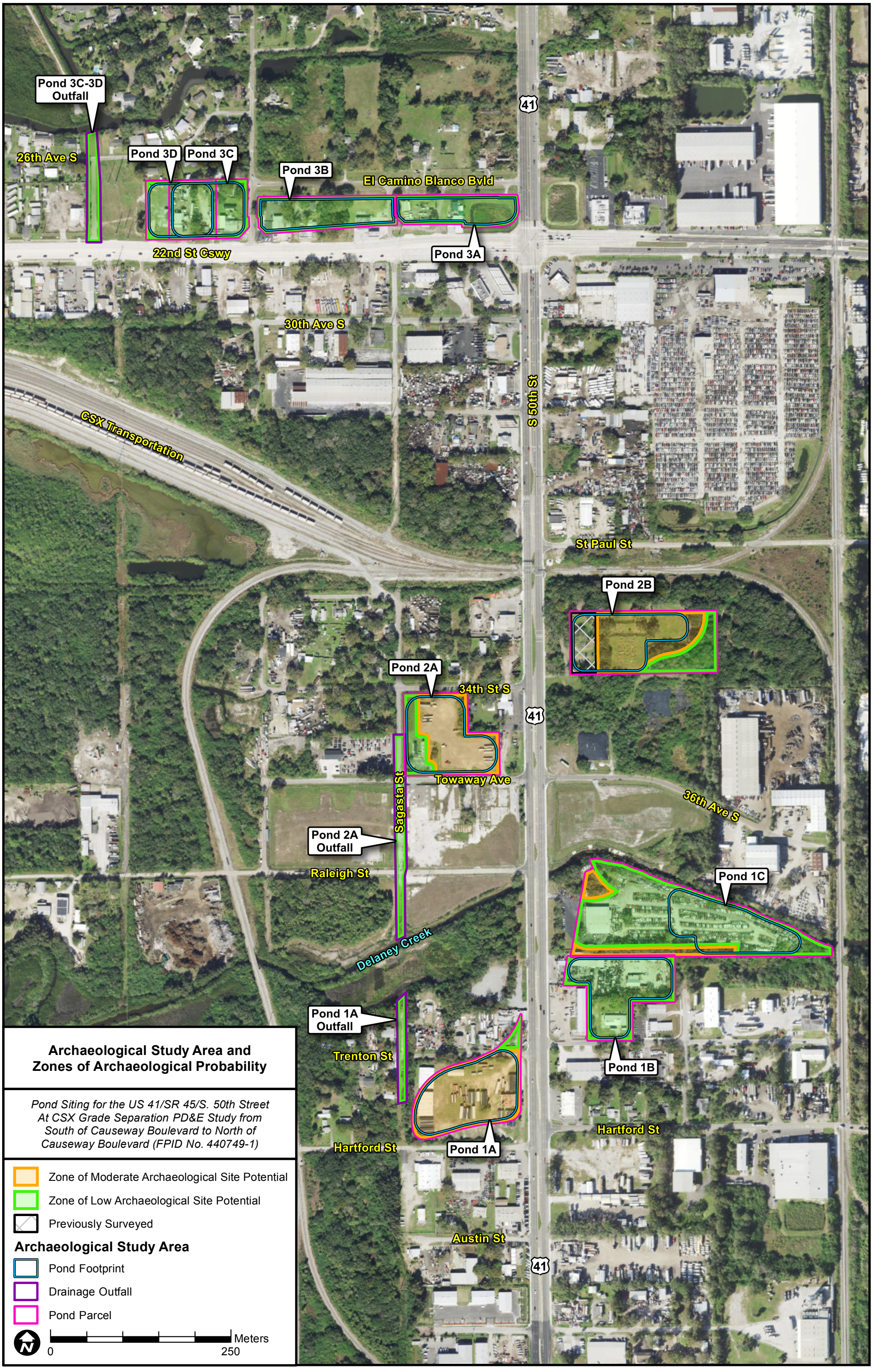

Archaeological Study Area and Zones of Archaeological Probability

Pond Siting for the US 41/SR 45/S. 50th Street At CSX Grade Separation PD&E Study from South of Causeway Boulevard to North of Causeway Boulevard (FPID No. 440749-1)

- Zone of Moderate Archaeological Site Potential
- Zone of Low Archaeological Site Potential
- Previously Surveyed

Archaeological Study Area

- Pond Footprint
- Drainage Outfall
- Pond Parcel

0 — 250 Meters

Attachment 3:

Previously Recorded, Recently Identified, and Potential Historic Resources Relative to the Historic Resources Study Area Illustrated on an Aerial Photograph

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23rd Ave S
41
24th Ave S
Pond 3C-3D Outfall
Pond 3C
Pond 3D
26th Ave S
Pond 3B
Pond 3A
El Camino Blanco Bvld
US 41 (8HI12129)
22nd St Cswy
8HI15335
8HI15336
8HI15337
8HI15338
30th Ave S
CSX Transportation
US 41 (8HI12129)
St Paul St
Pond 2B
41
Pond 2A
34th St S
8HI12107
Towaway Ave
Pond 2A Outfall
Sagasta St
36th Ave S
Pond 1C
Raleigh St
8HI12106
8HI12105
8HI15330
Delaney Creek
Pond 1B
Trenton St
Pond 1A Outfall
8HI15326
Hartford St
Hartford St
Pond 1A
41
Austin St

Previously Recorded and Potential Historic Resources Within the Historic Resources Study Area

Pond Siting for the US 41/SR 45/S. 50th Street At CSX Grade Separation PD&E Study from South of Causeway Boulevard to North of Causeway Boulevard (FPID No. 440749-1)

- Pond Footprint
- Drainage Outfall
- Pond Parcel
- Historic Resources Study Area
- 8HI00 Recorded Historic Structure
- 8HI00 Recently Identified Historic Structure
- Recorded Segment of Historic Linear Resource
- Recently Identified Segment of Historic Linear Resource
- Parcel with Historic Build Date

N

0 300 600 900 Feet

Attachment 4:

Archaeological Study Area Illustrated on an 1852 Historic Plat Map

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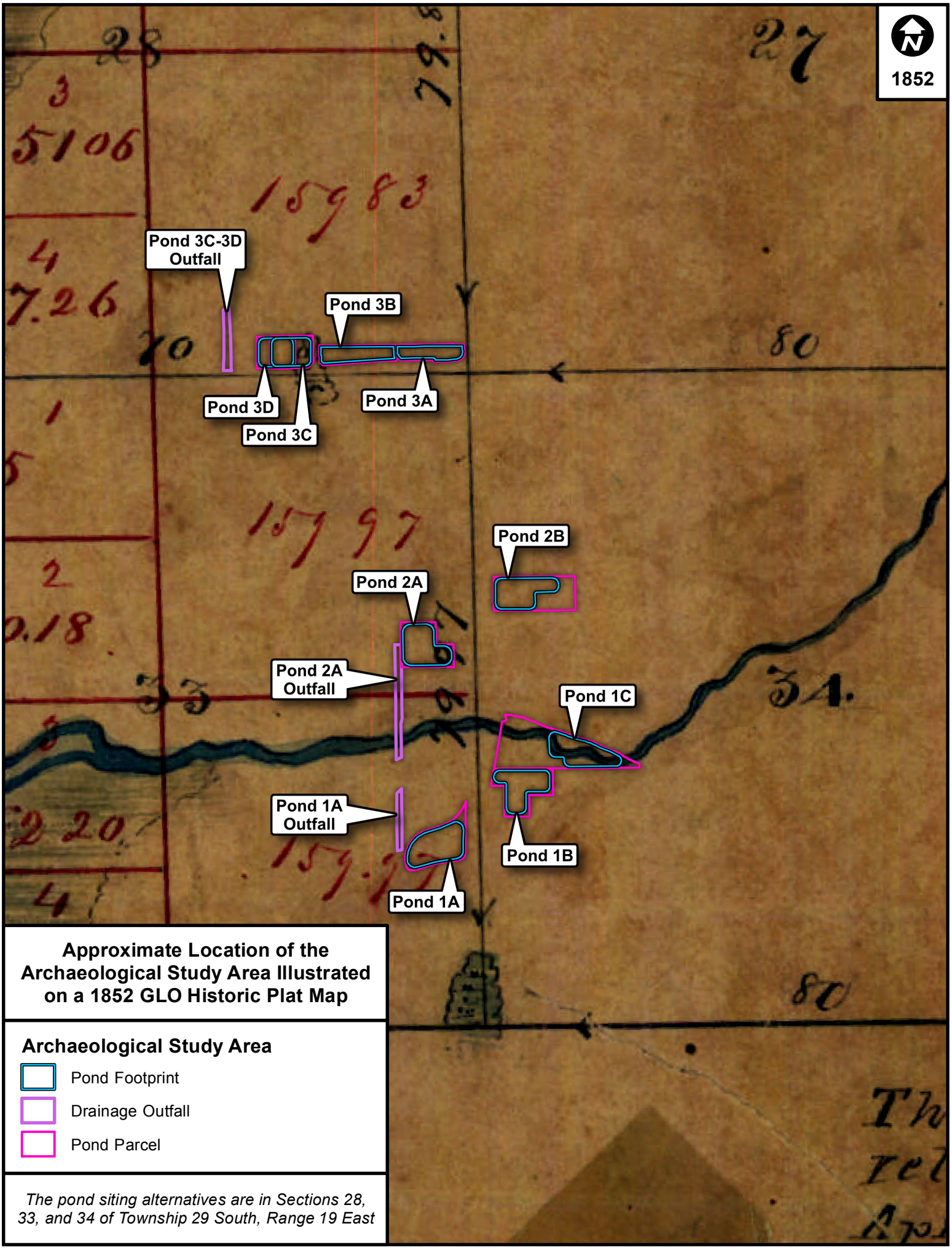

Approximate Location of the Archaeological Study Area Illustrated on a 1852 GLO Historic Plat Map

Archaeological Study Area

- Pond Footprint
- Drainage Outfall
- Pond Parcel

The pond siting alternatives are in Sections 28, 33, and 34 of Township 29 South, Range 19 East

Attachment 5:

Archaeological and Historic Resources Study Areas Illustrated on Select Aerial Photographs from 1938, 1957, 1965, 1968, 1973, 1976, 1980, and 1987

