RESOLUTION NO. ____

PROPOSED RESOLUTION NO. 23-038

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF LAKELAND, FLORIDA RELATING TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION STATE REVOLVING FUND LOAN PROGRAM; ADOPTING THE CITY OF LAKELAND WASTEWATER SYSTEM IMPROVEMENTS FACILITIES PLAN UPDATE DATED JULY 2023; ADOPTING THE CITY OF LAKELAND STATE REVOLVING FUND CAPITAL FINANCING PLAN; AUTHORIZING SUBMISSION OF THE PLANS TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION; DESIGNATING THE CITY OF LAKELAND'S AUTHORIZED REPRESENTATIVE; PROVIDING FOR CONFLICTS, SEVERABILITY AND AN EFFECTIVE DATE.

WHEREAS, the City Commission of the City of Lakeland has determined that the projects recommended in the City of Lakeland Wastewater System Improvements Facilities Plan Update relating to the City's western trunk sewer replacement and expansion project are in the best interest of its citizens; and

WHEREAS, the City of Lakeland is seeking funding from the Florida Department of Environmental Protection under its State Revolving Fund Loan Program to fund said improvements in order to benefit the City's wastewater system customers; and

WHEREAS, the City Commission finds that it is appropriate and in the best interests of its citizens to approve the City of Lakeland Wastewater System Improvements Facilities Plan Update and the State Revolving Fund Capital Financing Plan in accordance with the State Revolving Fund's requirements; and

WHEREAS, on September 5, 2023, the City Commission of the City of Lakeland conducted a duly-noticed public hearing prior to adoption of this Resolution;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF LAKELAND, FLORIDA:

SECTION 1. The foregoing findings are incorporated herein by reference and made a part hereof.

SECTION 2. The City Commission of the City of Lakeland hereby adopts the City of Lakeland Wastewater System Improvements Facilities Plan Update dated July 2023, attached hereto and incorporated herein by reference.

SECTION 3. The City of Lakeland State Revolving Fund Capital Financing Plan, attached hereto and incorporated herein by reference, has been reviewed and discussed at a public hearing of the City Commission and is hereby adopted.

SECTION 4. The City Commission of the City of Lakeland hereby authorizes the submission of the City of Lakeland Wastewater System Improvements Facilities Plan Update and the City of Lakeland State Revolving Fund Capital Financing Plan to the Florida Department of Environmental Protection.

SECTION 5. The City Manager is authorized to represent the City of Lakeland in carrying out the responsibilities under the State Revolving Fund Loan Program and to delegate authority and responsibility to staff to carry out all activities to accomplish the goals of the State Revolving Fund Loan Program.

SECTION 6. All resolutions or parts of resolutions in conflict with any of the provisions of this Resolution are hereby repealed.

SECTION 7. If any section or portion of a section of this Resolution proves to be invalid, unlawful, or unconstitutional, it shall not be held to invalidate or impair the validity, force, or effect of any other section or part of this Resolution.

SECTION 8. This Resolution shall take effect immediately upon passage.

PASSED AND CERTIFIED AS TO PASSAGE this 5th day of September, A.D. 2023.

H. WILLIAM MUTZ, MAYOR

ATTEST: _____
KELLY S. KOOS, CITY CLERK

APPROVED AS TO FORM AND CORRECTNESS: _____
PALMER C. DAVIS
CITY ATTORNEY

City of Lakeland

Western Trunk Gravity Sewer Replacement Facilities Plan Update

July 2023

City of Lakeland

Western Trunk Gravity Sewer Replacement
Facilities Plan Update
July 2023

CITY OF LAKELAND

Mayor	William “Bill” Mutz
City Manager	Shawn Sherrouse

Department

Director of Water Utilities	David Bayhan, Jr., PE
Water Utilities Engineering Supervisor	Robert Kniss, PE

Garney Construction

Design-Build Manager	Will Poczekaj

Chastain-Skillman, Inc.