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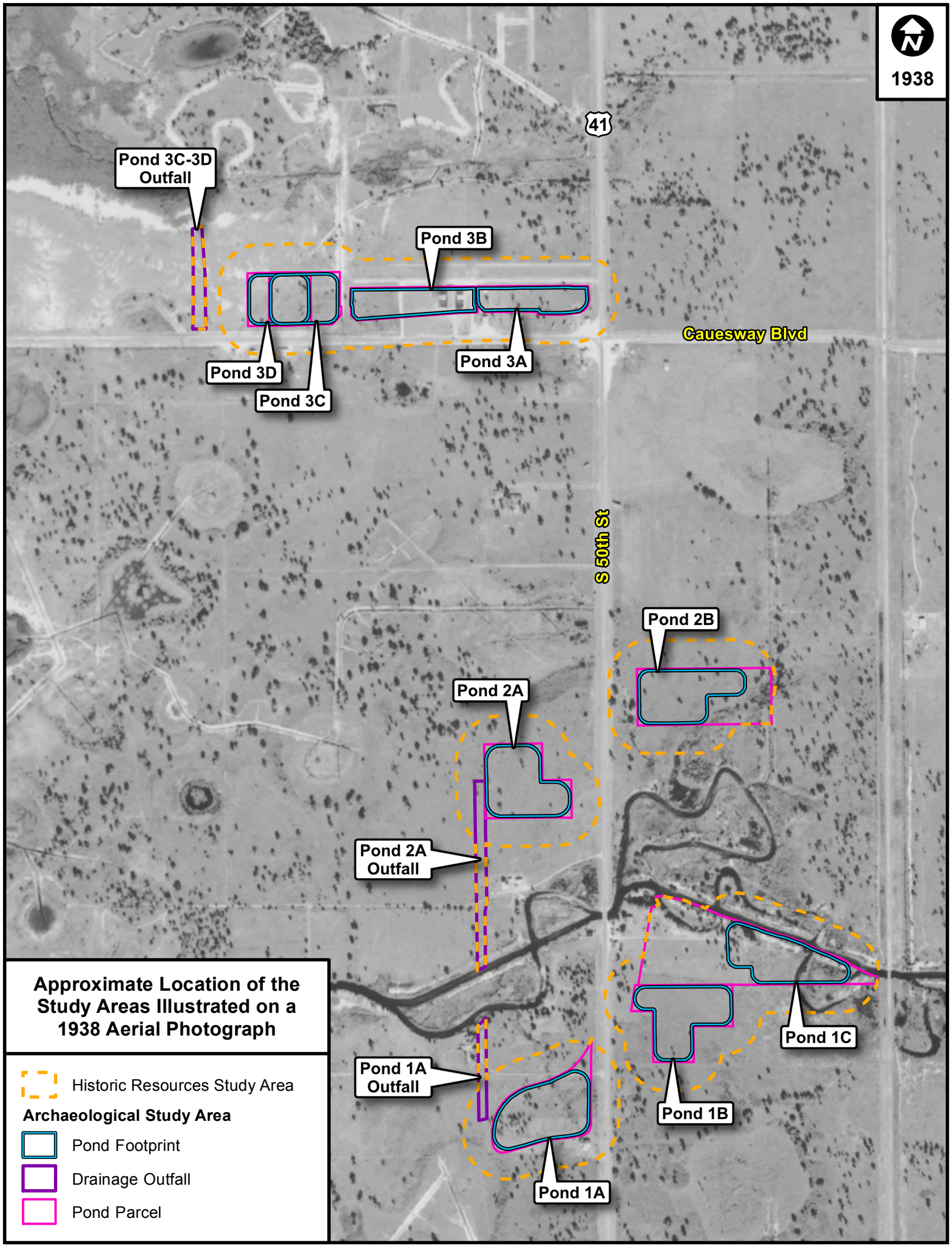
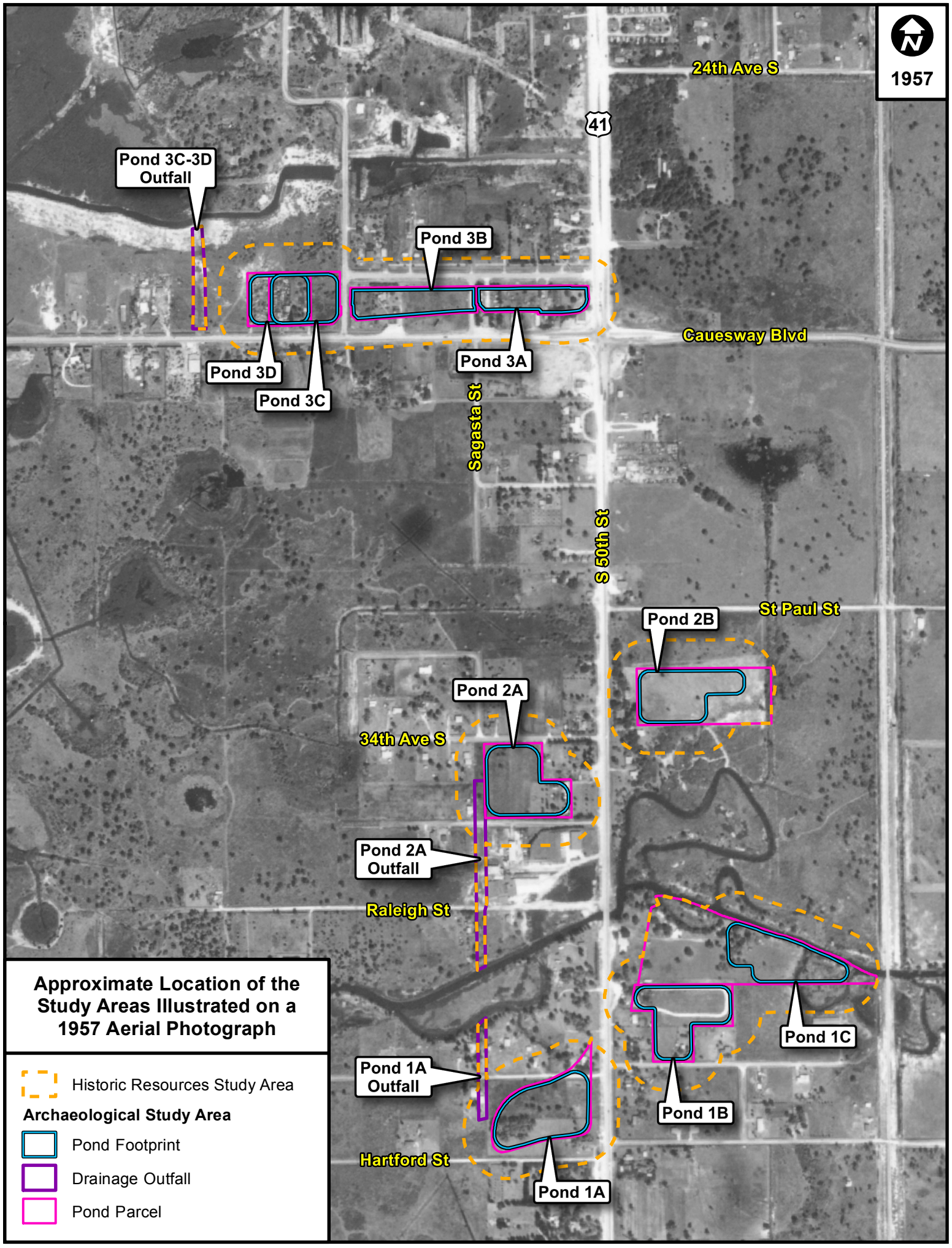
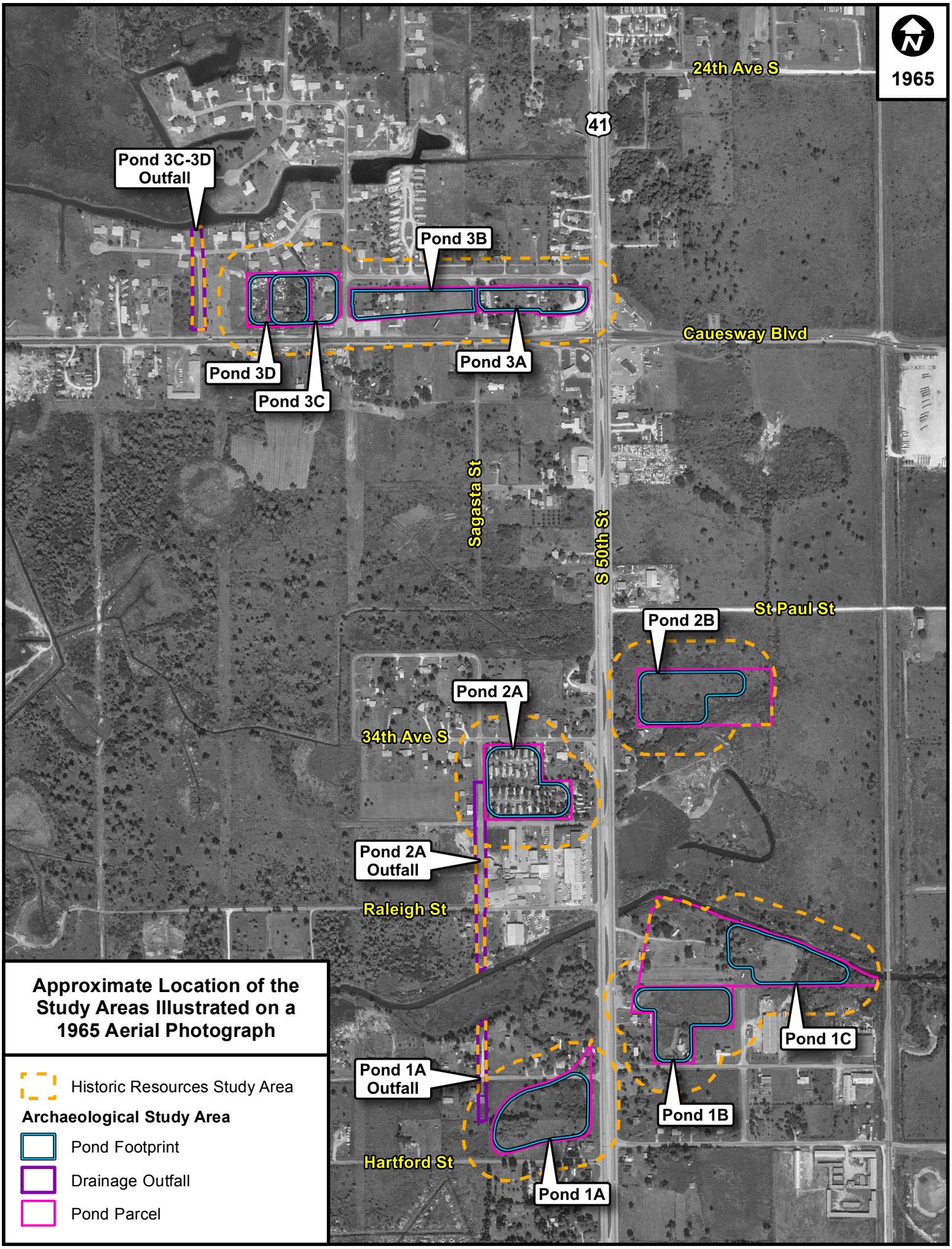
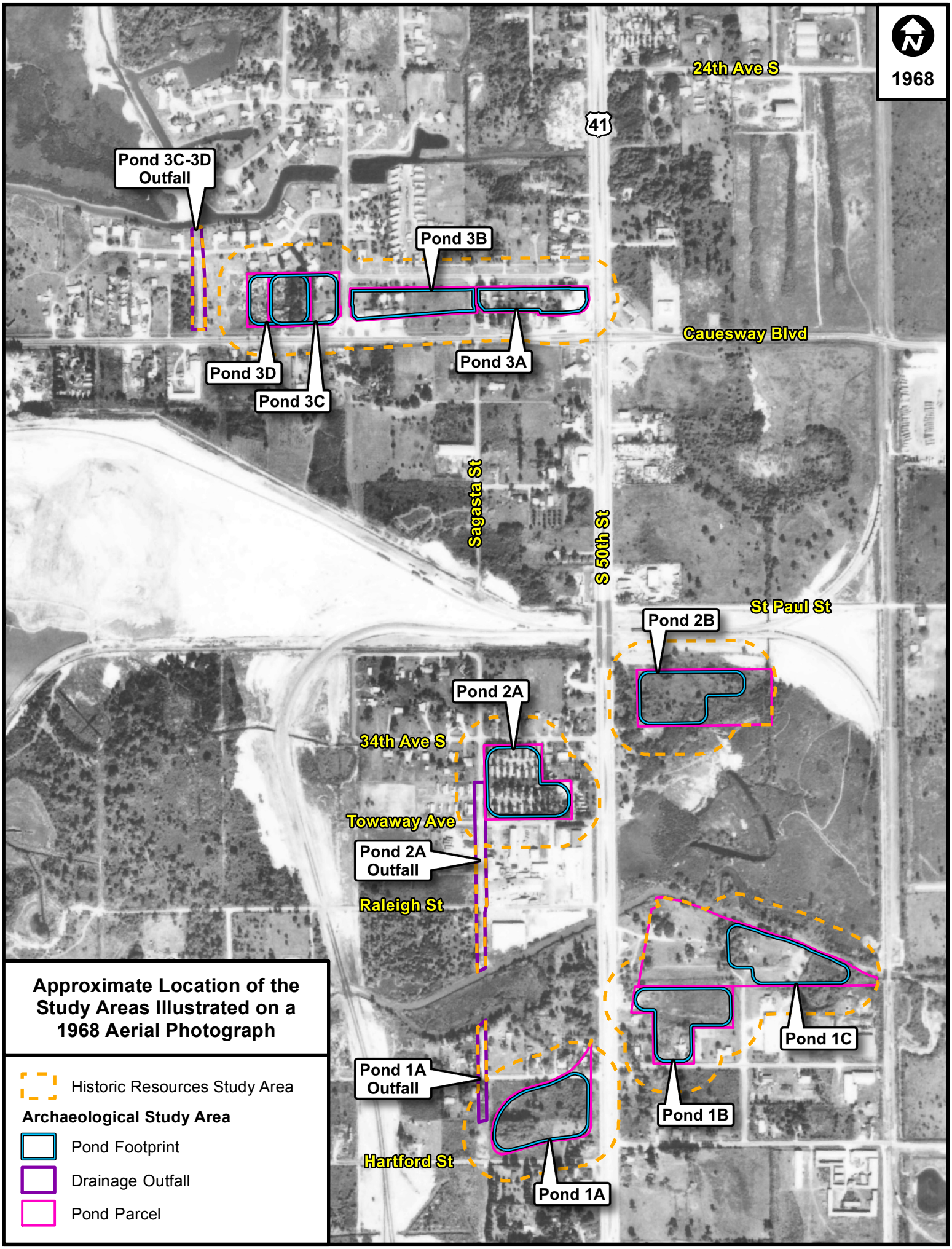
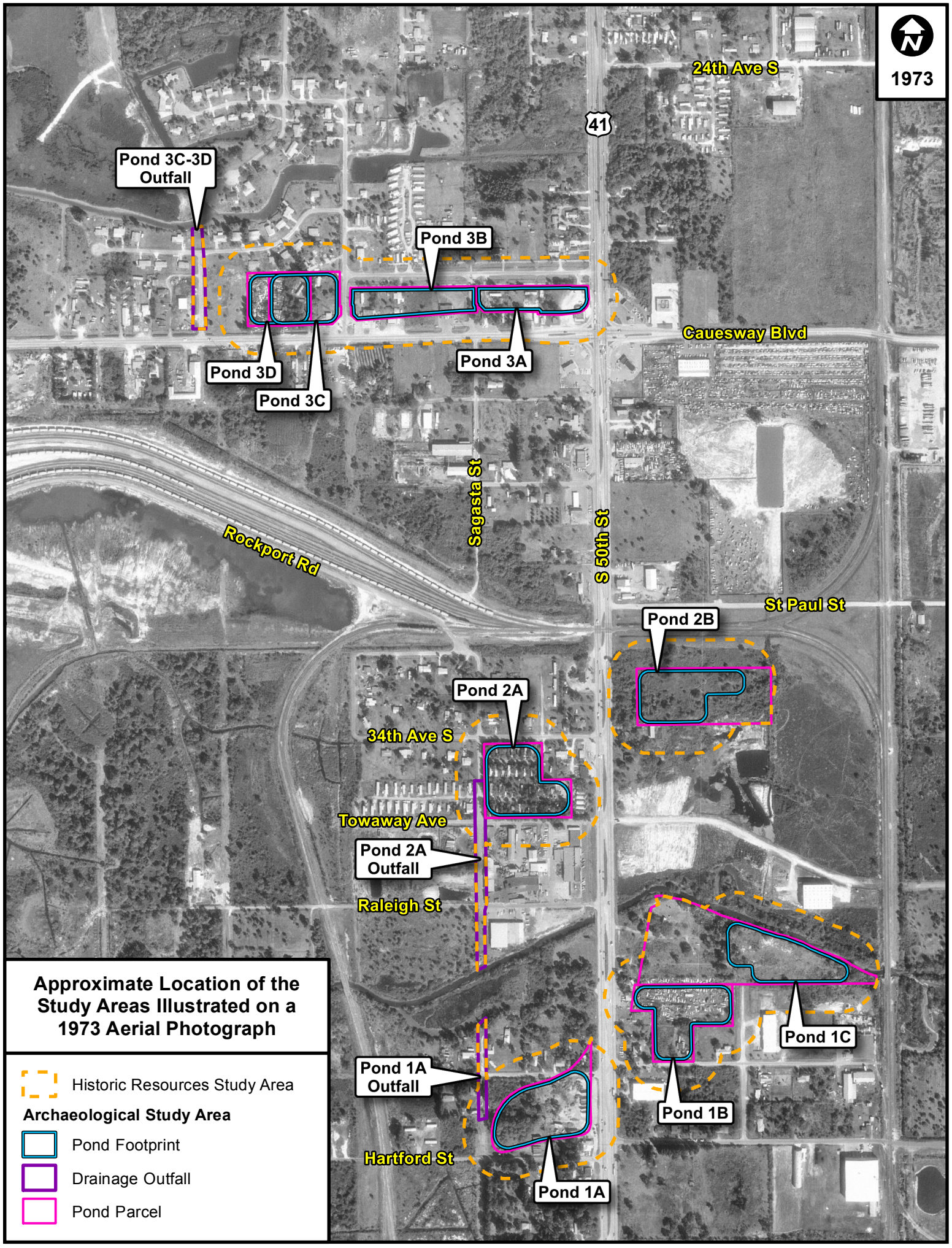
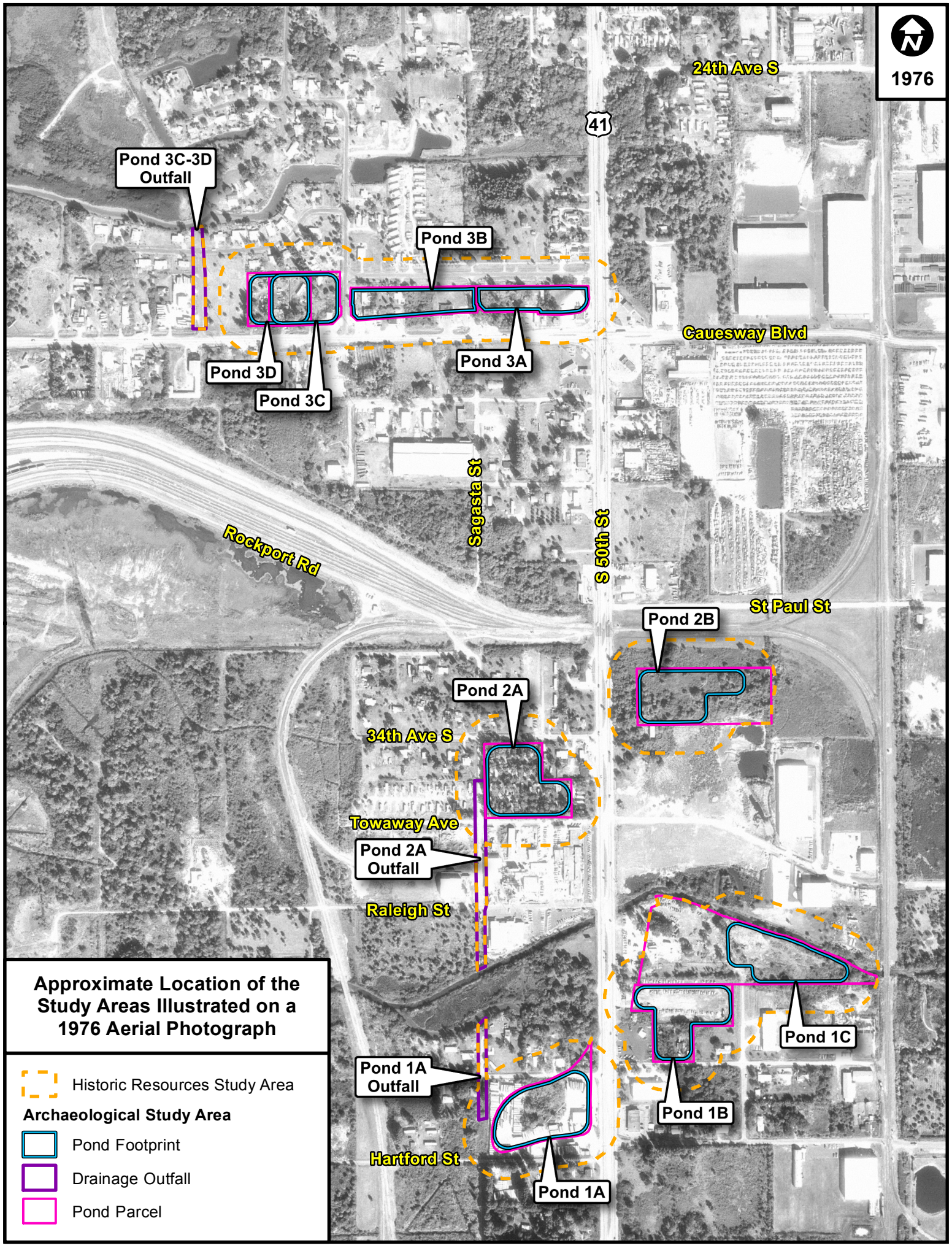

1938
41
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
Causeway Blvd
S 50th St
Pond 2B
Pond 2A
Pond 2A Outfall
Pond 1C
Pond 1A Outfall
Pond 1B
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1938 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel

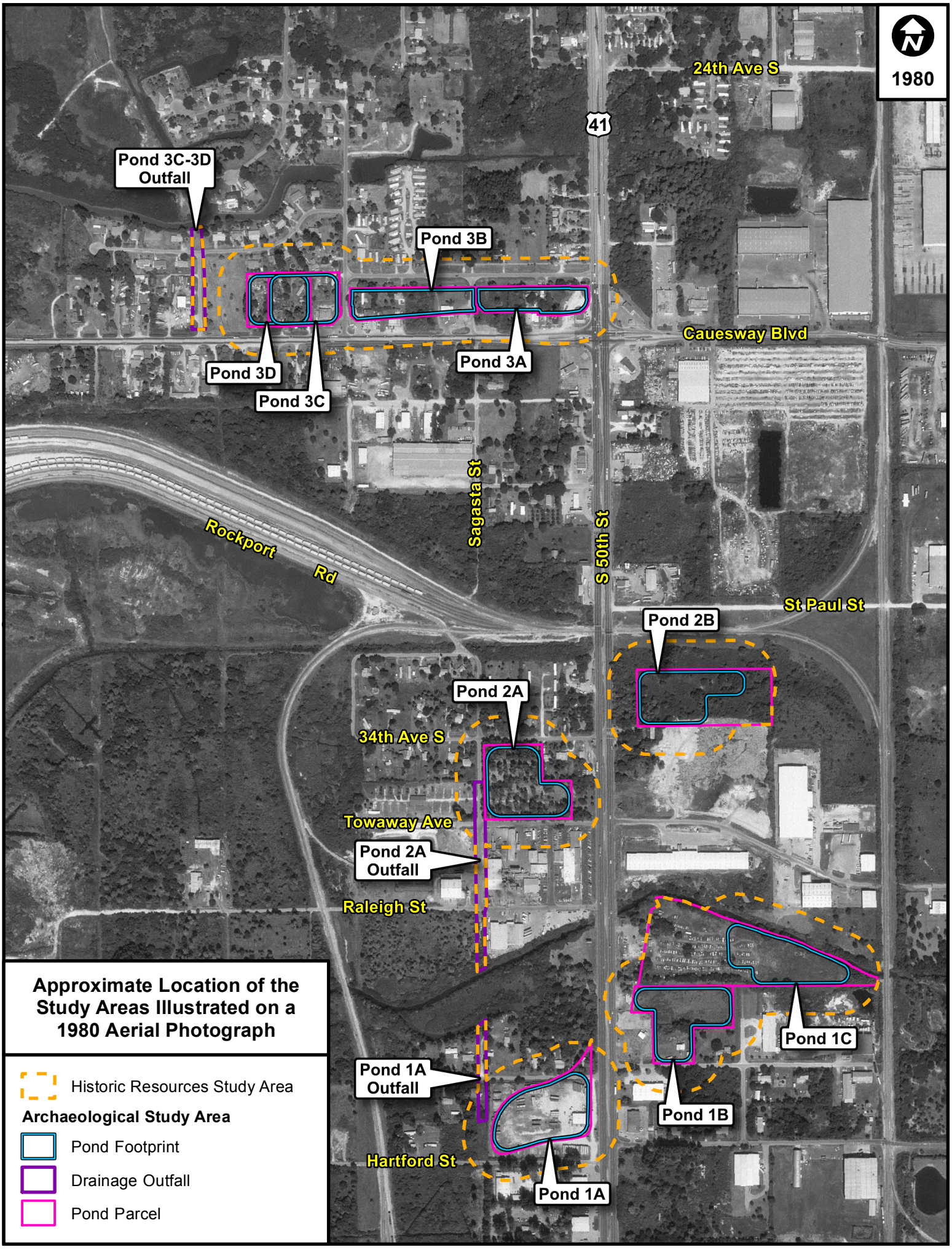

1957
24th Ave S
41
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
Causeway Blvd
Sagasta St
S 50th St
St Paul St
Pond 2B
Pond 2A
34th Ave S
Pond 2A Outfall
Raleigh St
Pond 1C
Pond 1A Outfall
Pond 1B
Hartford St
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1957 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel

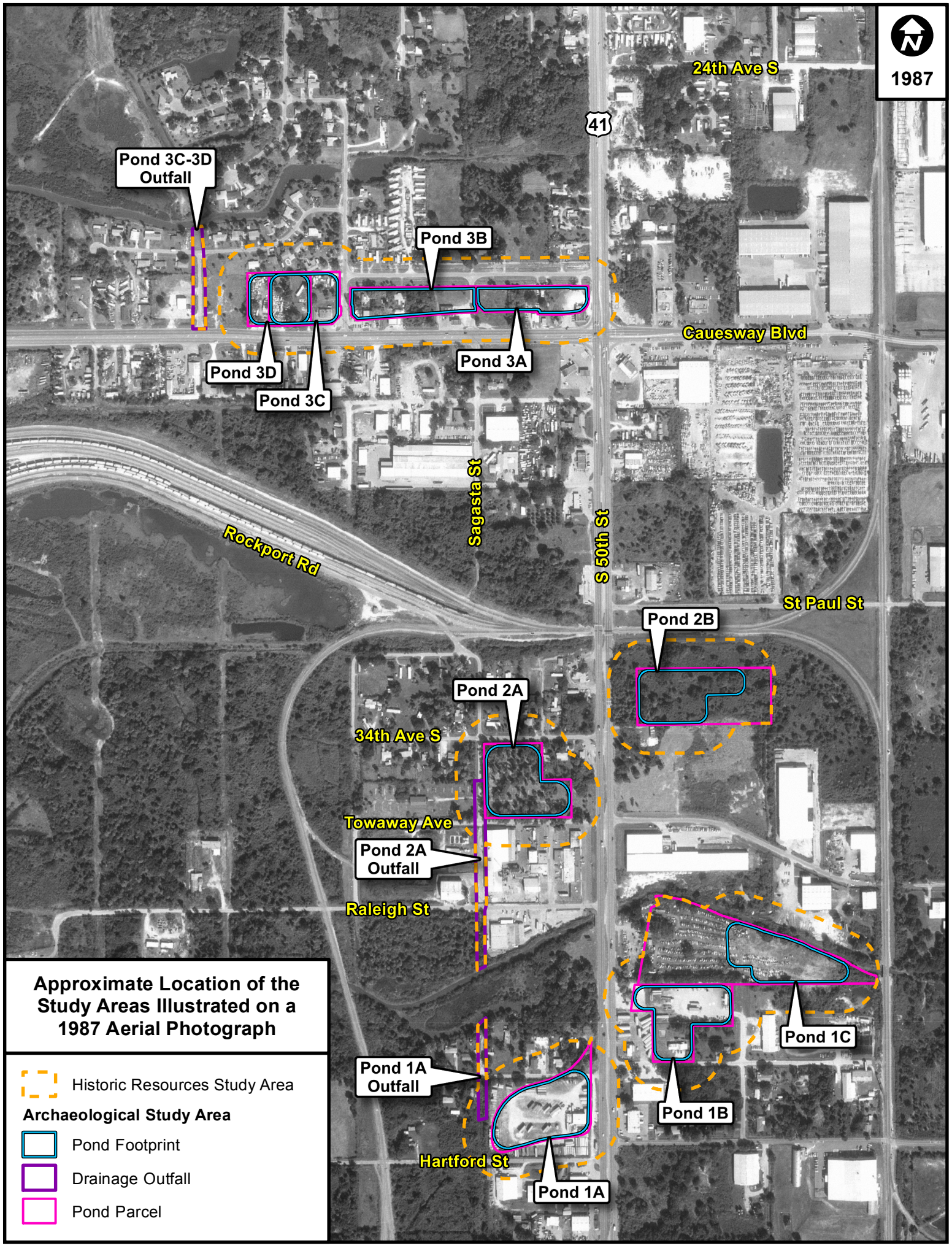

1965
24th Ave S
41
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
Causeway Blvd
Sagasta St
S 50th St
St Paul St
Pond 2B
Pond 2A
34th Ave S
Pond 2A Outfall
Raleigh St
Pond 1C
Pond 1A Outfall
Pond 1B
Hartford St
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1965 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel


1968
24th Ave S
41
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
Causeway Blvd
Sagasta St
S 50th St
St Paul St
Pond 2B
Pond 2A
34th Ave S
Towaway Ave
Pond 2A Outfall
Raleigh St
Pond 1C
Pond 1A Outfall
Pond 1B
Hartford St
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1968 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel


1973
24th Ave S
41
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
Causeway Blvd
Sagasta St
S 50th St
Rockport Rd
St Paul St
Pond 2B
Pond 2A
34th Ave S
Towaway Ave
Pond 2A Outfall
Raleigh St
Pond 1C
Pond 1A Outfall
Pond 1B
Hartford St
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1973 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel


1976
24th Ave S
41
Pond 3C-3D Outfall
Pond 3B
Pond 3A
Pond 3D
Pond 3C
Causeway Blvd
Sagasta St
S 50th St
Rockport Rd
St Paul St
Pond 2B
Pond 2A
34th Ave S
Towaway Ave
Pond 2A Outfall
Raleigh St
Pond 1C
Pond 1A Outfall
Pond 1B
Hartford St
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1976 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel

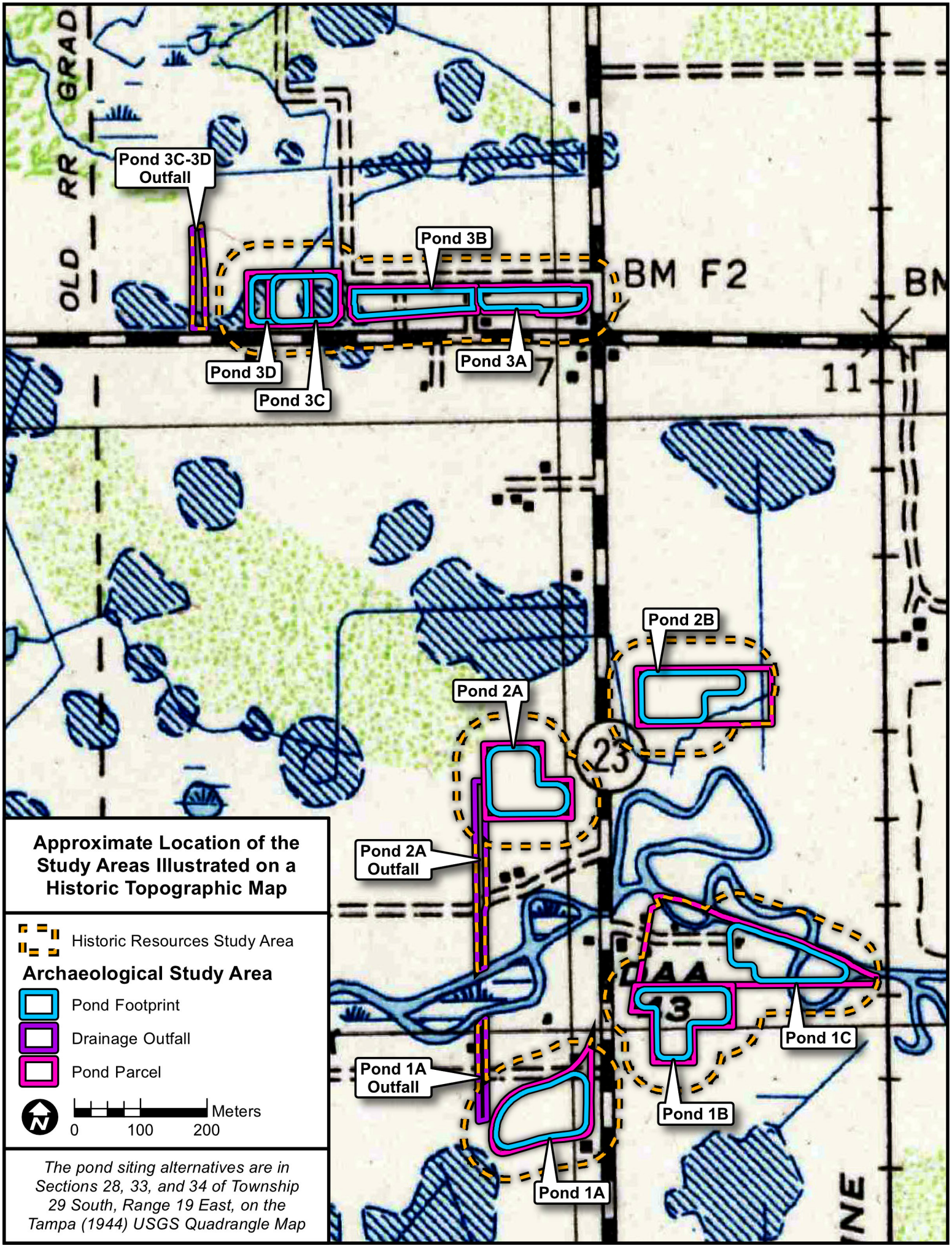

1980
24th Ave S
41
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
Causeway Blvd
Sagasta St
S 50th St
Rockport Rd
St Paul St
Pond 2B
Pond 2A
34th Ave S
Towaway Ave
Pond 2A Outfall
Raleigh St
Pond 1C
Pond 1A Outfall
Pond 1B
Hartford St
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1980 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel


1987
24th Ave S
41
Pond 3C-3D Outfall
Pond 3B
Pond 3A
Pond 3D
Pond 3C
Causeway Blvd
Sagasta St
S 50th St
Rockport Rd
St Paul St
Pond 2B
Pond 2A
34th Ave S
Towaway Ave
Pond 2A Outfall
Raleigh St
Pond 1C
Pond 1A Outfall
Pond 1B
Hartford St
Pond 1A
Approximate Location of the Study Areas Illustrated on a 1987 Aerial Photograph
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel

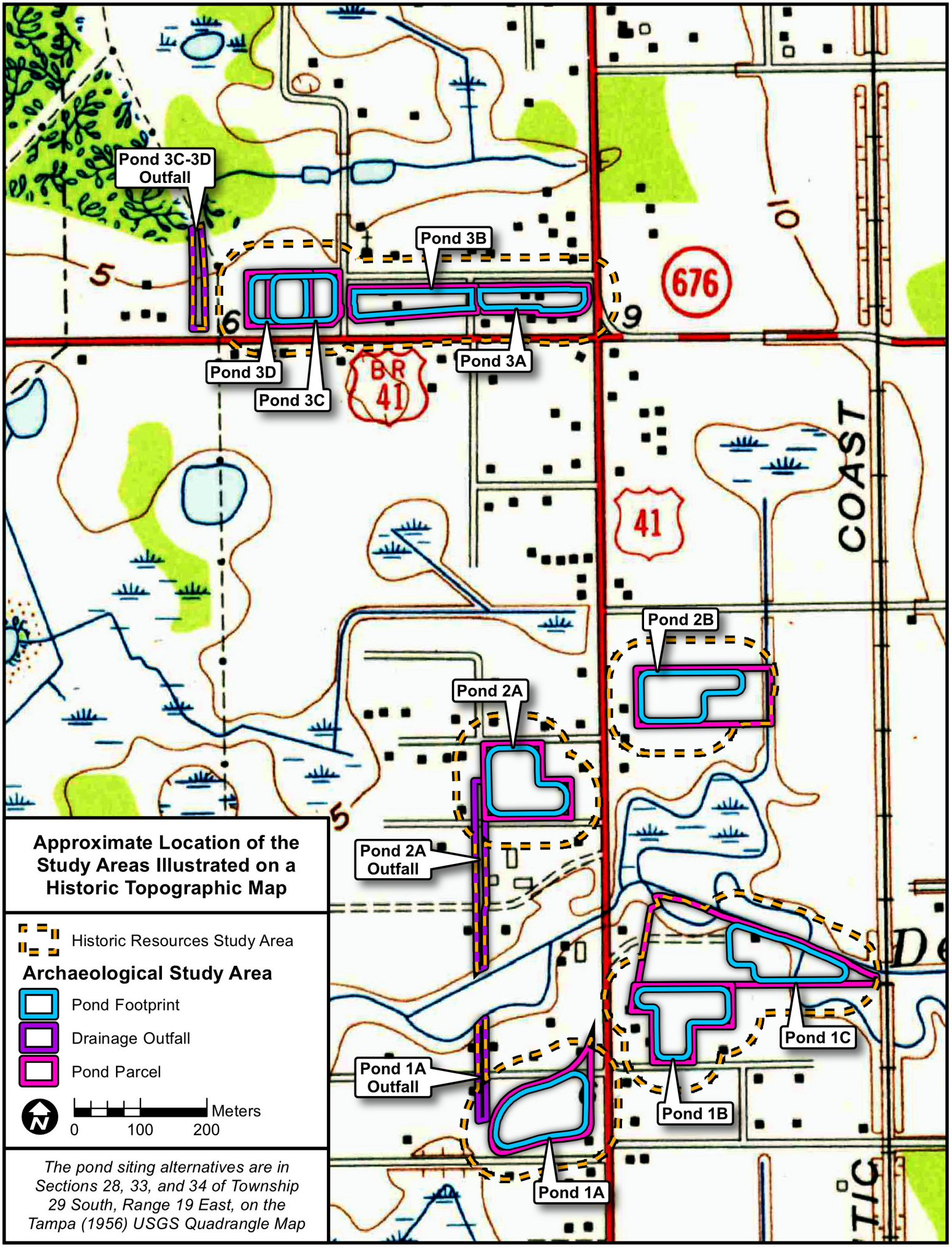
Attachment 6:

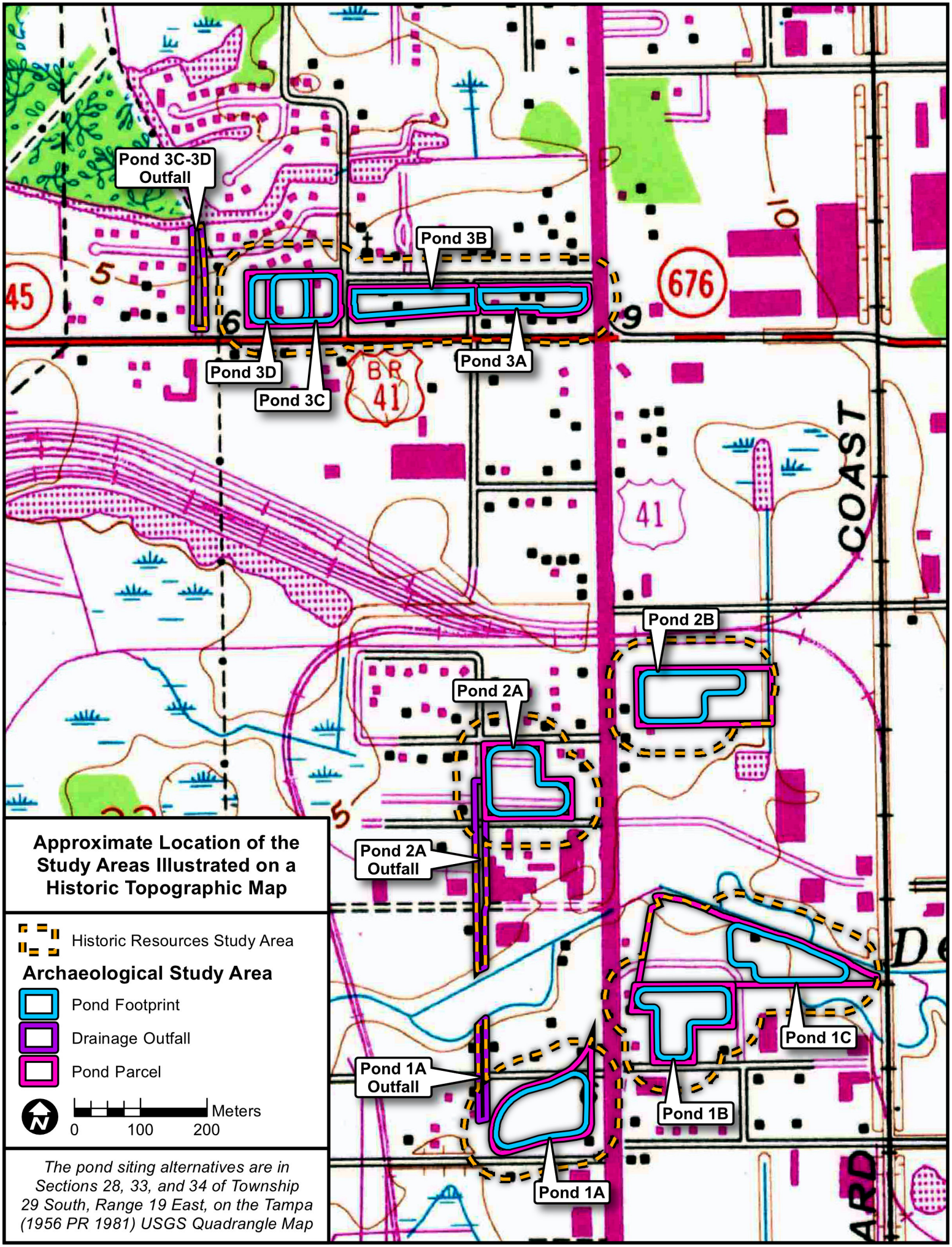
Archaeological and Historic Resources Study Areas Illustrated on Select USGS Topographic Maps from 1944, 1956, and 1981

DRAFT



Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
BM F2
OLD RR GRAD
11
Pond 2B
Pond 2A
23
Pond 2A Outfall
Pond 1C
Pond 1A Outfall
Pond 1B
Pond 1A
13
Approximate Location of the Study Areas Illustrated on a Historic Topographic Map
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel
Meters
0
100
200
The pond siting alternatives are in Sections 28, 33, and 34 of Township 29 South, Range 19 East, on the Tampa (1944) USGS Quadrangle Map


Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3C
Pond 3A
676
41
COAST
Pond 2B
Pond 2A
Pond 2A Outfall
Pond 1C
Pond 1A Outfall
Pond 1B
Pond 1A
Approximate Location of the Study Areas Illustrated on a Historic Topographic Map
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel
N
Meters
0
100
200
The pond siting alternatives are in Sections 28, 33, and 34 of Township 29 South, Range 19 East, on the Tampa (1956) USGS Quadrangle Map


Pond 3C-3D Outfall
Pond 3B
Pond 3A
Pond 3D
Pond 3C
Pond 2B
Pond 2A
Pond 2A Outfall
Pond 1C
Pond 1A Outfall
Pond 1B
Pond 1A
676
41
COAST
Approximate Location of the Study Areas Illustrated on a Historic Topographic Map
Historic Resources Study Area
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel
N
Meters
0
100
200
The pond siting alternatives are in Sections 28, 33, and 34 of Township 29 South, Range 19 East, on the Tampa (1956 PR 1981) USGS Quadrangle Map

Attachment 7:

Archaeological Study Area Illustrated on Map Excerpts from the 1918, 1958, and 1989 Hillsborough County Soil Surveys

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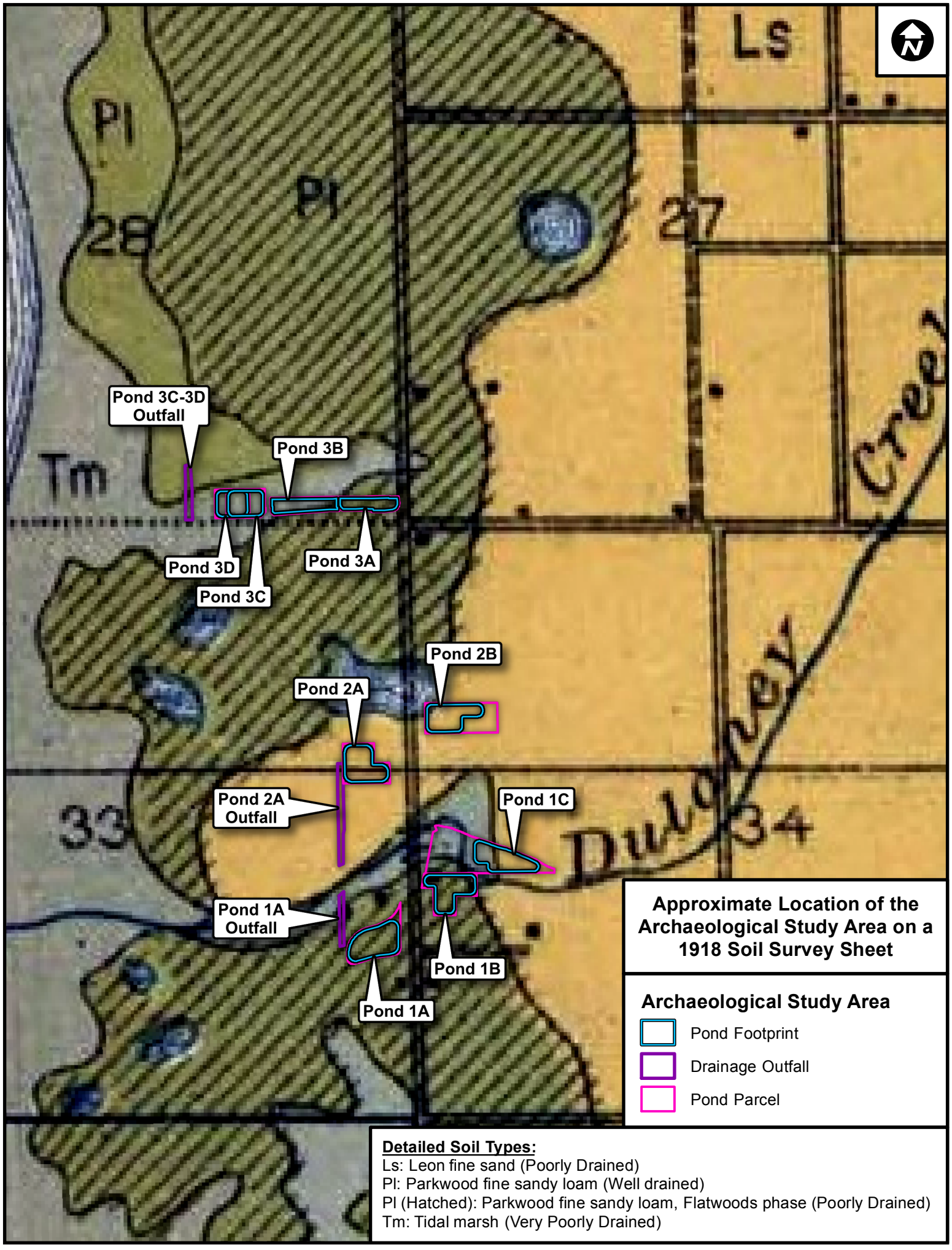
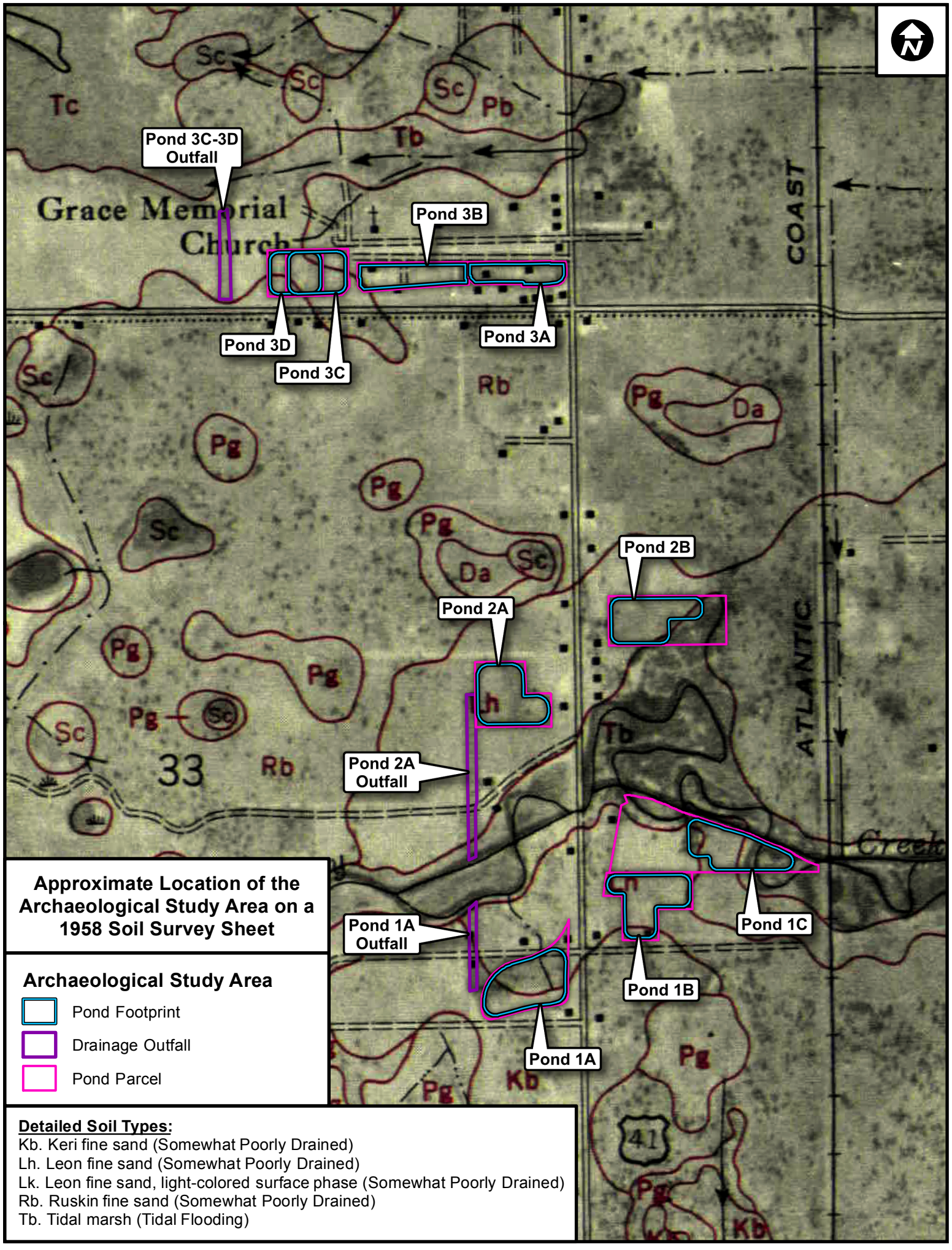
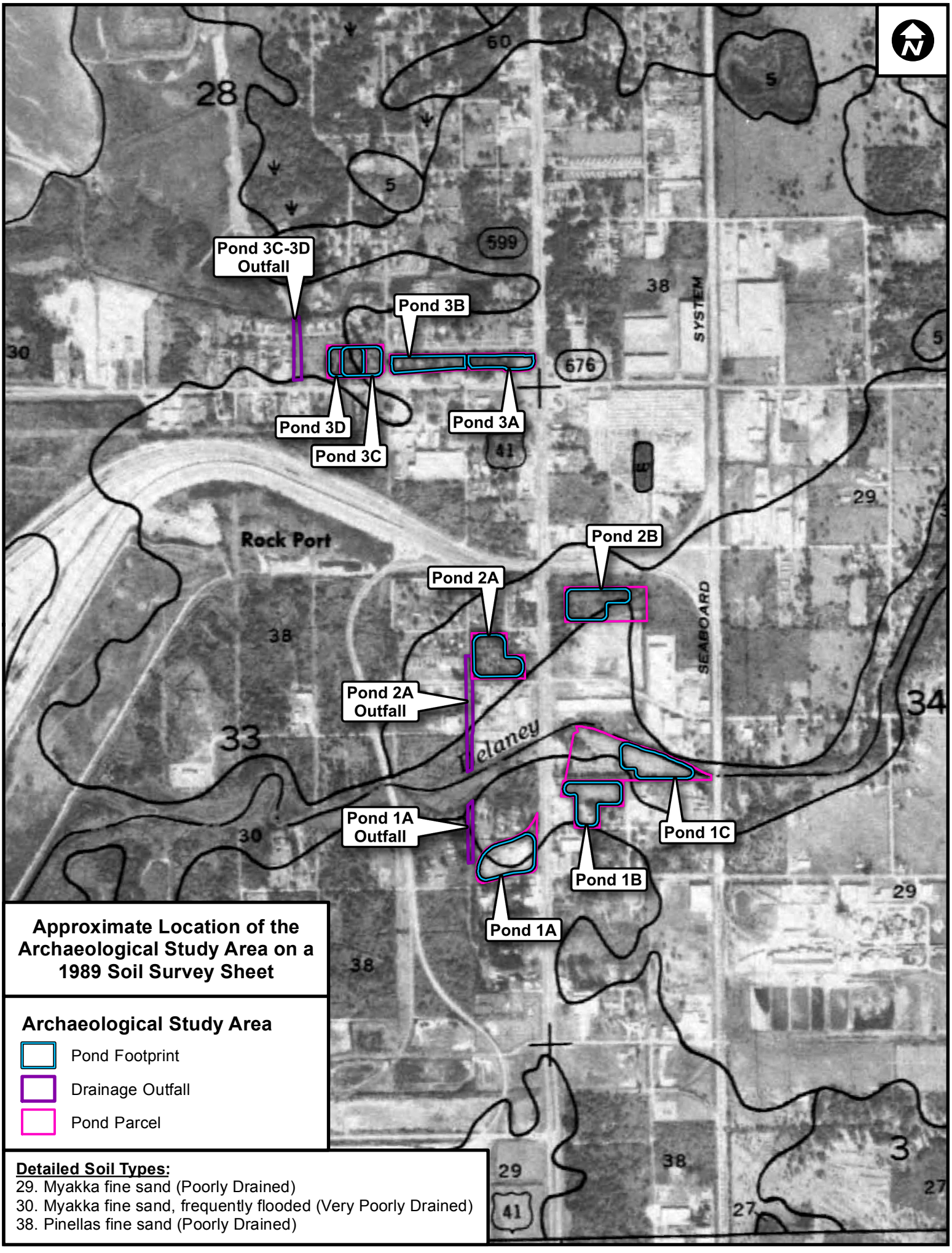