Engineer of Record	Douglas Jones, PE

Angie Brewer & Associates, L.C.

President	Mark Brewer
Senior Funding Manager	Kristin LaCross

Douglas E. Jones, PE

PE No. 58077

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Acknowledgements

This Facility Plan Update was compiled by Angie Brewer & Associates, LC utilizing technical information and data provided by the City of Lakeland, Garney Construction, and Chastain-Skillman, Inc.

Section 1 – Executive Summary

1.1 Introduction

This Facilities Plan is being updated to reflect the addition of the Western Trunk Gravity Sewer Replacement, to reflect current cost estimates and to support the City of Lakeland request for funds under the State's Clean Water State Revolving Fund (SRF) Loan Program.

The original Facilities Plan was adopted by the City of Lakeland City Commission in June 2004. On October 22, 2004, the City of Lakeland obtained a Florida Finding of No Significant Impact (FFONSI) for the City of Lakeland State Revolving Fund Wastewater Facilities Plan dated June 2004. The Florida Department of Environmental Protection (FDEP) also issued a Florida Reaffirmation Notice on July 6, 2016. The City of Lakeland is requesting Environmental Clearance, in the form of a FFONSI, FCEN or FRAN, be approved for the following project included in this Facilities Plan Update: Western Trunk Gravity Sewer Replacement.

This Facilities Plan Update and Capital Financing Plan have been prepared to complete a step in the process of establishing the eligibility of the City of Lakeland for low-cost State Revolving Fund (SRF) loans to finance utility system improvements. The SRF program provides low interest loans to local governments for the planning, design, and construction of utility systems.

The Florida Department of Environmental Protection (FDEP) administers the Florida SRF program. Under the SRF program, local governments are required to submit to FDEP Facilities Plans and Capital Financing Plans containing detailed planning, financial, and technical information for the purpose of obtaining environmental clearance for the proposed project. This document was prepared to meet those requirements.

Review of this document, consideration of public input, and adoption of the Facilities Plan by the City of Lakeland City Commission is required by the SRF program. Adoption of the Plans by the City Commission in no way commits the City to construct the project, nor does it commit the City to using SRF funding or the FDEP to offering SRF funding.

The recommendations in this planning document are consistent with the City of Lakeland Comprehensive Plan as adopted by the City of Lakeland City Commission and updated as needed.

1.2 Existing Wastewater Utility System

The Lakeland wastewater collection and transmission system includes approximately 341 miles of 6-inch to 48-inch diameter gravity sewer, 146 miles of 2-inch to 36-inch diameter force main, and 182 pump stations. Most of the City's pump stations are equipped with telemetry, allowing City personnel to monitor their status and collect data from each pump station. This data is accessible from a central location at the Glendale facility. All pump stations are equipped with high wetwell level alarms and standby power generators or portable generator receptacles.

The City operates one pretreatment facility and two wastewater treatment facilities. To reduce the organic load on the Glendale facility, the City constructed the West Lakeland Wasteload Reduction Facility. The Glendale plant serves the southern portion of the service area and the Northside facility the northern portion. The Glendale facility is permitted for 13.7 million gallons per day (MGD) annual average daily flow (AADF). The Northside facility is permitted for 8 MGD AADF.

Wastewater effluent is utilized by the City's electrical power generating facility for cooling water. The cooling water and any excess effluent not used by the power plant is pumped to a wetlands treatment system and then utilized by Tampa Electric Company's Polk Power Station or discharged to the Alafia River.

The Western Gravity Sewer Trunk Line (trunk line) is one of the major collection systems for the City of Lakeland's wastewater utility. The trunk line begins near George Jenkins Boulevard and runs south to the Southwest Pump Station located near the intersection of Edgewood Drive and San Gully Road (Figure 1-1). The Southwest Pump Station then pumps the wastewater to the City's Glendale Water Reclamation Facility via either a second trunk line or through a large force main.