Ls
Pl
Pl
28
27
Tm
Pond 3C-3D Outfall
Pond 3B
Pond 3D
Pond 3A
Pond 3C
Pond 2B
Pond 2A
Pond 2A Outfall
Pond 1C
33
34
Pond 1A Outfall
Pond 1B
Pond 1A
Approximate Location of the Archaeological Study Area on a 1918 Soil Survey Sheet
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel
Detailed Soil Types:
Ls: Leon fine sand (Poorly Drained)
Pl: Parkwood fine sandy loam (Well drained)
Pl (Hatched): Parkwood fine sandy loam, Flatwoods phase (Poorly Drained)
Tm: Tidal marsh (Very Poorly Drained)


Pond 3C-3D Outfall
Grace Memorial Church
Pond 3B
Pond 3D
Pond 3C
Pond 3A
COAST
Pond 2B
Pond 2A
ATLANTIC
Pond 2A Outfall
Pond 1C
Pond 1A Outfall
Pond 1B
Pond 1A
Tc
Sc
Pb
Tb
Rb
Pg
Da
Lh
Kb
33
41
Approximate Location of the Archaeological Study Area on a 1958 Soil Survey Sheet
Archaeological Study Area
Pond Footprint
Drainage Outfall
Pond Parcel
Detailed Soil Types:
Kb. Keri fine sand (Somewhat Poorly Drained)
Lh. Leon fine sand (Somewhat Poorly Drained)
Lk. Leon fine sand, light-colored surface phase (Somewhat Poorly Drained)
Rb. Ruskin fine sand (Somewhat Poorly Drained)
Tb. Tidal marsh (Tidal Flooding)



Approximate Location of the Archaeological Study Area on a 1989 Soil Survey Sheet

Archaeological Study Area

- Pond Footprint
- Drainage Outfall
- Pond Parcel

Detailed Soil Types:

29. Myakka fine sand (Poorly Drained)
30. Myakka fine sand, frequently flooded (Very Poorly Drained)
38. Pinellas fine sand (Poorly Drained)

APPENDIX J

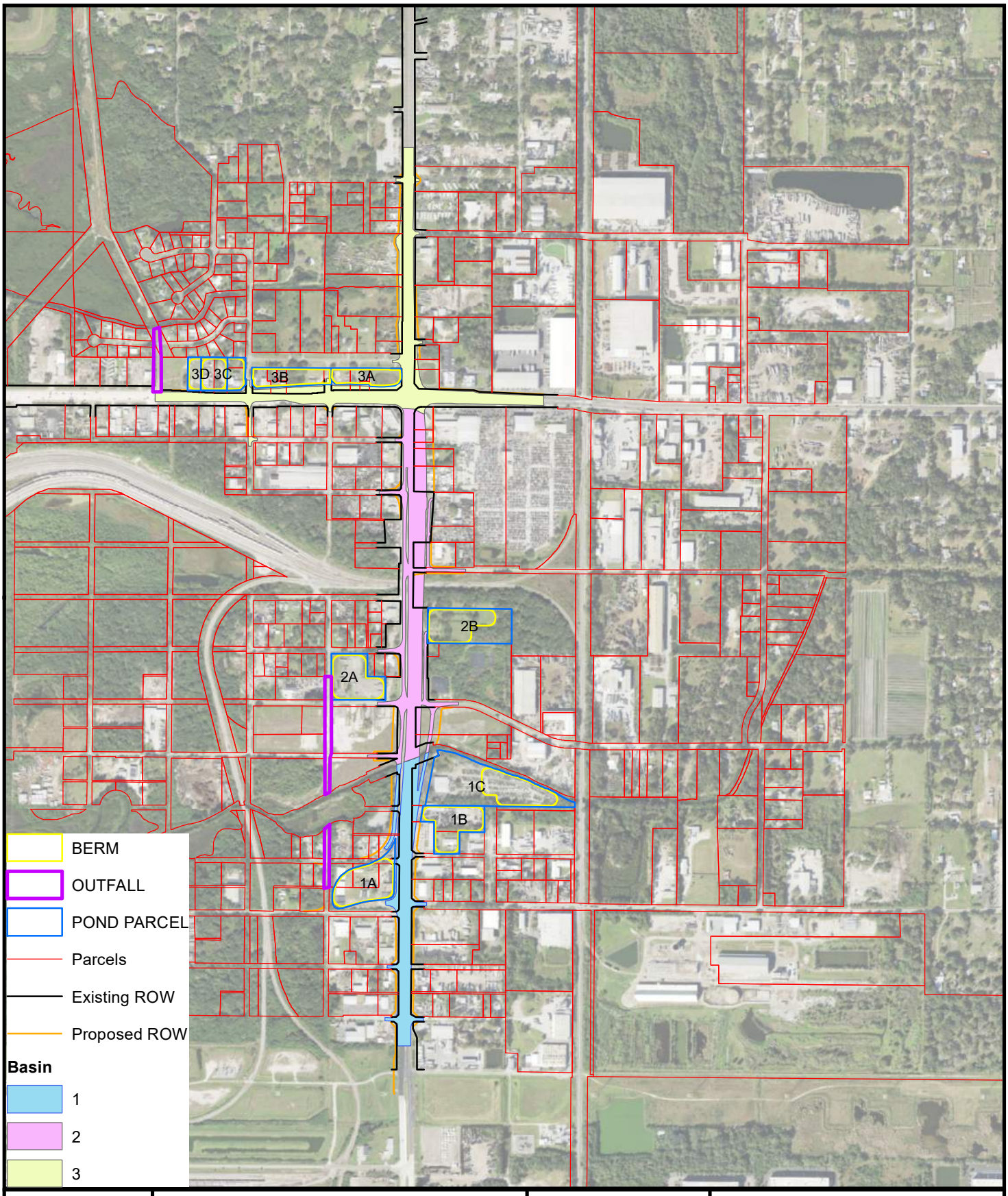
Contamination Desktop Review

DRAFT

Desktop Contamination Analysis - Pond Alternatives - October 31, 2022
US 41/SR 45/S. 50th Street at CSX Grade Separation
Hillsborough County
FPID: 440749-1-22-01

This desktop analysis of nine pond alternatives (provided on October 5, 2022) and three outfall pipe locations is intended to support the Pond Siting Report. These preliminary risk ratings are subject to change once the CSER is complete. The completed CSER for drainage sites will be submitted once the preferred drainage locations have been determined. Research conducted using a 600-foot contamination screening buffer using Map Direct database, and 13-page figures (Exide Technologies/Golder & Assoc.) provided by FDOT. The pond alternatives and outfalls are depicted on the attachment.

Basin	Drainage Site ID	Preliminary Risk Rating	Comments
1	OUTFALL	Medium	Onsite: no regulatory listings on-site; driveway and powerline easement Offsite: Exide Technologies Brownfield Site adjoining northern tip of outfall
	SMF 1A	Medium	Onsite: no regulatory listings on-site Offsite: Exide Technologies Brownfield Site within 500 feet north
	SMF 1B	Medium	Onsite: Used auto parts facility on-site northern parcel; Onsite: abandoned unknown facility on-site southern parcel; Offsite: Harcros groundwater contamination plume adjacent east
	SMF 1C	Medium	Onsite: Used auto parts facility on-site; Offsite: Exide Technologies Brownfield Site adjacent north, including proposed waste consolidation area Offsite: Harcros groundwater contamination plume adjacent south
2	OUTFALL	Medium	Onsite: paved road (Sagasta Street); no regulatory listings on-site Offsite: Exide Technologies Brownfield Site adjoining east and west, including impacted areas adjoining east, and existing and proposed waste consolidation areas adjoining east and west
	SMF 2A	Medium	Onsite: Trucking company; Registered petroleum storage tanks with no reported discharges Offsite: Exide Technologies Brownfield Site adjacent south and east, including impacted areas adjacent south, and existing and proposed waste consolidation areas adjacent south Offsite: Former gasoline station with petroleum discharge located adjacent east
	SMF 2B	Medium	Onsite: no regulatory listings onsite; Offsite: Exide Technologies Brownfield Site adjoining south Offsite: Former gasoline station with petroleum discharge located adjacent southwest
3	OUTFALL	Low	Onsite: paved road (45th Street) and powerline easement; no regulatory listings on-site; Offsite: no confirmed contamination sites within 500 ft.
	SMF 3A	High	Onsite/Adjoining south: FDOT confirmed contamination Offsite: two confirmed contamination sites within 500 feet
	SMF 3B	High	Onsite: United Oil confirmed contamination Offsite: two confirmed contamination sites within 500 feet
	SMF 3C	Low	Onsite: no regulatory listings on-site Offsite: no confirmed contamination sites within 500 feet
	SMF 3D	Low	Onsite: no regulatory listings on-site; Offsite: no confirmed contamination sites within 500 ft.



Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 1,000

1" = 1000'

RK&K

Figure 1
Pond Site Overview
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\PondSitesOverview2.mxd

7.0 Project Impacts

Based on the methodologies performed, four preferred pond sites (including one outfall) were evaluated to identify contamination concerns which may impact the proposed improvements for this project. These are discussed in **Table 1**. The location of each preferred pond site, and nearby contamination sites are illustrated in **Appendix A**.

TABLE 1: PREFERRED POND SITES

Pond Site ID	Contaminants of Concern	Risk Rating	Comments
POND 1A (and Outfall)	Solid Waste, Hazardous Wastes, Petroleum	Low	During the site reconnaissance, Pond 1A was observed as Aries Building Systems, located at 3929 S. 50th Street. According to the website, Aries is a full-service provider of short term container rentals, mobile classrooms, workforce housing and custom modular buildings. Two permanent structures were noted along the east boundary. An office trailer, apparently used for Aries' office, and a vacant, corrugated metal warehouse building with a concrete floor. Although placards for hazardous materials were noted on the outside of the corrugated metal warehouse building, no hazardous materials were observed within, or around this building. A track hoe, roll-off, and welders were working on a bare soil area in the west-central area. This appears to be where modifications, such as disassembly, demolition, welding, etc. to structures are performed. Construction materials including wood, metal, plastic, and fiberglass insulation were mixed with bare soil, apparently due to being run over with heavy equipment. Tierra estimates the area was approximately 50 feet in diameter. No petroleum storage tanks, hazardous materials, stained soil or stressed vegetation were noted on this site. Although Tierra was unable to determine if buried debris was present, this area is considered a low risk. A portion of Trenton Street (approximately 180 feet) is included in the northern area. Additionally, a container storage yard (no signage), including an office/residence is located at 3825 S. 50th Street, along the northern boundary within Pond 1A. Although visibility was limited since the site was mostly covered with storage containers, trailers and vehicles, no groundwater monitor wells, petroleum products or hazardous materials were noted. Several totes appeared to be empty. No regulatory files were found. Given the lack of a reported discharge, this site is considered a low risk. The outfall is located west and north of Pond 1A. During the site reconnaissance, vehicles were parked within the outfall. No petroleum storage tanks, hazardous materials, or stained soil was noted within the outfall. POND 1A: Aerial Photographs first depict one structure at the east-central boundary in 1980. A second structure (office trailer) was added north of it in 1995. Office trailers and storage containers were depicted in varying quantities from 1973 to 2017. In 2017, only the two permanent structures located along the east boundary remained. Office trailers and storage containers were added again from 2019 to 2022. OUTFALL: Aerial Photographs depict generally undeveloped land, except for Trenton Street (intersects proposed outfall) which was first depicted in 1957, and one structure located within the proposed outfall from 1957 to 1965. The north half was depicted as a driveway or unimproved road since 1965. Clearing was depicted in 1973, presumably for a powerline easement. Varying quantities of vehicles and/or trailers appear to have been parked/stored at various locations within the proposed outfall since 1995. Fill material was added in 2021 and 2022. The topographic map dated 1956 and photorevised in 1980 depicts Pond 1A and outfall shaded in white which indicates undeveloped land. **Contamination Concerns:** No regulatory files were found for Pond 1A, or the outfall. Offsite, six contamination sites were identified within 600 feet of this drainage site and outfall. The nearest offsite contamination concerns, beginning with the closest are: EDM 5 – Delaney Creek Brownfield Redevelopment Area/Exide Technologies is located adjoining north of the outfall, and 260 feet north of Pound 1A. This Brownfield Area, including the Institutional Control boundary encompasses 36-acres, located east and west of US 41. West of US 41, Delaney Creek is included in the Institutional Control boundary. This area is depicted in **CSER Appendix A**. Given the regulatory status, and offsite location, this site is considered a low risk. EDM 3 - Former Hi Tech Products, 4917 Hartford Street, is located 50 feet south of Pond 1A. During the site reconnaissance, this site was observed as Florida Marine Joiner Service, a provider of all marine interior outfitting, refurbishing and new-build projects. EDM's report states initial data was received on July 16, 1996, and this site is listed as "closed." The *Groundwater Investigation Report Number 96-13* dated September 1996, states "laboratory analyses of ground water and sediment samples collected at the study site indicate the presence of volatile and semi-volatile compounds in the groundwater, and semi-volatiles in the sediment." Groundwater contaminants were below GCTLs. However, sediment samples exceeded industrial Soil Cleanup Target Levels (SCTLs). Recommendations included periodic groundwater monitoring, proper containerization and disposal of "spent cleaning fluids," discontinue the application of "excess materials" to their own parking lot, and removal of the current layer of "Anti-Dust 100" from the parking lot. A groundwater flow map depicted flow to the west, cross gradient to Pond 1A, and the outfall. No further regulatory files were found on the OCULUS database. Although the address identified by EDM, and the FDEP's report state "4917" is the number associated with the address, maps included in the FDEP's report depicts the actual location at 4927 Hartford Street (based on the HCPA database). Given the separation distance of 50 feet, and cross-gradient groundwater flow, this site is considered a low risk. EDM 2 – Former Interstate Uniform Services Corp., 4027 S. 50th Street (currently 4023 S. 50th Street according to HCPA), is located 120 feet south of Pond 1A. This site was observed as Lee Auto Group, a sales and service facility. No tanks, monitor wells or hazardous materials were noted. Tank information was not provided in EDM's report, except facility status is "open." Files were not found on the OCULUS database. Therefore, Tierra emailed the Environmental Protection Commission of Hillsborough County (EPCHC) on May 4, 2021 for information regarding this facility. No records were found. Tierra also emailed the FDEP Southwest District on May 5, 2021, and no records were found. No petroleum storage tanks, or indicators such as vent pipes, fill ports, and monitor wells were noted. It is possible underground storage tank may have been, or may still be present. Tierra was unable to confirm the presence or absence of one or more petroleum storage tanks. Therefore, the location, quantity, and contents of tanks remain unknown. The possibility remains the tanks may have been and may still be underground at this facility. Given the separation distance, and lack of a reported discharge, this site is considered a low risk. The remaining sites identified in EDM's report (EDM 1, 4, and 6) are located over 300 feet from Pond 1A. Given the separation distances over 300 feet, these sites are considered a low risk. Additionally, several auto repair facilities/salvage yards (no signage noted) noted in adjacent north and west areas during the site reconnaissance are located over 50 feet from Pond 1A. Since business signage was not noted, and parcel boundaries were not obvious, these were grouped together as Site 19 Auto Repair/Salvage. According to HCPA, Site 19 includes 4724, 4725, 4906, 4914, and 4920 Trenton Street. Given the separation distance, lack of reported discharges, and lack of contamination concerns noted during the site reconnaissance, these sites are considered a low risk. **Risk Rating:** Given the lack of documented contamination within the boundaries, and separation distance from offsite contamination concerns, POND 1A (including outfall) is assigned a risk rating of Low.

POND 2B	Solid Waste, Hazardous Wastes, Petroleum	Low	During the site reconnaissance, this site was observed as a staging yard for the adjoining southeast Edge Metals Recycling facility. The address is 5005 Performance Park Boulevard according to information found on the HCPA database. One open (no siding), metal roof shed was noted along the north boundary onsite. The west and central areas used for truck and trailer parking/storage, and metal storage containers. Land surface was comprised mainly of crushed asphalt. Several dewatering pumps, metal pipes, and equipment parts were stored in the east-central area. The eastern area was woods, and low, wet areas. Manmade ditches were located along the south and east boundaries. No petroleum tanks, hazardous materials, stained soil, stressed vegetation or groundwater monitor wells were noted. In an interview during the site reconnaissance on January 5, 2023, Mr. Mike Wortham, stated he is co-owner of the Edge Recycling facility which leases this site. He further stated no petroleum products or hazardous materials were on-site. Approximately 4 ½-inches of crushed asphalt was added to "level the site." Offsite, "warning" signs associated with EDM 5 – Delaney Creek Brownfield Redevelopment Area/Exide Technologies were noted along the south boundary which state "Contaminated Area Avoid Contact with Soil and Water…for information call FDEP (813) 470-5700." See discussion below. East of Pond 2B, clearing was in progress, and haul road was noted. Aerial photographs depict the site as cleared land, a manmade ditch along the east boundary, and possibly a low, wet area (southeast area) in 1957. Earthwork and possibly dumping was noted along the southern boundary (350 feet east of US 41 ROW) in 1973, 1980, and 1995. Although dense vegetation obscured visibility in this area during the site reconnaissance, evidence of dumping was not obvious during the site reconnaissance. Several trails were noted in 1998. A small grove was noted in the southeast area in 2002. Given the very short existence (only depicted in 2002 and gone in 2003) of the small grove, and lack of grove support structures in the southeast area onsite, this is considered a low risk. Small areas were cleared along the north-central boundary, and in the east-central area in 2003, 2007, and 2008. The site was developed and used as a paint ball park from 2014 to 2021, and cleared with a manmade ditch added along the south boundary in 2022. Most of the eastern area was cleared in 1957, and remained wooded from 1965 to current. The topographic map dated 1956 and photorevised in 1980 depicts white shading which indicates undeveloped land. One manmade ditch was depicted near the east boundary onsite. No structures were noted. **Contamination Concerns:** No regulatory listings were found for Pond 2B. Offsite, the nearest contamination concern is the adjoining south EDM 5 - Delaney Creek Brownfield Redevelopment Area/Exide Technologies site. This Brownfield Area, encompasses 36-acres, and is located east and west of US 41. This area is depicted in **CSER Appendix A**. During the site reconnaissance, this location was observed as fenced, grassy, and overgrown areas. Warning signs posted on the fence states "contaminated area avoid contact with soil and water," with the FDEP as the contact. EDM's report states discovery, assessment and remediation activities began in 1980. Cleanup status is listed as "open." The Annual Groundwater Monitoring Report dated July 2022 concludes "groundwater monitoring data from this reporting period are generally consistent with data obtained during historical groundwater monitoring events. The exception currently being evaluated is the disparity between results for samples from monitoring wells and results for samples collected from DPT/temporary locations during the recent injection events." The continuation of bioremediation groundwater injections was recommended to proceed semi-annually. An accelerated bioremediation program for treating chlorinated ethenes in groundwater was instituted in 2005. Metals, VOCs, and natural attenuation parameters are monitored quarterly, semiannually or annually. Groundwater flow in the upper surficial aquifer is generally to the south, towards Delaney Creek. Groundwater flow in the middle and lower surficial aquifer is generally to the west-southwest. Figures included in the report depict the nearest groundwater plume (arsenic) located 40 feet southwest of Pond 2B. Other groundwater plumes including arsenic, sulfate, and organics are depicted over 550 feet southwest of Pond 2B. See excerpts in **CSER Appendix F**. The Phase 4 Remediation Completion Report dated August 5, 2022 states 15,010 cubic yards of waste/soil (lead impacted soil, battery casings and components) were excavated and/or moved to the Waste Consolidation Area (Area 1), then were covered with warning fabric, 1.5 feet of clean fill, 0.5 feet of topsoil, and sod or seed. Given the regulatory status, groundwater flow to the south, away from Pond 2B, and groundwater testing results onsite (near south-central boundary), and near the north boundary of Pond 2B below GCTLs, this site is considered a low risk. Note: groundwater monitor wells were not observed onsite during the site reconnaissance. However, the mangled remains of both 1-inch and 2-inch diameter PVC was observed within the manmade ditch where two groundwater monitor wells were noted during the May 2021 site reconnaissance. Given the lengths, diameters, and location of the PVC remains, Tierra presumes these were the remains of the former monitor wells. EDM 7 – Foy's Transport Tire Service (Former Coastal Mart #628), is 3411 South 50th Street, located 280 feet southwest of Pond 2B. EDM's report states this site is a closed retail gas station with a total of four registered USTs removed in 1991. Two discharges were reported with discharge dates of December 7, 1988, and December 30, 1988. Site assessment is on-going. This facility is in the FDEP EDI program with a score/rank of 35/8533 (score when ranked 10) effective in 2012. Additionally, this facility is an inactive waste tire collector. A Supplemental Site Assessment Report (SSAR) dated April 30, 2021 (revised May 18, 2021) states groundwater testing conducted on November 25, 2020, found that "Dissolved hydrocarbon concentrations exceeded Natural Attenuation Default Concentrations (NADCs)," and GCTLs. The groundwater petroleum plume is depicted over 280 feet southwest of Pond 2B. See excerpts in **CSER Appendix F**. Given the separation distance of 280 feet, this site is considered a low risk. EDM 8 – Torbo Truck Repair/Ray's Truck Rental (Former Southeast Industrial and GTE Of FL Fleet CTR), 5160 Saint Paul Street (currently 3140 S. 50th Street according to HCPA), is located 280 feet north of Pond 2B. During the May 2021 site reconnaissance, this site was observed as a facility named Southeast Industrial, a business that provides vacuum trucks, hydro blast services, and acid tower maintenance services. EDM's report states this site has three registered 200-gallon USTs (installation dates unknown). Tank contents included: unleaded gasoline, new/lube oil, and waste oil. The three USTs were removed from the site on October 31, 1986. No discharges were reported. The most recent file on the FDEP OCULUS database dated June 19, 2007 states the facility has "closed/moved." While performing research for Southeast Industrial (ERIC_13883) located at 4513 Causeway Boulevard, it was discovered that files related to this site were included. In an undated mix of documents found on OCULUS, the most recent was a meeting sign-in sheet dated January 9, 2014. Figures depicting groundwater monitor well locations, and a "Groundwater Analytical Summary" table (no date; presumably 2013 or 2014) were also included. According to the table, the most recent sampling event occurred on December 30, 2013, and included all six groundwater monitor wells. Arsenic and manganese exceeded the GCTL (MW-50TH-1, and MW-50TH-4), but were below their NADCs. In 2009, sulfate exceeded the GCTL at MW-50TH-1, but was below the NADC in 2013. See excerpts in **CSER Appendix F**. Given the separation distance of 280 feet, this site is considered a low risk. EDM 9 – Azucar Sandwich Shop (Former C Mart #629), 3137 South 50th Street, is located 360 feet northwest of Pond 2B. This former gasoline station was issued an SRCO on December 6, 2022 for the May 19, 1988 discharge (see excerpts in **CSER Appendix F**). An EPCHC letter dated December 6, 2005 states "EPC staff reviewed the subject site file and concluded that the 10/16/86 discharge is data entry error. Therefore, the discharge should be deleted from PCT." See letter in **CSER Appendix F**. Given the separation distance, and regulatory status, this site is a low risk. The following contamination sites were noted offsite, in surrounding areas during the site reconnaissance, and review of historical aerial photographs. The nearest is Site 20 - Edge Metals Recycling, 5120 36th Avenue South, located 60 feet southeast of Pond 2B. One 550-gallon diesel AST was observed 300 feet southeast of Pond 2B. Given the separation distance of 300 feet to the AST, this site is considered a low risk. The remaining sites are located over 150 feet from Pond 2B, and include: Site 21 - CSX railroad tracks (north), Site 22 - Tony & Son Trucking, 3929 S. 50th Street (west), and Site 23 - Miconn Scaffolding 3309 S. 50th Street (west). No regulatory files were found for these sites. Given the separation distances of over 150 feet, these sites are considered a low risk. **Risk Rating:** Following extensive assessment and remediation, soil and groundwater contamination, and buried debris associated with the adjoining south Delaney Creek Brownfield Redevelopment/Exide Technologies site were not identified within Pond 2B; and groundwater flow to the south, away from Pond 2B. Therefore, Pond 2B is assigned a risk rating of Low.

POND 3A	Petroleum	**High**	During the site reconnaissance, the eastern portion of Pond 3A was observed as an existing manmade pond. The central portion is comprised of Site 28 - Thach Tire & Rim, 4916 Causeway Boulevard, a tire repair and replacement business. Small quantities (less than two gallons) of tire lubricant soap was noted at the tire compressor machine. The soap was situated on concrete, and is bio-degradable. The northern area was "built up," possibly the septic drainfield, and mostly covered with outdoor carpet. Several tire storage shelters (tents/shed), and several automobiles were parked/stored north of the main building. Based on an interview performed during the site reconnaissance on December 20, 2022, the owner (no name given) stated she was not aware of petroleum storage tanks or hazardous materials onsite. She also stated one hydraulic lift with an aboveground hydraulic fluid reservoir was removed from the west service bay; and she was not aware of previous use as a gasoline station. According to the EDM report, this facility is currently registered as an active waste tire collector. No petroleum storage tanks or monitor wells were noted. The western portion of Pond 3A is comprised of Site 15 - First Choice Cars, 4902 Causeway Boulevard, an auto repair facility. Repairs were performed in the west-central area on a concrete pad. The remainder of the site was bare soil and grass. Several small containers (less than 5-gallons) of lubricants, and solvents, along with tools and parts were stored in box containers located in the west-central area north of the concrete pad. Most of the parcel surface was obscured with parked/stored automobiles, and semi-trailers. An area of stained soil (apparently waste oil) approximately 10 square feet was observed about 10 feet north of the concrete pad (coordinates 27° 55.408 North, 82° 24.213). Photo documentation is provided in **Appendix E**. No petroleum storage tanks or monitor wells were noted. This site was identified in EDM's report as EDM 15 - FDOT Right-of-Way NE Corner of Sagasta & SR 676 located along the south boundary of Pond 3A (near west end). EDM's report states this site had five former USTs removed in 2008. The work was performed by the FDOT who reported a discharge on May 16, 2008. The Tank Closure report/Contamination Discovery Notification dated May 15, 2008 states that five unregistered USTs (one 400-gallon, two 530-gallon, and two 3,300-gallon) were discovered while performing utility structure installation/support services. The contents of each tank were unknown, and the tanks were removed in February 2008. Source removal of contaminated soils was performed in March and April 2008. The area was backfilled with clean fill material and FDOT construction activities resumed. An EPCHC letter dated June 23, 2008 states that further site assessment is required. However, an FDOT letter dated August 4, 2008 states that since the site had pre-existing contamination before FDOT involvement, the responsible party should be the entity that caused the contamination, and the FDOT did not plan to conduct further assessment at that time. See excerpts in **CSER Appendix F**. No SRCO was found. Tierra is not aware if a search for other USTs using GPR, or other means was used to determine if other USTs may be present in this vicinity. Since no tank closure/assessment reports were found, it is possible other USTs may be present. Given the lack of assessment/closure documentation, potential for other remaining USTs, and location within/near Pond 3A, this site is considered a high risk. The 1957 aerial photograph depicts five structures, and an RV park in the western area. Several trailers/mobile homes were added in 1965, and 1973. The RV park and structures located in the western area were no longer present, and the area is overgrown in 1980. One mobile home in the north-central area was removed by 1991. Clearing/earthwork was depicted in the central area in 1995 and 1998. Two structures along the south boundary were removed by 2002. The large structure at the southeast corner was removed by 2005. Approximately 10 to 15 trailers were depicted in the western area from 2003 to 2005. Debris and one roll-off was depicted in the western area in 2006. Only three structures were depicted along the south-central boundary in 2006. No other structures were depicted. The manmade Pond (eastern area) was first depicted in 2009. In the western area, clearing/earthwork was depicted in 2009 and 2010. The 2015 and 2016 aerial photographs depict one structure (possibly an office trailer) within a fenced area, and a concrete pad (south of fenced area) in the western area. Several structures were added in the central area from 2017 to 2019. The western area was vacated in 2018. Several semi-trailers and multiple vehicles were depicted in the western area from 2020 to 2022. The topographic map dated 1956 and photorevised 1980 depicts eight structures within Pond 3A, and/or along the south boundary. **Contamination Concerns:** Offsite, the following five sites were identified with regulatory files, and are located within 600 feet of Pond 3A: EDM 11 – Former Talman Tank and Equipment, 4701 Causeway Blvd, located 300 feet southwest of Pond 3A. During the site reconnaissance, this site was observed as Florida Tank Services Inc., a tanker repair facility. No groundwater monitor wells were noted. EDM's report states this facility has one 1,000-gallon leaded gasoline UST which was installed in 1982, and closed in place in March 1986. Given the separation distance of 300 feet, this site is considered a low risk. EDM 12 – FDOT ROW, 7-Eleven Store, 2801 S 50th St and 4919 Causeway Blvd, is located 160 feet south of Pond 3A. During the site reconnaissance, this site was observed as an active Marathon gas station. It should be noted that two facility IDs are listed at this address. According to the EDM report, thirteen tanks are registered under Facility ID 8625555: four 4,000-gallon USTs (two unleaded gasoline, one leaded gasoline, one diesel fuel) were removed from the site in 1987; one 4,000-gallon diesel fuel UST and three 10,000-gallon unleaded gasoline USTs were removed in 1998; one 20,000-gallon diesel fuel UST was removed in 2017; and two unleaded gasoline USTs (20,000-gallon, 15,000-gallon) were removed in 2018. One 20,000-gallon ethanol E10 UST and one 20,000-gallon diesel fuel UST are currently in service at the site. Petroleum discharge dates and statuses for Facility ID 8625555 are as follows: • September 11, 1988 – cleanup complete (SRCO issued August 24, 2016) • February 24, 1995 – cleanup complete (SRCO issued August 24, 2016) • June 10, 1999 – cleanup not required • January 8, 2007 – cleanup complete (SRCO issued April 15, 2010) • September 13, 2017 – cleanup complete (SRCO issued February 21, 2019) • January 31, 2018 – cleanup complete (SRCO issued May 22, 2019) According to EDM's report, one 1,000-gallon "other non-regulated" UST registered under Facility ID 9810315 was removed in March 2008. The Tank Closure Report/Contamination Discovery Notification dated May 14, 2008 states that one unregistered 1,000-gallon UST was discovered at the southwest corner of the US 41 and Causeway Boulevard intersection while performing FDOT utility structure installation/support services. The tank contained sand upon discovery. The tank was removed in March 2008. Following the tank removal, soil and groundwater samples were collected. The results of one soil sample (SS-8) exceeded SCTLs for benzo(a)pyrene and benzo(a)pyrene equivalents. Groundwater sampling results did not exceed GCTLs. Source removal of contaminated soils was performed in March and April 2008. The area was backfilled with clean fill material and FDOT construction activities resumed. Due to the presence of hydrocarbon-impacted soil, a discharge was reported on April 2, 2008. An EPCHC letter dated June 24, 2008 states that further site assessment is required. However, an FDOT letter dated August 4, 2008 states that since the site had "pre-existing contamination not caused or exacerbated by FDOT," the responsible party should be the entity that caused the contamination. The FDOT planned no further assessment at that time. See excerpts in **CSER Appendix F**. Given the separation distance of 160 feet, this site is assigned a risk rating of Low EDM 14 – Sunoco (Former United Oil #215), 4714 Causeway Blvd, is located 40 feet west of Pond 3A. This site was observed as an active Sunoco gas station, with the tank farm located 70 feet west of Pond 3A. Multiple groundwater monitor wells were also noted. According to the EDM report, this site has a total of eight registered petroleum tanks. Six USTs (unleaded gasoline, and diesel) were removed in 2000 and 2009. Two USTs (one 16,000-gallon unleaded gasoline, and one 12,000-gallon diesel) installed in 2009 remain in-service. Petroleum discharges were reported on December 28, 1988 and August 21, 1989. Cleanup for these discharges was combined and is currently in progress. The FDEP Deliverable Review letter dated August 30, 2022 states two offsite replacement wells to the south could not be installed due to lack of offsite access; a new scope of work will be forwarded to FDEP for issuance of a new Purchase Order; contamination concentrations are trending downward; the Natural Attenuation Default Concentration (NADC) for naphthalene was exceeded at MW-10; and the Environmental Protection Commission does not believe moving forward with a Pilot Test is warranted at this time. The Remedial Action Interim Report dated July 22, 2022 states GCTL exceedances were identified at four groundwater monitor wells: MW-4, MW-4R, MW-10, and CW-4. Figures in the report depict the groundwater plume 110 feet west of Pond 3A, and groundwater flow to the east, towards Pond 3A. Although SCTL exceedances were not identified, OVA readings ranged from less than 1 to 437 parts per million (ppm). Depth to groundwater ranged from 2.38 feet bls to

TABLE 1: PREFERRED POND SITES			
Pond Site ID	**Contaminants of Concern**	**Risk Rating**	**Comments**
			3.20 feet bls in May 2022. A Pilot Test Plan was recommended. See excerpts in **CSER Appendix F**. An FDEP offsite notification letter was submitted to the FDOT on February 10, 2017 for soil and/or groundwater contamination associated with this facility within the Causeway Boulevard ROW. Given the separation distance of 80 feet from the tank farm and 100 feet from the groundwater plume, this site is considered a low risk. EDM 16 – Former Chevron #48098, 2718 S 50th St, located 120 feet east of Pond 3A. This site was observed as a manmade pond. According to the EDM report, three "generic gasoline" USTs (capacity not specified) were removed from this site in January 1983. Petroleum discharges were reported on September 15 and September 16, 1987. The cleanup was combined and a No Further Action (NFA) letter was issued on April 20, 1994. No current contamination concerns were identified. Due to the lack of current contamination concerns, this site is considered a low risk. The following sites identified in EDM's report are located over 300 feet from Pond 3A. These are considered a low risk given the separation distance of at least 300 feet, and the types of regulatory listings. EDM 13 - Rosier Property (Former Gas Station, TANKS 8945228), 4702 Causeway Boulevard and 2750 S. 47th Street, located 480 feet west of Pond 3A. EDM 17 – Richards Construction Co. (TANKS 9600925), 5010 27th Avenue, located 350 feet northeast of Pond 3A. EDM 18 – Chavez Auto Transport (LUST/TANKS 9502663), 2436 S. 50th Street, located 420 feet northeast of Pond 3A. The following five sites identified during the site reconnaissance, and on aerial photographs are located at least 100 feet from Pond 3A. No regulatory files were found. These are considered a low risk given the separation distance of at least 100 feet, and lack of a reported discharge. Site 24 – Pro Tech Truck Service, 4901 Causeway Boulevard, located 170 feet south of Pond 3A. Site 25 – Delmar Automotive, 4717 Causeway Boulevard, located 180 feet southwest of Pond 3A. Site 27 – Allen's Access and Gate Automation, 4710 Causeway Boulevard , located 350 feet west of Pond 3A. Site 29 – Cubic Storage & Office Systems, 2449 S. 50th Street, located 100 feet north of Pond 3A. Site 30 – Avengers Auto Body Repair Shop/DMD Motors (former CSD Truck Repairs), 2802 S. 50th Street, located 240 feet southeast of Pond 3A. **Risk Rating:** Given the petroleum stained soil (10 square feet) observed in southwest area during the site reconnaissance, and the lack of tank closure/assessment, potential for other USTs remaining, and location within/near the southern boundary, Pond 3A is assigned a risk rating of High.