1.3 Need for Project

The trunk line is 24-inch non-reinforced concrete pipe (NRCP) from George Jenkins Boulevard and transitions to 36-inch NRCP at Herschell Street. The pipe was subsequently lined in the 1980s, reducing the 24-inch and 36-inch diameters to 20-inch and 30-inch, respectively. The reduction in diameter of the 36-inch line has led to capacity issues and pipe failures due to the pipe's age.

The City primary goals for the new trunk line are the following:

- Provide capacity for current and future demand. Chastain-Skillman recently updated the City's sewer model to account for dry weather flow and peak 7-day wet weather flow. Chastain-Skillman is also preparing a 20-year wastewater master plan with flow projections. These projections and potential build-out of the drainage basin are considered when sizing the proposed trunk line.
- The existing trunk line is located under homes in the Oakhill, Colonial, and Citrus Center Colony MHPs may not remain in operation. Lateral flows from the homes must be captured and routed elsewhere, rather than reusing the existing trunk line.
- The trunk line needs to be accessible for maintenance operations.

The City has established standards for its collection and transmission system. Those that are most important for this project are:

- Depth of flow in gravity lines should never exceed 75% of the pipe diameter.

- Improvements to gravity lines should be considered when the depth of flow approaches 60% full.
- Recommended gravity upgrades should account for future demands for at least 20 years and should not be greater than 50% full to allow for additional capacity.
- Manholes should not surcharge.
- Maximum pump run times should not exceed 8 hours (5 hours for a new design).
- Force main velocity can be between 2.2 – 7.0 feet per second (fps). New designs should use 4.5 – 5.0 fps

1.4 Selected Plan

The selected plan is to replace the existing trunk line with a new 42-inch diameter gravity trunk line. Improvements associated with the new line include new manholes and pipe as well as rehabilitation of pipe and manholes where feasible, proper abandonment, restoration and other necessary appurtenances. Of the four evaluated alternatives, the selected plan is the most cost-effective based on a 20-year present worth analysis. In addition, the selected plan scored the most favorable based on non-monetary factors.

The alignment along the northern half of the line will be west of the existing line to take advantage of better construction conditions and to avoid conflicts with existing manufactured home communities which restrict City access for operation and maintenance. The southern half of the alignment will follow the route of the existing trunk line. This route is approximately 13,880 feet in length.

The selected plan route matches the existing trunk line alignment except for the section between Herschell Street and Patterson Street and along Forest Park Street and Webster Avenue. The new pipeline profile will allow collector sewers and services that enter the existing trunk line to be diverted to the new line.

1.5 Financing the Improvement Project

A summary of the SRF Estimated Loan Budget is presented in **Table 1-1**. The City has included the use of American Rescue Plan Act (ARPA) funds as well as City funds to reduce the estimated SRF Loan Amount. The total amount includes the estimated cost of construction, contingency, technical services, capitalized interest, and loan service fee. A detailed breakdown of the costs is included in the Capital Financing Plan located in Appendix B of this document.

Table 1-1. SRF Estimated Loan Budget

Item	Total
Estimated Construction	$45,232,019
Contingency	$4,523,202
Technical Services After Bid Opening	$4,523,202
Subtotal	**$54,278,423**
Other Funding to Reduce Loan Amount	
ARPA	$15,348,418
City Funds	$12,000,000
Subtotal Non-SRF Funds	**$27,348,418**
Estimated SRF Loan Amount	**$26,930,005**
Capitalized Interest	$249,989
Loan Service Fee	$538,600
Total SRF Cost for Amortization	**$27,718,594**

An interest rate of 0.30% for the project included in this plan has been used to calculate the total estimated annual payment of approximately $1,643,978 (including a coverage rate of 1.15).

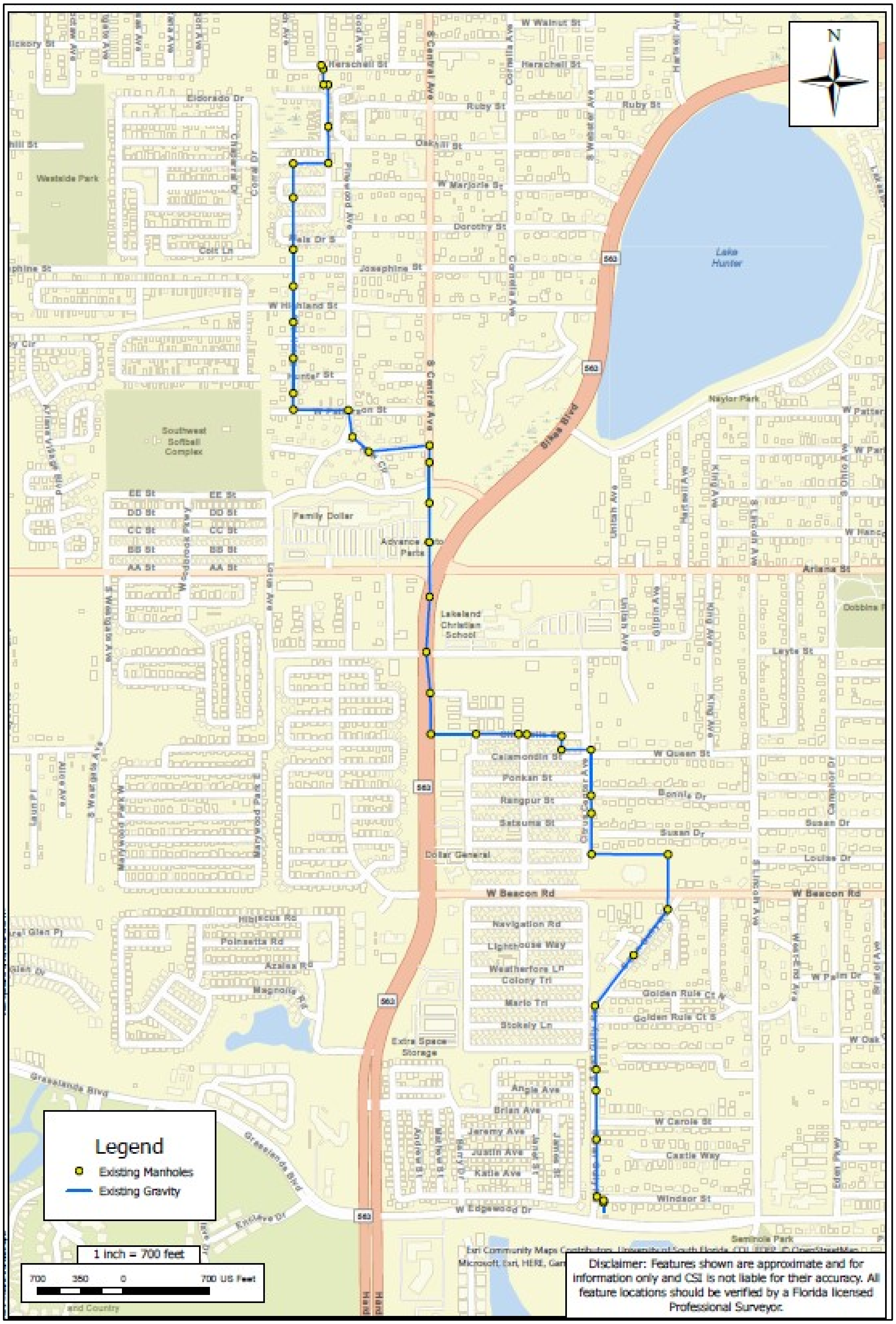
The planning process for this project has established that the gross revenues currently generated by the water and wastewater systems are sufficient to support the estimated annual SRF loan debt payments. This plan presents a financially conservative outlook.