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POND 3B	Petroleum	**High**	During the site reconnaissance, this site was observed with Sagasta Street along the east boundary, a residence (4711 E. El Camino Boulevard) in the north-central, and three commercial businesses (from west to east): EDM 13 - Rosier Property (Former Gas Station), 4702 Causeway Boulevard and 2750 S. 47th Street, is located within the western portion of Pond 3B. During the site reconnaissance, two businesses were observed at this site: R&E Tire Plus at 2750 S. 47th Street (western portion of parcel), and Caballero Auto Service at 4702 Causeway Boulevard (eastern portion of parcel). Both were used as active auto repair shops. A pump island (no pumps) with an aboveground hydraulic lift was noted south of the Caballero buildings. No groundwater monitor wells, or evidence of USTs (vent pipes, fill ports, etc.) were noted. However, visibility was mostly obscured with vehicles covering much of this parcel. This parcel was mostly paved (concrete and asphalt). One waste oil AST with stained soil (approximately 5 square feet) was noted just east of the AST. Several hydraulic lifts, and several 55-gallon drums labeled used oil filters were noted. According to the EDM report, this facility formerly maintained two leaded gasoline USTs (2,000-gallon, 4,000-gallon) which were removed from the site in July 1989. The tank registration form dated October 16, 1989 was found on the OCULUS database, but no maps, figures, or coordinates were provided. Although no discharges were reported, the lack of documentation supporting the tank removals is considered a data gap. The USTs and piping may remain within or near Pond 3B. The location of the former tanks was not identified in regulatory files or during the site reconnaissance. This site was first depicted on the 1965 aerial photograph, with an expansion to the north in 2005. Due to the lack of closure assessment, and the possibility USTs, and/or petroleum impacts may remain within Pond 3B, this site is considered a high risk. Site 27 – Allen's Access and Gate Automation, 4710 Causeway Boulevard, is located in the west-central area. During the site reconnaissance, this site was observed as Allen's Access and Gate Automation. Two 5-gallon gasoline containers were noted near the lawn equipment storage area, 30 feet north of the Causeway Boulevard ROW. No hazardous materials, or groundwater monitor wells were noted. No regulatory files were found. This site was first depicted on the 1957 aerial photograph. Given the lack of a reported discharge, this site is considered a low risk. EDM 14 – Sunoco (former United Oil #215), 4714 Causeway Blvd, is located within the eastern portion of Pond 3B. During the site reconnaissance, this site was observed as an active Sunoco gas station. The tank farm, and multiple groundwater monitor wells are located within Pond 3B. Areas to the north and west of the Sunoco were grassy with sparse trees. According to the EDM report, this site has a total of eight registered petroleum tanks. Six USTs (unleaded gasoline, and diesel) were removed in 2000 and 2009. Two USTs (one 16,000-gallon unleaded gasoline, and one 12,000-gallon diesel) installed in 2009 remain in-service. Petroleum discharges were reported on December 28, 1988 and August 21, 1989. Cleanup for these discharges was combined and is currently in progress. The FDEP Deliverable Review letter dated August 30, 2022 states two offsite replacement wells to the south could not be installed due to lack of offsite access; a new scope of work will be forwarded to FDEP for issuance of a new Purchase Order; contamination concentrations are trending downward; the Natural Attenuation Default Concentration (NADC) for naphthalene was exceeded at MW-10; and the Environmental Protection Commission does not believe moving forward with a Pilot Test is warranted at this time. The Remedial Action Interim Report dated July 22, 2022 states GCTL exceedances were identified at four groundwater monitor wells: MW-4, MW-4R, MW-10, and CW-4. Figures in the report depict the groundwater plume 20 feet south of Pond 3B, and groundwater flow to the east, and south, cross-gradient and down-gradient from Pond 3B, respectively. Although SCTL exceedances were not identified, OVA readings ranged from less than 1 to 437 parts per million (ppm). The highest readings were south of the tank farm, near the south boundary of Pond 3B. Depth to groundwater ranged from 2.38 feet bls to 3.20 feet bls in May 2022. A Pilot Test Plan was recommended. See excerpts in **CSER Appendix F**. An FDEP offsite notification letter was submitted to the FDOT on February 10, 2017 for soil and/or groundwater contamination within the Causeway Boulevard ROW. This site was first depicted on the 1973 aerial photograph. Given the USTs located within Pond 3B, and the proximity of the groundwater plume, and impacted soil, this site is considered a contamination risk to Pond 3A. Aerial photographs depict the western area with one or two structures, and the eastern area as an open field in 1957. Another structure (EDM 13 - gas station) was depicted at the southwest boundary in 1965, and another structure (EDM 14 - gas station) was depicted at the southwest boundary in 1973. A trailer/mobile home was depicted in the northwest area from 1973 to 1991. Clearing/earthwork was depicted in the western area in 1998 and 2002. In the eastern area, clearing/earthwork, and one trailer/mobile home was depicted in 2002. In the western area, multiple vehicles were depicted from 2006 to 2022. The northwest area was paved in 2020. The topographic map dated 1956 and photorevised 1980 depicts white shading which indicates undeveloped land, and five small structures. **Contamination Concerns:** Offsite, the nearest contamination concerns are: Site 15 - First Choice Cars, 4902 Causeway Boulevard, an auto repair facility is located adjoining east of Pond 3B. Repairs were performed 50 feet east of Pond 3B. Several small containers (less than 5-gallons) of lubricants, and solvents, along with tools and parts were stored in box containers located in the west-central area north of the concrete pad. Most of the parcel surface was obscured with parked/stored automobiles, and semi-trailers. No petroleum storage tanks or monitor wells were noted. This site was identified in EDM's report as EDM 15 - FDOT Right-of-Way NE Corner of Sagasta & SR 676. EDM's report states this site had five former USTs removed in 2008. The work was performed by the FDOT who reported a discharge on May 16, 2008. The Tank Closure Report dated May 15, 2008 states that five unregistered USTs (one 400-gallon, two 530-gallon, and two 3,300-gallon) were discovered while performing utility structure installation/support services. Source removal of contaminated soils was performed in March and April 2008. The area was backfilled with clean fill material and FDOT construction activities resumed. An EPCHC letter dated June 23, 2008 states that further site assessment is required. However, an FDOT letter dated August 4, 2008 states that since the site had pre-existing contamination before FDOT involvement, the responsible party should be the entity that caused the contamination, and the FDOT did not plan to conduct further assessment at that time. See excerpts in **CSER Appendix F**. No SRCO was found. Tierra is not aware if a search for other USTs using GPR, or other means was used to determine if other USTs may be present in this vicinity. Since no tank closure/assessment reports were found, it is possible other USTs may be present. Given the proximity, lack of assessment/closure documentation, potential for other remaining USTs, this site is considered a risk to Pond 3B. Site 26 – EZ Hollywood Tops (former gasoline station), 4710 Causeway Boulevard, is located 70 feet west of Pond 3B. During the site reconnaissance, this site was observed as EZ Hollywood Tops, an automotive service shop. Although the parking lot appeared recently resurfaced, cuts in the asphalt resembled former pump islands and groundwater monitor wells. The service bays and storage areas were mostly not visible (behind walls and covered fencing) during the site reconnaissance. No vent pipes, fill ports or ASTs were noted. No regulatory files were found. This site was first depicted in 1965. Pump islands were noted on aerial photographs from 1965 to 1980. Given the separation distance of 70 feet, and lack of a reported discharge, this site is considered a low risk. The following four sites identified during the site reconnaissance, and on aerial photographs are located at least 160 feet from Pond 3B. These are considered a low risk given the separation distance of at least 160 feet, and lack of a reported discharge. Site 24 – Pro Tech Truck Service, 4901 Causeway Boulevard, located 160 feet south of Pond 3B. Site 25 – Delmar Automotive, 4717 Causeway Boulevard, located 160 feet south of Pond 3B. Site 28 - Thach Tire & Rim, 4916 Causeway Boulevard, located 200 feet east of Pond 3B. Site 29 – Cubic Storage & Office Systems, 2449 S. 50th Street, located 400 feet northeast of Pond 3B. **Risk Rating:** Given the Sunoco gas station (EDM 14) USTs located within Pond 3B, the proximity of the groundwater petroleum plume, and impacted soil; the potential USTs and/or soil and groundwater impacts associated with EDM 13 (former gas station) may be within Pond 3B; and the proximity, lack of assessment/closure documentation, potential petroleum impacts associated with Site 15, Pond 3B is assigned a risk rating of High.

APPENDIX K

Right of Way Cost Determination

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FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	Alternate:	Pond 1 A	District:	Seven
County:	Hillsborough	Segment:	N/A	Date:	19-Dec-22
State Rd.:	45	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	0	0
Total Parcels	0	0

Estimated Relocatees:	
Business	1
Residential	0
Signs	0
Special	4
Total Relocatees	5

R/W SUPPORT COSTS (PHASE 41)

							Amount
1. Direct Labor Cost	(Parcels	0	x	20,000 =	Rate)		0
2. Indirect Overhead	(Parcels	0	x	0 =	Rate)		0
3.						TOTAL PHASE 41	$0

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial					0	Parcels	x 30,000 =	0	
5. Business Damage CPA Fees Through Trial					0	Claims	x 19,000 =	0	
6. Court Reporter & Process Servers	50%	x	0	= 0	Parcels	x 500 =	0		
7. Expert Witness	75%	x	0	= 0	Parcels	x 30,000 =	0		
8. Mediators	75%	x	0	= 0	Parcels	x 2,400 =	0		
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x 15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x 15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x 5,000 =	0	
12.							TOTAL PHASE 4B		$15,000

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount	929,828	x	120%	* *Design plan stage*	=	1,115,800		
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	=	0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			1,115,800	
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)	=	133,900		
17. Litigation Awards (Factor	45%	x	40%	of Line 15)	=	200,800		
18. Business Damages (Claims	0	x	0	)	=	0		
19. Bus. Damages Incrs. (Factor	25%	x	$ -	)	=	0		
20. Owner Appr. Fees (Parcels	0	x	$15,000	)	=	0		
21. Owner CPA Fees (Claims	0	x	$16,000	)	=	0		
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	334,700	x	33%	)	=	110,500		
23. Owner Expert Witness (Comm.+Unimp.)	0	+	0	) x 18,000	=	0		
24. Other Condemn. Costs	0	x	$1,000		=	0		
25. SUBTOTAL				(Lines 16 thru 24)	=		445,200	
26.						TOTAL PHASE 43		$1,561,000

** Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

	Replacement Housing		Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
	Move Costs				
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	1	=	40,000
32. Personal Property	$3,000	x	4	=	12,000
33. (Lines 28 thru 32)					TOTAL PHASE 45 $52,000
34. Relocation Services Cost			$5,200	(Not in Phase Total)	
35.					
36.					
37.				(All Phases)	TOTAL ESTIMATE $1,628,000

Real Estate:	Richard E. Sliz	Signed:		Date:	12/19/2022
Bus. Dam. :	Richard E. Sliz	Signed:		Date:	12/19/2022
Relocation:	Richard E. Sliz	Signed:		Date:	12/19/2022
Overall Review:	D. Wade Brown	Signed:		Date:	12/19/2022

Cost Estimate Sequence #: Dated: 12/19/2022 In the Amount of $ $1,628,000 Data Input Completion Date: 12/19/2022

REMARKS:

All three parcels are considered to be one parent tract.
The pond site does not acquire the entire remainder property, however the right of way will require the additional property .
The taking of the entire property will offset $150,000 in business damages from the mainline estimate.

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: | Gaming 1: X | Special Purpose: | Docs to RW:

Comments:

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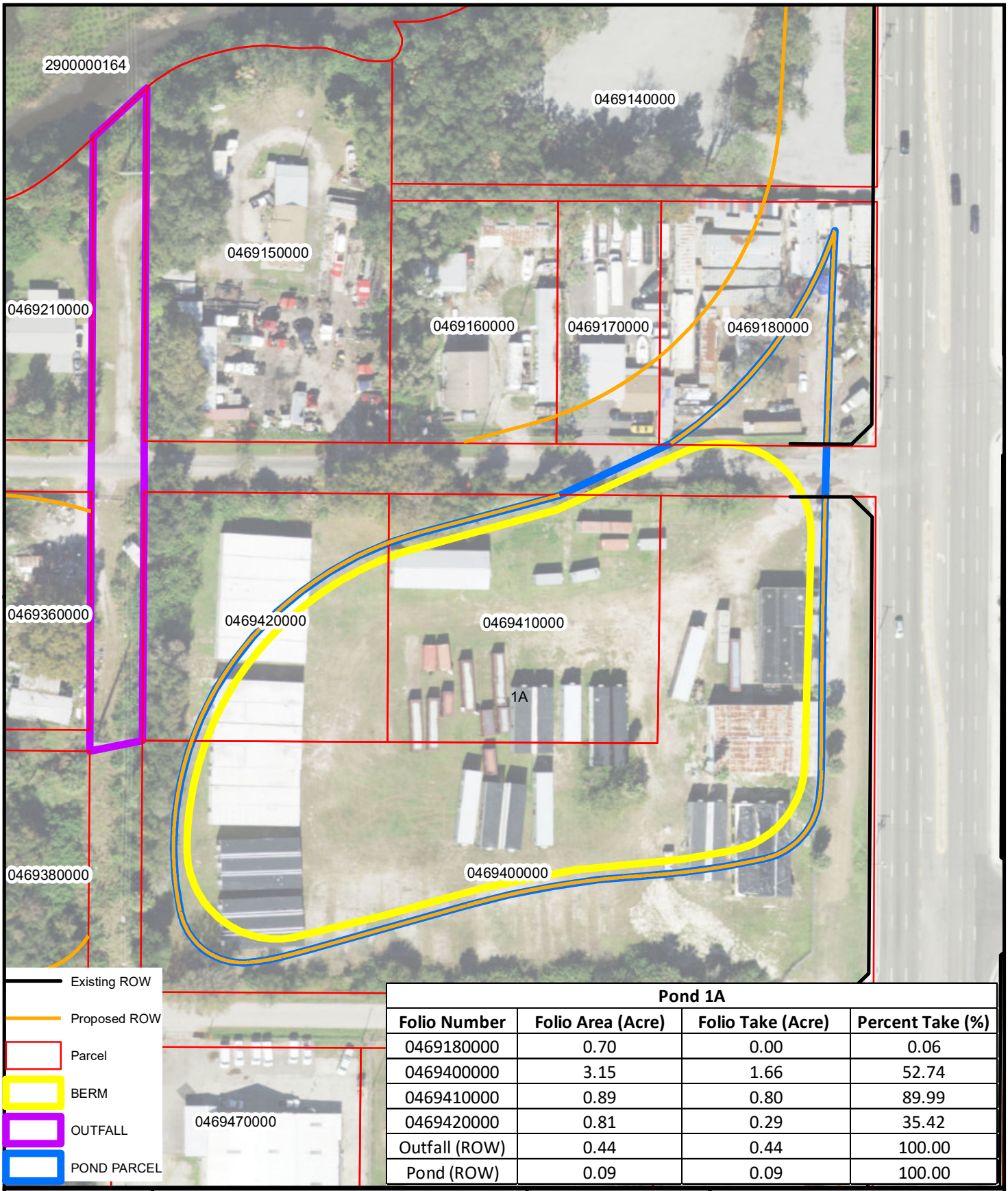


Pond 1A			
Folio Number	Folio Area (Acre)	Folio Take (Acre)	Percent Take (%)
0469180000	0.70	0.00	0.06
0469400000	3.15	1.66	52.74
0469410000	0.89	0.80	89.99
0469420000	0.81	0.29	35.42
Outfall (ROW)	0.44	0.44	100.00
Pond (ROW)	0.09	0.09	100.00

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 100

1" = 100'

RK&K

Pond 1A
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond1A.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	Alternate:	Pond 1B	District:	Seven
County:	Hillsborough	Segment:	N/A	Date:	2-Dec-22
State Rd.:	45	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	1
Residential	0	0
Unimproved	0	0
Total Parcels	0	1

Estimated Relocatees:	
Business	2
Residential	0
Signs	0
Special	5
Total Relocatees	7

R/W SUPPORT COSTS (PHASE 41)

									Amount
1. Direct Labor Cost	(Parcels	1	x	20,000	=	Rate)			20,000
2. Indirect Overhead	(Parcels	1	x	0	=	Rate)			0
3.								TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

										Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000	=	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000	=	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500	=	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000	=	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400	=	2,400	
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000	=	30,000	
10. Miscellaneous Contracts					1	Per Project	x	15,000	=	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000	=	0	
12.									TOTAL PHASE 4B		$107,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount	1,153,406	x	120%	* *Design plan stage*	=		1,384,100		
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	=		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)				1,384,100	
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)	=		166,100		
17. Litigation Awards (Factor	45%	x	40%	of Line 15)	=		249,100		
18. Business Damages (Claims	0	x	0	)	=		0		
19. Bus. Damages Incrs. (Factor	25%	x	$ -	)	=		0		
20. Owner Appr. Fees (Parcels	1	x	$15,000	)	=		15,000		
21. Owner CPA Fees (Claims	0	x	$16,000	)	=		0		
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	415,200	x	33%	)	=		137,000		
23. Owner Expert Witness (Comm.+Unimp.)	1	+	0	) x 18,000	=		18,000		
24. Other Condemn. Costs	1	x	$1,000		=		1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=			586,200	
26.							TOTAL PHASE 43		$1,970,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
	Replacement Housing						
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
	Move Costs						
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	2	=	80,000		
32. Personal Property	$3,000	x	5	=	15,000		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$95,000
34. Relocation Services Cost			$9,500	(Not in Phase Total)			
35.							
36.							
37.				(All Phases)		TOTAL ESTIMATE	$2,193,200

Real Estate:	Richard E. Sliz	Signed:		Date:	12/7/2022
Bus. Dam. :	Richard E. Sliz	Signed:		Date:	12/7/2022
Relocation:	Richard E. Sliz	Signed:		Date:	12/7/2022
Overall Review:	D. Wade Brown	Signed:		Date:	12/7/2022

Cost Estimate Sequence #: Dated: 12/7/2022 In the Amount of $ $2,193,200 Data Input Completion Date: 12/7/2022

REMARKS:

The total taking offsets $200,000 in business damages that were included in the mainline cost estimate.

The following indicates the estimator's confidence in the above estimate:

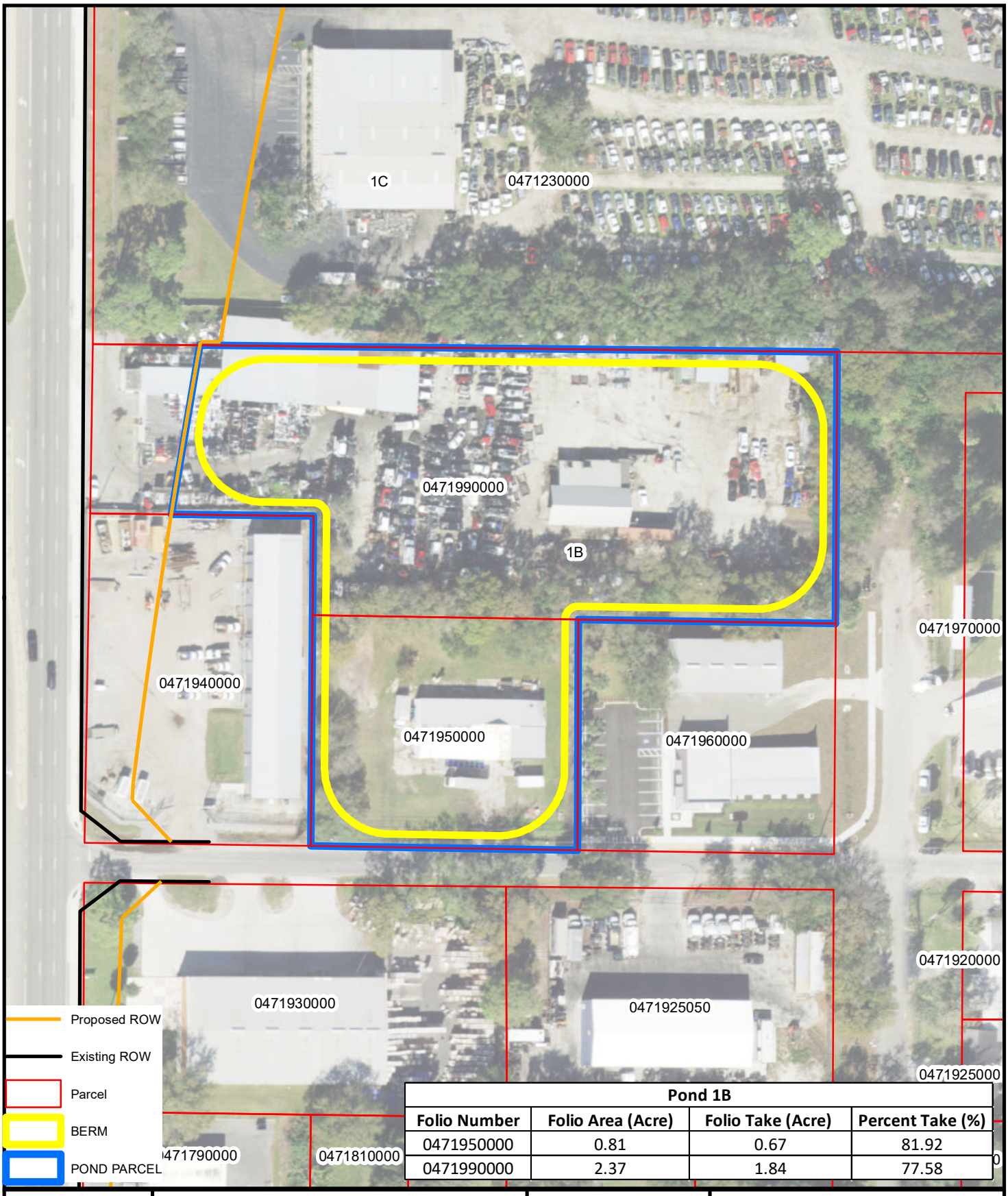
	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: | Gaming 1: X | Special Purpose: | Docs to RW:

Comments:

DRAFT



Pond 1B			
Folio Number	Folio Area (Acre)	Folio Take (Acre)	Percent Take (%)
0471950000	0.81	0.67	81.92
0471990000	2.37	1.84	77.58

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 100
1" = 100'

RK&K

Pond 1B
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond1B.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	Alternate:	Pond 1C	District:	Seven
County:	Hillsborough	Segment:	N/A	Date:	2-Dec-22
State Rd.:	45	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	0	0
Total Parcels	0	0

Estimated Relocatees:	
Business	1
Residential	0
Signs	0
Special	5
Total Relocatees	6

R/W SUPPORT COSTS (PHASE 41)								Amount
1. Direct Labor Cost	(Parcels	0	x	20,000	=	Rate)		0
2. Indirect Overhead	(Parcels	0	x	0	=	Rate)		0
3.							TOTAL PHASE 41	$0

R/W OPS (PHASE 4B)									Amount
4. Appraisal Fees Through Trial					0	Parcels	x	30,000 =	0
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	0	=	0	Parcels	x	500 =	0
7. Expert Witness	75%	x	0	=	0	Parcels	x	30,000 =	0
8. Mediators	75%	x	0	=	0	Parcels	x	2,400 =	0
9. Demolition, Asb. Abate., Survey, etc.					1	Imprvmet	x	15,000 =	15,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$30,000

R/W LAND COSTS (PHASE 43)							Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		2,933,343	x	120% * *Design plan stage*		=	3,520,000	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		=	0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)				3,520,000
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)		=	422,400	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)		=	633,600	
18. Business Damages	(Claims	0	x	0)		=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0	
20. Owner Appr. Fees	(Parcels	0	x	$15,000)		=	0	
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	1,056,000	x	33%)		=	348,500	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x	18,000	=	0	
24. Other Condemn. Costs		0	x	$1,000		=	0	
25. SUBTOTAL				(Lines 16 thru 24)		=		1,404,500
26.							TOTAL PHASE 43	$4,924,500

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)					
27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)	Replacement Housing		Number		Amount	
28. Owner	$35,000	x	0	=	0	
29. Tenant	$25,000	x	0	=	0	
	Move Costs					
30. Residential	$5,000	x	0	=	0	
31. Business/Farm	$40,000	x	1	=	40,000	
32. Personal Property	$3,000	x	5	=	15,000	
33. (Lines 28 thru 32)						TOTAL PHASE 45 $55,000
34. Relocation Services Cost			$5,500	(Not in Phase Total)		
35.						
36.						
37.				(All Phases)		TOTAL ESTIMATE $5,009,500

Real Estate:	Richard E. Sliz	Signed:		Date:	12/7/2022
Bus. Dam. :	Richard E. Sliz	Signed:		Date:	12/7/2022
Relocation:	Richard E. Sliz	Signed:		Date:	12/7/2022
Overall Review:	D. Wade Brown	Signed:		Date:	12/7/2022

Cost Estimate Sequence #: Dated: 12/7/2022 In the Amount of $ $5,009,500 Data Input Completion Date: 12/7/2022

REMARKS:

The total taking of this parcel offsets $500,000 in business damages from the mainline cost estimate and an easement parcel would not be required, due to the pond acquisition is shown acquiring the entire remainder property.