1.6 Planning Considerations

1.6.1 Planning Area Description

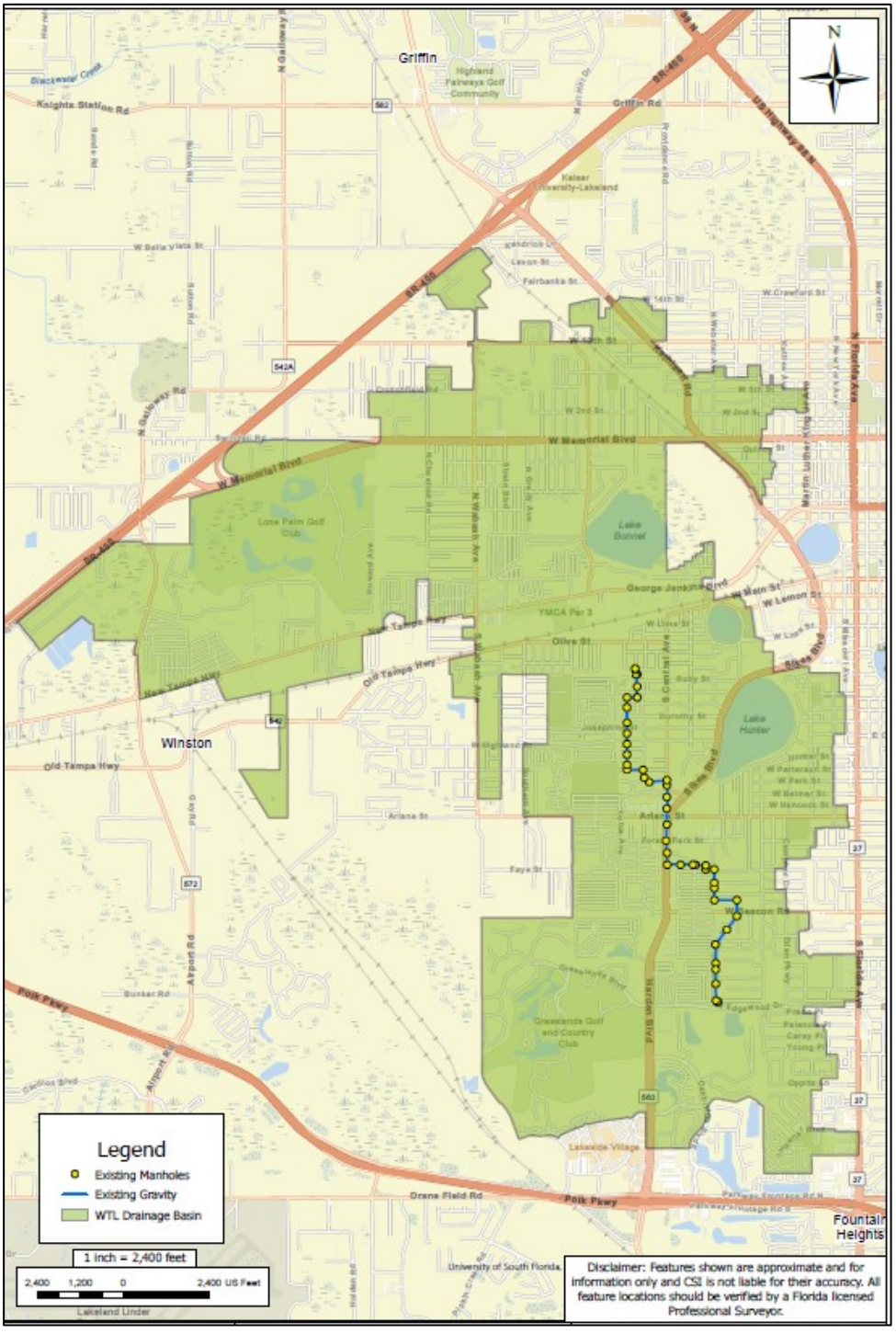
The Western Gravity Sewer Trunk Line (trunk line) is one of the major collection systems for the City of Lakeland's wastewater utility. The trunk line begins near George Jenkins Boulevard and runs south to the Southwest Pump Station located near the intersection of Edgewood Drive and San Gully Road (Figure 1-1). The Southwest Pump Station then pumps the wastewater to the City's Glendale Water Reclamation Facility via either a second trunk line or through a large force main.