The following indicates the estimator's confidence in the above estimate:

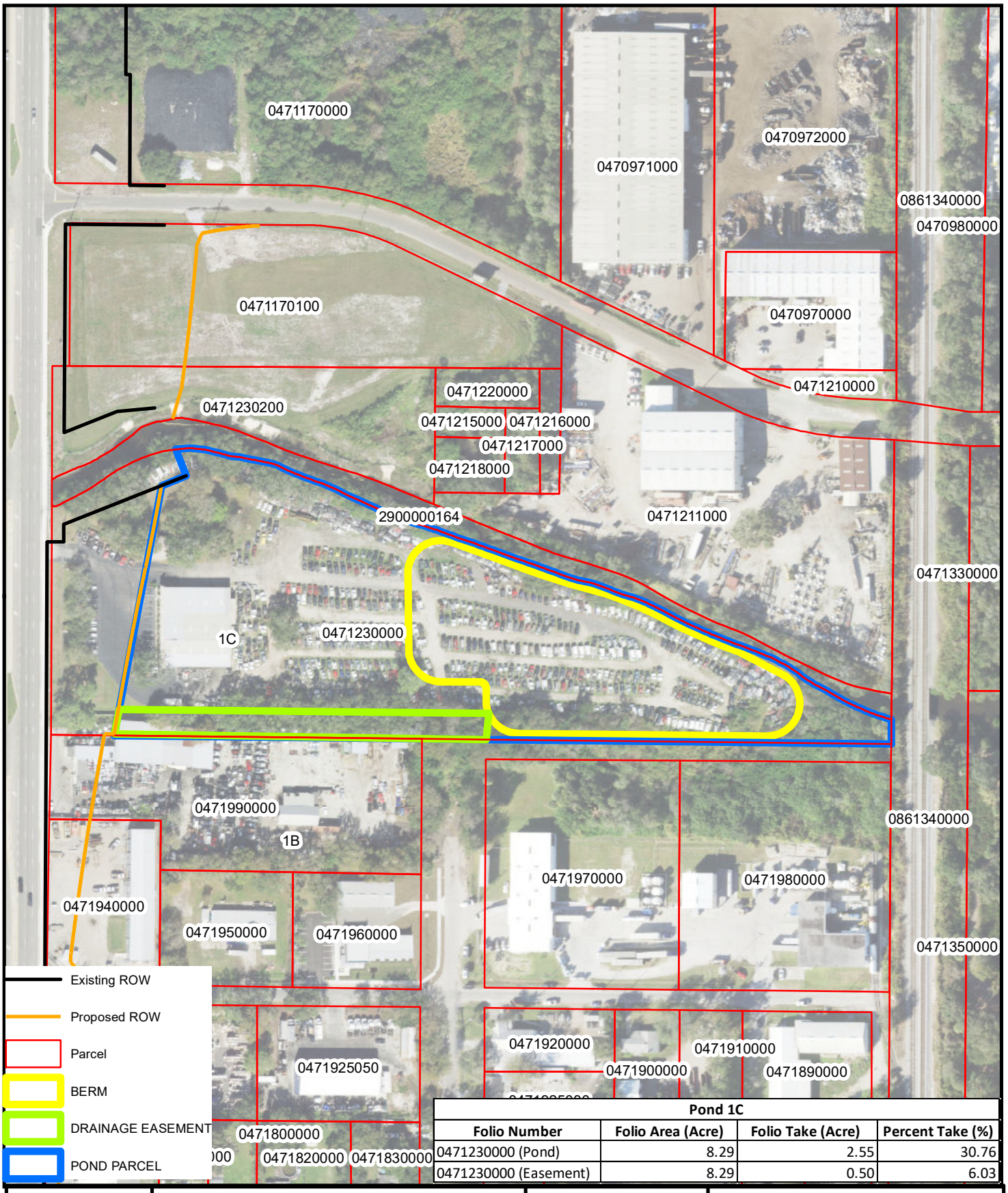
	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: | Gaming 1: X | Special Purpose: | Docs to RW:

Comments:

DRAFT



Pond 1C			
Folio Number	Folio Area (Acre)	Folio Take (Acre)	Percent Take (%)
0471230000 (Pond)	8.29	2.55	30.76
0471230000 (Easement)	8.29	0.50	6.03

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 200
1" = 200'

RK&K

Pond 1C
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond1C.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	Alternate:	Pond 2A	District:	Seven
County:	Hillsborough	Segment:	N/A	Date:	2-Dec-22
State Rd.:	45	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	1
Residential	0	0
Unimproved	0	0
Total Parcels	0	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	3
Total Relocatees	3

R/W SUPPORT COSTS (PHASE 41)

								Amount
1. Direct Labor Cost	(Parcels	1	x	20,000	=	Rate)		20,000
2. Indirect Overhead	(Parcels	1	x	0	=	Rate)		0
3.							TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000 =	30,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$107,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount	1,544,497	x	120%	* *Design plan stage*	=		1,853,400	
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	=		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)				1,853,400
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)	=		222,400	
17. Litigation Awards (Factor	45%	x	40%	of Line 15)	=		333,600	
18. Business Damages (Claims	0	x	0	)	=		0	
19. Bus. Damages Incrs. (Factor	25%	x	$ -	)	=		0	
20. Owner Appr. Fees (Parcels	1	x	$15,000	)	=		15,000	
21. Owner CPA Fees (Claims	0	x	$16,000	)	=		0	
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	556,000	x	33%	)	=		183,500	
23. Owner Expert Witness (Comm.+Unimp.)	1	+	0	) x 18,000	=		18,000	
24. Other Condemn. Costs	1	x	$1,000		=		1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=			773,500
26.							TOTAL PHASE 43	$2,626,900

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

	Replacement Housing		Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	3	=	9,000
33. (Lines 28 thru 32)					TOTAL PHASE 45 $9,000
34. Relocation Services Cost			$900	(Not in Phase Total)	
35.					
36.					
37.				(All Phases)	TOTAL ESTIMATE $2,763,800

Real Estate:	Richard E. Sliz	Signed:		Date:	12/7/2022
Bus. Dam. :		Signed:		Date:	12/7/2022
Relocation:	Richard E. Sliz	Signed:		Date:	12/7/2022
Overall Review:	D. Wade Brown	Signed:		Date:	12/7/2022

Cost Estimate Sequence #: Dated: 12/7/2022 In the Amount of $ $2,763,800 Data Input Completion Date: 12/7/2022

REMARKS:

There was not a mainline taking from this parcel

The following indicates the estimator's confidence in the above estimate:

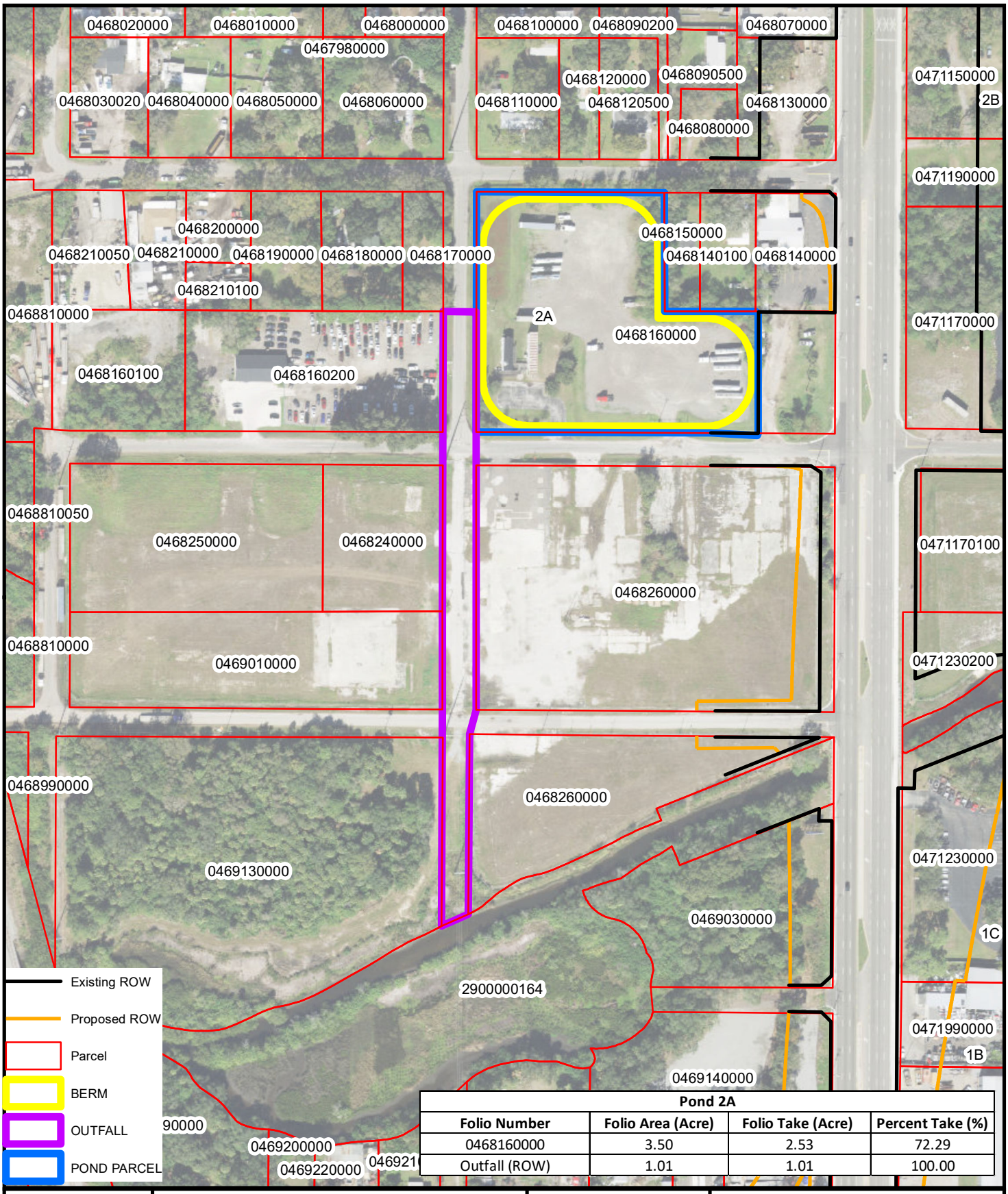
	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: | Gaming 1: X | Special Purpose: | Docs to RW:

Comments:

DRAFT



Pond 2A			
Folio Number	**Folio Area (Acre)**	**Folio Take (Acre)**	**Percent Take (%)**
0468160000	3.50	2.53	72.29
Outfall (ROW)	1.01	1.01	100.00

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 200

1" = 200'

RK&K

Pond 2A
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond2A.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	Alternate:	Pond 2B	District:	Seven
County:	Hillsborough	Segment:	N/A	Date:	2-Dec-22
State Rd.:	45	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	1
Residential	0	0
Unimproved	0	0
Total Parcels	0	1

Estimated Relocatees:	
Business	1
Residential	0
Signs	0
Special	1
Total Relocatees	2

R/W SUPPORT COSTS (PHASE 41)								Amount
1. Direct Labor Cost	(Parcels	1	x	20,000	=	Rate)		20,000
2. Indirect Overhead	(Parcels	1	x	0	=	Rate)		0
3.							TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)								Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount	1,293,505	x	120%	* *Design plan stage*			=	1,552,200	
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)			=	0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)					1,552,200
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)			=	186,300	
17. Litigation Awards (Factor	45%	x	40%	of Line 15)			=	279,400	
18. Business Damages (Claims	0	x	0	)			=	0	
19. Bus. Damages Incrs. (Factor	25%	x	$ -	)			=	0	
20. Owner Appr. Fees (Parcels	1	x	$15,000	)			=	15,000	
21. Owner CPA Fees (Claims	0	x	$16,000	)			=	0	
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	465,700	x	33%	)			=	153,700	
23. Owner Expert Witness (Comm.+Unimp.)	1	+	0	) x	18,000		=	18,000	
24. Other Condemn. Costs	1	x	$1,000				=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)			=		653,400
26.								TOTAL PHASE 43	$2,205,600

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)				
27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)	Replacement Housing		Number		Amount	
28. Owner	$35,000	x	0	=	0	
29. Tenant	$25,000	x	0	=	0	
	Move Costs					
30. Residential	$5,000	x	0	=	0	
31. Business/Farm	$40,000	x	1	=	40,000	
32. Personal Property	$3,000	x	1	=	3,000	
33. (Lines 28 thru 32)						TOTAL PHASE 45 $43,000
34. Relocation Services Cost			$4,300		(Not in Phase Total)	
35.						
36.						
37.					(All Phases)	TOTAL ESTIMATE $2,346,500

Real Estate:	Richard E. Sliz	Signed:		Date:	12/7/2022
Bus. Dam. :		Signed:		Date:	
Relocation:	Richard E. Sliz	Signed:		Date:	12/7/2022
Overall Review:	D. Wade Brown	Signed:		Date:	12/7/2022

Cost Estimate Sequence #: Dated: 12/7/2022 In the Amount of $ $2,346,500 Data Input Completion Date: 12/7/2022

REMARKS:

There was not a mainline taking from this parcel

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: | Gaming 1: X | Special Purpose: | Docs to RW:

Comments:

DRAFT

Pond 2B			
Folio Number	Folio Area (Acre)	Folio Take (Acre)	Percent Take (%)
0471150000	4.93	2.46	49.90

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 100
1" = 100'

RK&K

Pond 2B
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond2B.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	**Alternate:**	Pond 3A	**District:**	Seven
County:	Hillsborough	**Segment:**	N/A	**Date:**	2-Dec-22
State Rd.:	45	**FAP#:**	N/A	**C.E. Sequence**	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	0	0
Total Parcels	0	0

Estimated Relocatees:	
Business	1
Residential	0
Signs	0
Special	2
Total Relocatees	3

R/W SUPPORT COSTS (PHASE 41)

								Amount
1. Direct Labor Cost	(Parcels	0	x	20,000	=	Rate)		0
2. Indirect Overhead	(Parcels	0	x	0	=	Rate)		0
3.							TOTAL PHASE 41	$0

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					0	Parcels	x	30,000 =	0
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	0	=	0	Parcels	x	500 =	0
7. Expert Witness	75%	x	0	=	0	Parcels	x	30,000 =	0
8. Mediators	75%	x	0	=	0	Parcels	x	2,400 =	0
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000 =	30,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$45,000

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount	524,720	x	120%	* *Design plan stage*	=	629,700	
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	=	0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			629,700
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)	=	75,600	
17. Litigation Awards (Factor	45%	x	40%	of Line 15)	=	113,300	
18. Business Damages (Claims	0	x	0	)	=	0	
19. Bus. Damages Incrs. (Factor	25%	x	$ -	)	=	0	
20. Owner Appr. Fees (Parcels	0	x	$15,000	)	=	0	
21. Owner CPA Fees (Claims	0	x	$16,000	)	=	0	
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	188,900	x	33%	)	=	62,300	
23. Owner Expert Witness (Comm.+Unimp.)	0	+	0	) x 18,000	=	0	
24. Other Condemn. Costs	0	x	$1,000		=	0	
25. SUBTOTAL				(Lines 16 thru 24)	=		251,200
26.						TOTAL PHASE 43	$880,900

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

	Replacement Housing		Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	1	=	40,000
32. Personal Property	$3,000	x	2	=	6,000
33. (Lines 28 thru 32)				TOTAL PHASE 45	$46,000
34. Relocation Services Cost			$4,600	(Not in Phase Total)	
35.					
36.					
37.				(All Phases) TOTAL ESTIMATE	$971,900

Real Estate:	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Bus. Dam. :	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Relocation:	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Overall Review:	D. Wade Brown	**Signed:**		**Date:**	12/7/2022

Cost Estimate Sequence #: **Dated:** 12/7/2022 **In the Amount of $** $971,900 **Data Input Completion Date:** 12/7/2022

REMARKS:

The total taking of tire shop offsets $200,000 in business damages from the mainline cost estimate.
Parcels 046643-0100 and 046643-5000 are being considered as one parent tract due to recent acquisition by the same owner as parcel 046643-0100.

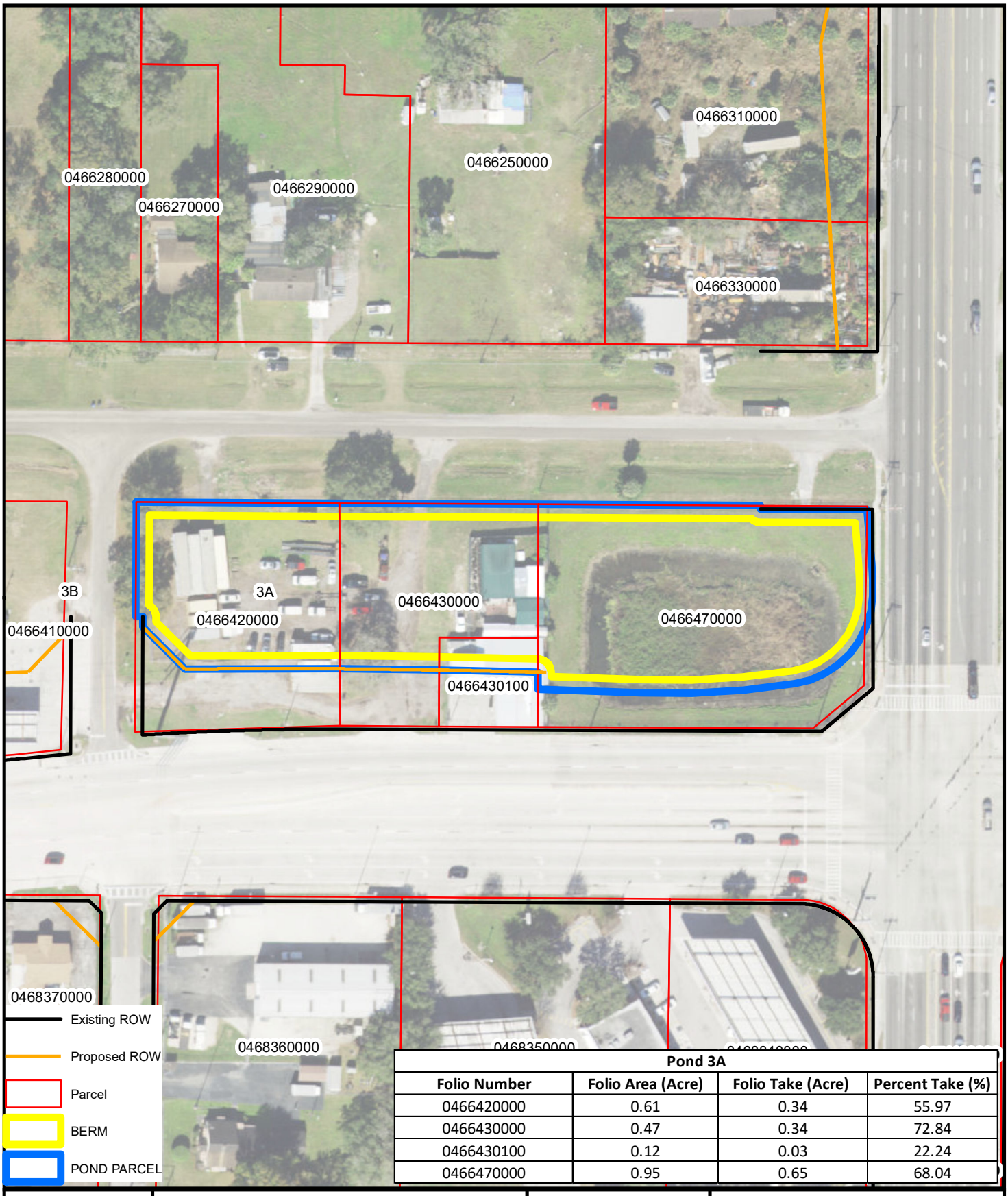
The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: **Gaming 1:** X **Special Purpose:** **Docs to RW:**
Comments:

DRAFT



Pond 3A			
Folio Number	Folio Area (Acre)	Folio Take (Acre)	Percent Take (%)
0466420000	0.61	0.34	55.97
0466430000	0.47	0.34	72.84
0466430100	0.12	0.03	22.24
0466470000	0.95	0.65	68.04

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

N

0 100

1" = 100'

RK&K

Pond 3A
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond3A.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	Alternate:	Pond 3B	District:	Seven
County:	Hillsborough	Segment:	N/A	Date:	2-Dec-22
State Rd.:	45	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	1
Residential	0	0
Unimproved	0	0
Total Parcels	0	1

Estimated Relocatees:	
Business	0
Residential	1
Signs	0
Special	0
Total Relocatees	1

R/W SUPPORT COSTS (PHASE 41)

								Amount
1. Direct Labor Cost	(Parcels	1	x	20,000	=	Rate)		20,000
2. Indirect Overhead	(Parcels	1	x	0	=	Rate)		0
3.							TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					1	Imprvmet	x	15,000 =	15,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$92,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount	1,181,375	x	120%	* *Design plan stage*	=		1,417,700	
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	=		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)				1,417,700
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)	=		170,100	
17. Litigation Awards (Factor	45%	x	40%	of Line 15)	=		255,200	
18. Business Damages (Claims	0	x	0	)	=		0	
19. Bus. Damages Incrs. (Factor	25%	x	$ -	)	=		0	
20. Owner Appr. Fees (Parcels	1	x	$15,000	)	=		15,000	
21. Owner CPA Fees (Claims	0	x	$16,000	)	=		0	
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	425,300	x	33%	)	=		140,300	
23. Owner Expert Witness (Comm.+Unimp.)	1	+	0	) x 18,000	=		18,000	
24. Other Condemn. Costs	1	x	$1,000		=		1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=			599,600
26.							TOTAL PHASE 43	$2,017,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
	Replacement Housing				
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	1	=	25,000
	Move Costs				
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $25,000
34. Relocation Services Cost			$2,500	(Not in Phase Total)	
35.					
36.					
37.				(All Phases)	TOTAL ESTIMATE $2,155,200

Real Estate:	Richard E. Sliz	Signed:		Date:	12/7/2022
Bus. Dam. :	Richard E. Sliz	Signed:		Date:	12/7/2022
Relocation:	Richard E. Sliz	Signed:		Date:	12/7/2022
Overall Review:	D. Wade Brown	Signed:		Date:	12/7/2022

Cost Estimate Sequence #: **Dated:** 12/7/2022 **In the Amount of $** $2,155,200 **Data Input Completion Date:** 12/7/2022

REMARKS:

The total taking of parcel 046639-0000 offsets $400,000 in business damages from the mainline cost estimate
The total taking of parcel 046643-0000 offsets $200,000 in business damages from the mainline cost estimate
The total taking of parcel 046641-0000 offsets $500,000 in business damages from the mainline cost estimate
All business relocations are reflected in the mainline cost estimate

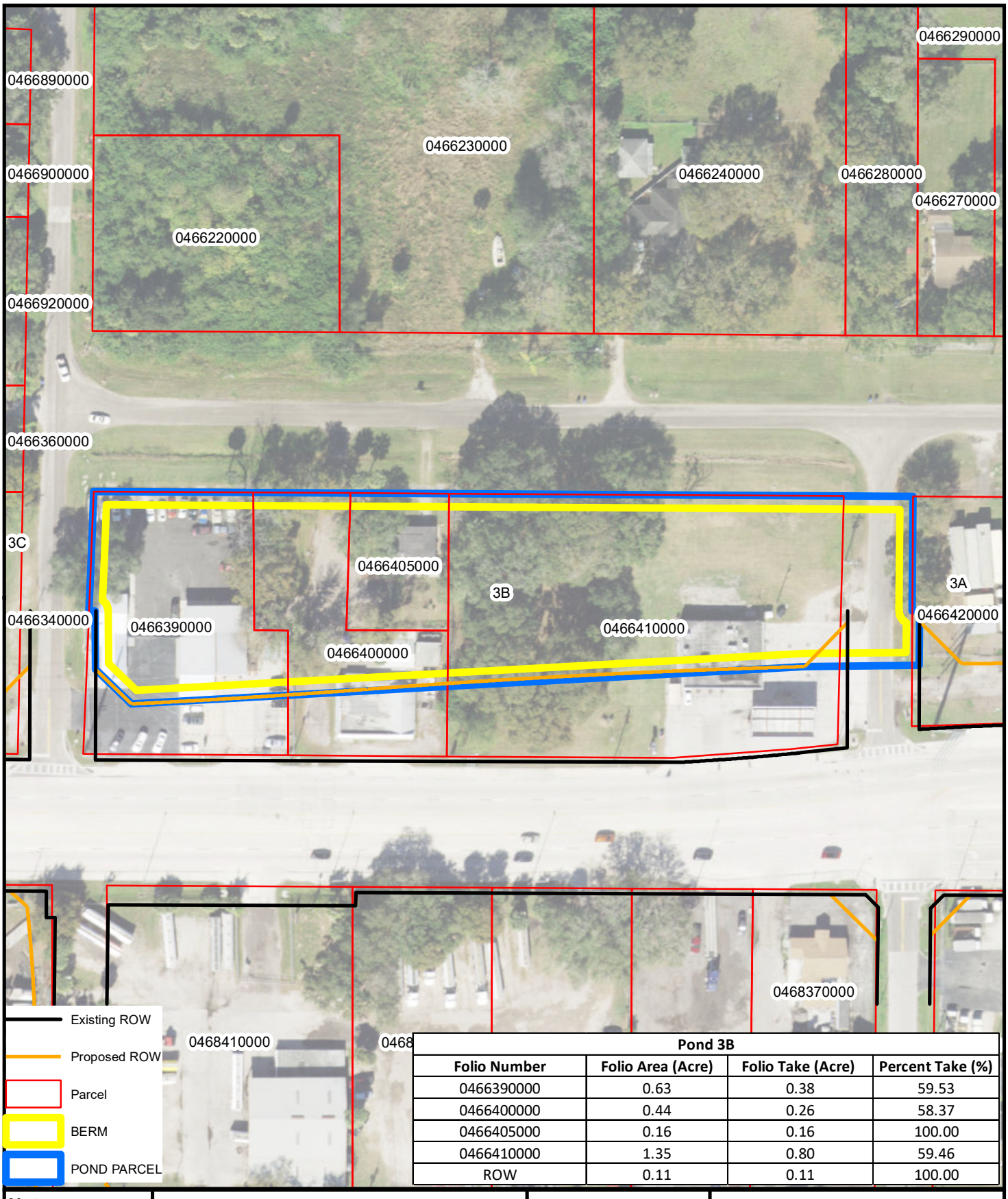
The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: **Gaming 1:** X **Special Purpose:** **Docs to RW:**
Comments:

DRAFT



Pond 3B			
Folio Number	**Folio Area (Acre)**	**Folio Take (Acre)**	**Percent Take (%)**
0466390000	0.63	0.38	59.53
0466400000	0.44	0.26	58.37
0466405000	0.16	0.16	100.00
0466410000	1.35	0.80	59.46
ROW	0.11	0.11	100.00

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 100
1" = 100'

RK&K

Pond 3B
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond3B.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	**Alternate:**	Pond 3C	**District:**	Seven
County:	Hillsborough	**Segment:**	N/A	**Date:**	2-Dec-22
State Rd.:	45	**FAP#:**	N/A	**C.E. Sequence**	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	1
Residential	0	0
Unimproved	0	0
Total Parcels	0	1

Estimated Relocatees:	
Business	3
Residential	0
Signs	0
Special	3
Total Relocatees	6

R/W SUPPORT COSTS (PHASE 41)

									Amount
1. Direct Labor Cost	(Parcels	1	x	20,000	=	Rate)			20,000
2. Indirect Overhead	(Parcels	1	x	0	=	Rate)			0
3.								TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

										Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000	=	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000	=	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500	=	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000	=	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400	=	2,400	
9. Demolition, Asb. Abate., Survey, etc.					3	Imprvmet	x	15,000	=	45,000	
10. Miscellaneous Contracts					1	Per Project	x	15,000	=	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000	=	0	
12.									TOTAL PHASE 4B		$122,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount	1,085,078	x	120%	* *Design plan stage*	=	1,302,100		
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	=	0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			1,302,100	
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)	=	156,300		
17. Litigation Awards (Factor	45%	x	40%	of Line 15)	=	234,400		
18. Business Damages (Claims	0	x	0	)	=	0		
19. Bus. Damages Incrs. (Factor	25%	x	$ -	)	=	0		
20. Owner Appr. Fees (Parcels	1	x	$15,000	)	=	15,000		
21. Owner CPA Fees (Claims	0	x	$16,000	)	=	0		
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	390,700	x	33%	)	=	128,900		
23. Owner Expert Witness (Comm.+Unimp.)	1	+	0	) x 18,000	=	18,000		
24. Other Condemn. Costs	1	x	$1,000		=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		553,600	
26.							TOTAL PHASE 43		$1,855,700

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

	Replacement Housing		Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	3	=	120,000
32. Personal Property	$3,000	x	3	=	9,000
33. (Lines 28 thru 32)				TOTAL PHASE 45	$129,000
34. Relocation Services Cost			$12,900	(Not in Phase Total)	
35.					
36.					
37.				(All Phases) TOTAL ESTIMATE	$2,127,600

Real Estate:	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Bus. Dam. :	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Relocation:	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Overall Review:	D. Wade Brown	**Signed:**		**Date:**	12/7/2022

Cost Estimate Sequence #: **Dated:** 12/7/2022 **In the Amount of $** $2,127,600 **Data Input Completion Date:** 12/7/2022

REMARKS:

The total taking of parcel 046634-0000 offsets a $200,000 business damage from the mainline cost estimate
The total taking of parcel 046659-0000 offsets a $50,000 business damage from the mainline cost estimate
The total taking of parcel 046660-0000 offsets a $50,000 business damage from the mainline cost estimate

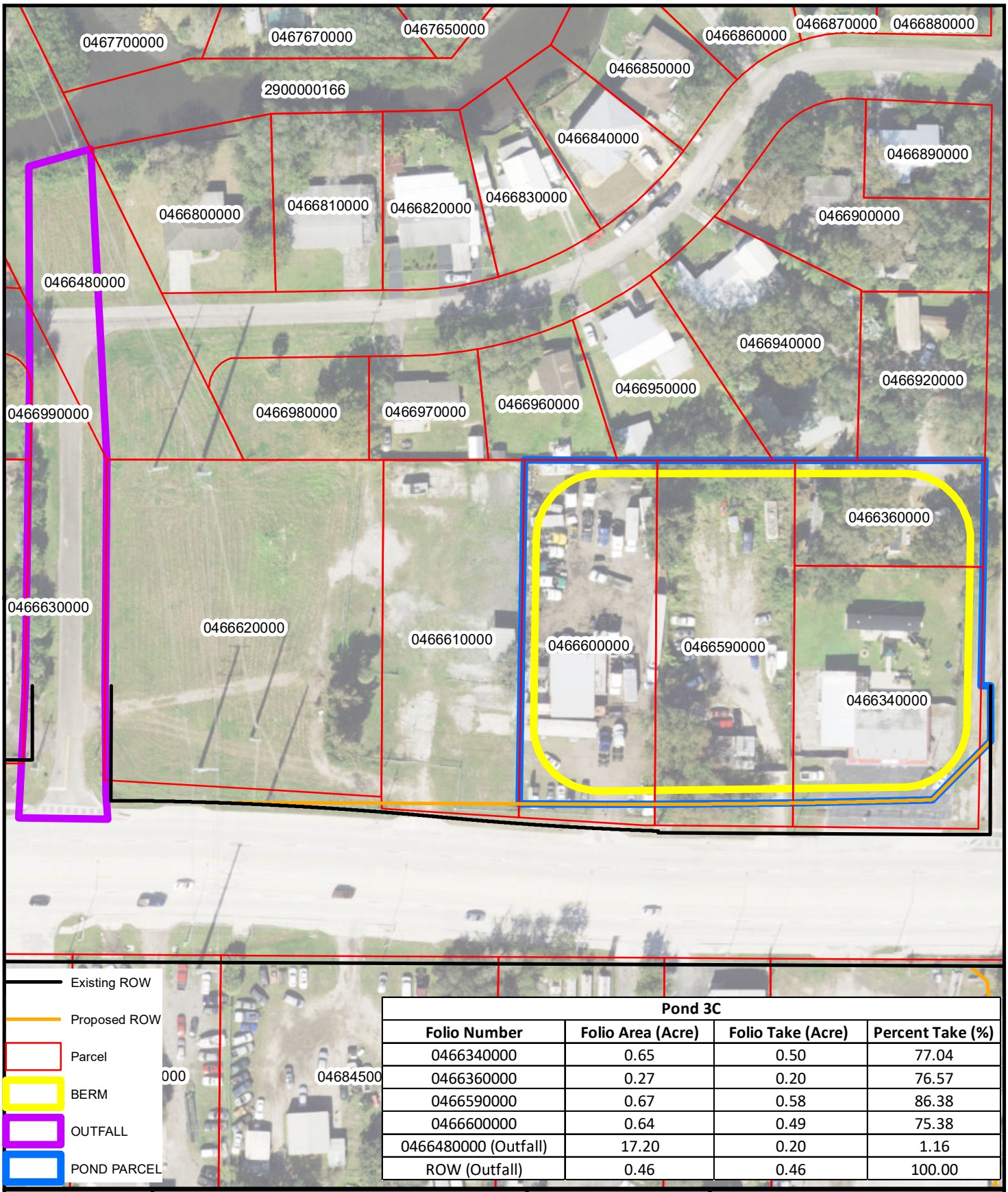
The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: **Gaming 1:** X **Special Purpose:** **Docs to RW:**
Comments:

DRAFT



Pond 3C			
Folio Number	**Folio Area (Acre)**	**Folio Take (Acre)**	**Percent Take (%)**
0466340000	0.65	0.50	77.04
0466360000	0.27	0.20	76.57
0466590000	0.67	0.58	86.38
0466600000	0.64	0.49	75.38
0466480000 (Outfall)	17.20	0.20	1.16
ROW (Outfall)	0.46	0.46	100.00

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 100
1" = 100'

RK&K

Pond 3C
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond3C.mxd

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	440749-1	**Alternate:**	Pond 3D	**District:**	Seven
County:	Hillsborough	**Segment:**	N/A	**Date:**	2-Dec-22
State Rd.:	45	**FAP#:**	N/A	**C.E. Sequence**	N/A
Project Des.	US 41/SR 45/S 50th St @ CSX Grade Separation South of Causeway Blvd				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	0	0
Total Parcels	0	0

Estimated Relocatees:	
Business	3
Residential	0
Signs	0
Special	5
Total Relocatees	8

R/W SUPPORT COSTS (PHASE 41)

								Amount
1. Direct Labor Cost	(Parcels	0	x	20,000	=	Rate)		0
2. Indirect Overhead	(Parcels	0	x	0	=	Rate)		0
3.							TOTAL PHASE 41	$0

R/W OPS (PHASE 4B)

									Amount	Subtotal
4. Appraisal Fees Through Trial					0	Parcels	x	30,000 =	0	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	0	=	0	Parcels	x	500 =	0	
7. Expert Witness	75%	x	0	=	0	Parcels	x	30,000 =	0	
8. Mediators	75%	x	0	=	0	Parcels	x	2,400 =	0	
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000 =	30,000	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B		$45,000

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount	895,215	x	120%	* *Design plan stage*	=	1,074,300	
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	=	0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			1,074,300
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	128,900	
17. Litigation Awards	(Factor	45%	x	40%	of Line 15)	=	193,400	
18. Business Damages	(Claims	0	x	0	)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -	)	=	0	
20. Owner Appr. Fees	(Parcels	0	x	$15,000	)	=	0	
21. Owner CPA Fees	(Claims	0	x	$16,000	)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	322,300	x	33%	)	=	106,400	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0	) x 18,000	=	0	
24. Other Condemn. Costs		0	x	$1,000		=	0	
25. SUBTOTAL					(Lines 16 thru 24)	=		428,700
26.							TOTAL PHASE 43	$1,503,000

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

	Replacement Housing		Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	3	=	120,000
32. Personal Property	$3,000	x	5	=	15,000
33. (Lines 28 thru 32)				TOTAL PHASE 45	$135,000
34. Relocation Services Cost			$13,500	(Not in Phase Total)	
35.					
36.					
37.				(All Phases)	TOTAL ESTIMATE $1,683,000

Real Estate:	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Bus. Dam. :	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Relocation:	Richard E. Sliz	**Signed:**		**Date:**	12/7/2022
Overall Review:	D. Wade Brown	**Signed:**		**Date:**	12/7/2022

Cost Estimate Sequence #: **Dated:** 12/7/2022 **In the Amount of $** $1,683,000 **Data Input Completion Date:** 12/7/2022

REMARKS:

The total taking of parcel 046659-0000 offsets a $50,000 business damage from the mainline cost estimate
The total taking of parcel 046660-0000 offsets a $50,000 business damage from the mainline cost estimate

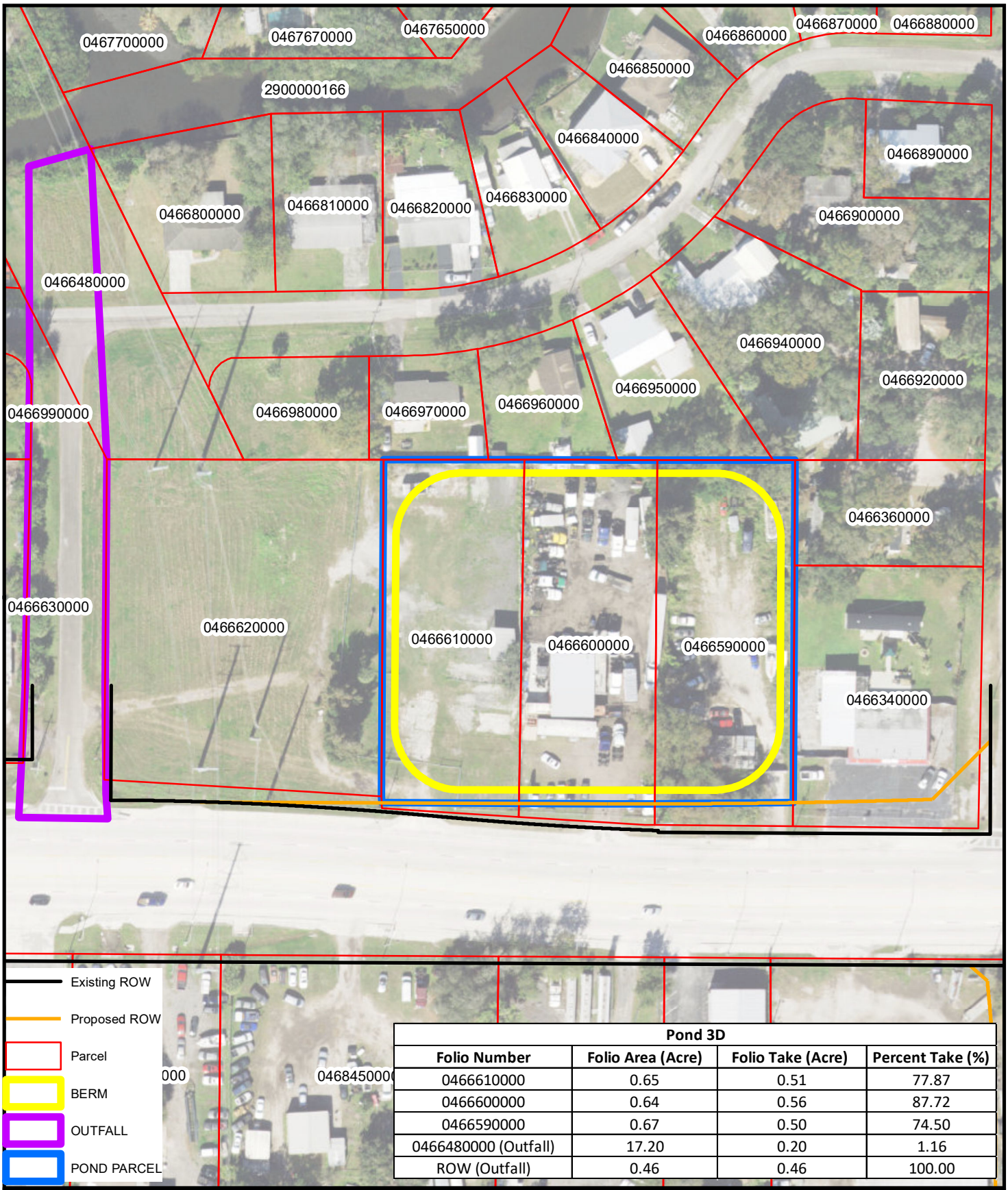
The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: **Gaming 1:** X **Special Purpose:** **Docs to RW:**
Comments:

DRAFT



Pond 3D			
Folio Number	**Folio Area (Acre)**	**Folio Take (Acre)**	**Percent Take (%)**
0466610000	0.65	0.51	77.87
0466600000	0.64	0.56	87.72
0466590000	0.67	0.50	74.50
0466480000 (Outfall)	17.20	0.20	1.16
ROW (Outfall)	0.46	0.46	100.00

Notes:

A- Project: 18033

B- Data From - Imagery, Esri

C- This map is intended for planning purposes only. This is not a survey.

Date: 10/05/2022
Drawn By: VV
Reviewed By: EAL

Explanation of Features

0 100
1" = 100'

RK&K

Pond 3D
US41 at CSX
440749-1
Hillsbourough County, FL

Path: C:\Users\vverma\Desktop\CSX at 41\Pond Site Figures\Pond Alternatives FDOT\Pond3D.mxd