Figure 1-1. Existing Western Gravity Sewer Trunk Line



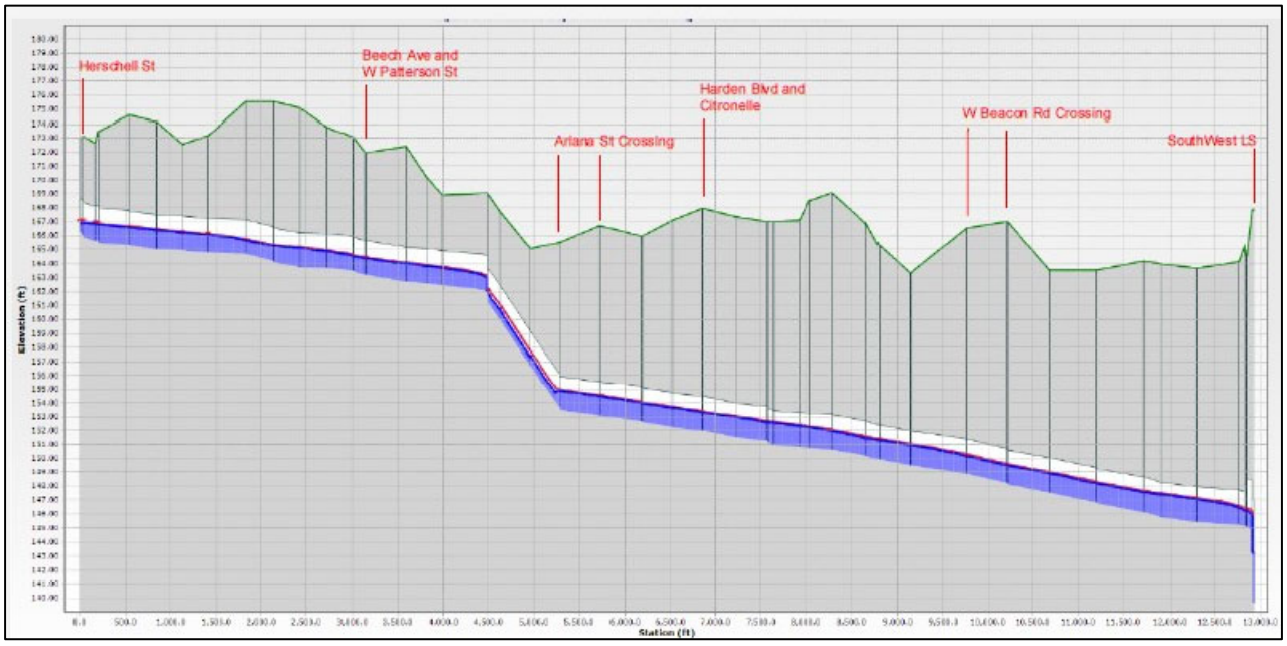
The drainage area for the trunk line is roughly bounded by Interstate 4 to the north, Edgewood Drive to the south, Florida Avenue to the east, and Galloway Road to the west **(Figure 1-2)**. This Planning Area is characterized as urban, consisting of single and multi-family residential, commercial, and light industrial uses.

Figure 1-2. Western Gravity Sewer Trunk Line Drainage Area



The existing 36-inch diameter section of trunk line consists of approximately 12,800 lineal feet of lined NRCP slip lined to 30-inch diameter and 43 manholes. There are approximately 47 branch connections that flow into the manholes along the 36-inch sewer line's route. **Figure 1-3** shows the profile of the existing trunk line and modeled depth of flow in the pipe during current the peak week of the wet season. The model predicts that during the storm event flow condition, the lower end of the trunk line was flowing at 82% full (by level). It is important to point out that with gravity sewers, the peak flow capacity is reached at approximately 94% and decreases as the flow approaches full-pipe conditions. However, empirical evidence indicates the lower half of the Trunk Line surcharges during normal wet season peak day conditions.

Figure 1-3. Existing Trunk Line Depth of Flow – Peak Week



Maintaining the existing trunk line is problematic because of its alignment through urbanized areas with limited access. The following areas are of particular concern:

- The trunk line runs through the Oakhill Mobile Home Park (MHP) and the Bedrock Colonial MHP located west of Pinewood Avenue between Herschell Street and Josephine Street. The MHPs' private sewer collection system discharges into the trunk line at Manholes 7013, 7010, 7153, 7009,

7008, and 7006. The line runs under several of the homes which limits the City's access for maintenance.

- The line runs beneath the Harden Boulevard pavement for approximately 1,400 feet south of Ariana Street. Harden Boulevard is a State highway which limits City access for maintenance activities.
- The line exits Harden Boulevard right-of way south of Topaz Retreat Apartments and runs within a 15-foot-wide wastewater easement along Citronelle Street within the Bedrock Citrus Center Colony MHP. On the east side of the MHP, the line turns south and runs along the east side of the drainage channel to just north of Beacon Road. The line is 14-foot to 16-foot deep in this area and runs within 10 feet of several homes.

The Publix lift station (L0790) force main and Northwest lift station (L0810) discharge into the Trunk Line near Herschell Street. These force mains currently account for 78% of the dry weather flow in the Trunk Line. This percentage decreases to approximately 59% during the wet season peak day, suggesting that significant infiltration and inflow into the Trunk Line.

Table 1-2. Current Modeled Flow Conditions in Trunk Line

Location	Dry Weather Flow (MGD)	Wet Weather Flow (MGD)		
		Peak 7-Day Rolling Average	Peak Day	Hurricane Ian
Current Flow				
Northwest Force Main	0.67	1.00	1.05	1.13
Publix Force Main	1.17	1.65	1.65	1.66
Other Sources	0.53	1.10	1.90	3.07
Terminus of Trunk Line	**2.37**	**3.75**	**4.60**	**5.86**

The sewer model was run for projected year 2045 flow conditions. The flows were based on a hybrid projection of traffic analysis zone data with modifications

provided by the City planning department. **Table 1-3** summarizes the projected dry and wet weather flows in the trunk line.

Table 1-3. Modeled Flow Conditions in Trunk Line in Year 2045

Location	Dry Weather Flow (MGD)	Wet Weather Flow (MGD)		
		Peak 7-Day Rolling Average	Peak Day	Hurricane Ian
Projected Flow in 2045				
Northwest Force Main	0.74	1.06	1.12	1.20
Publix Force Main	1.21	1.69	1.70	1.70
Other Sources	0.58	1.23	2.03	3.21
Terminus of Trunk Line	***2.53***	***3.98***	***4.85***	***6.11***

Table 1-4 shows the modeled depth of flow for the existing 30-inch trunk line, a 36-inch line, and 42-inch line in 2045 under wet weather conditions. It is important to point out that the maximum capacity of gravity sewers occurs at a depth of flow of approximately 94% of the pipe diameter. The maximum depth of flow in the modeled trunk line occurs in the southern half of the trunk line after the Ariana Street crossing. This is because there is less slope in this section.

Table 1-4. Modeled Depth of Flow in Year 2045

Flow Condition	Projected Depth of Flow (as a % of Pipe Diameter)		
	Existing 30" Trunk Line	36" Trunk Line	42" Trunk Line
Peak Wet Week	70%	47%	33%
Peak Wet Day	77%	51%	38%
Hurricane Day	96%	78%	41%

Figures 1-2, 1-3, and 1-4 show the projected year 2045 depth of flow in a proposed 36-inch trunk line. **Figures 1-7, 1-8, and 1-9** show the depth of flow for a proposed 42-inch trunk line.

Figure 1-4. Proposed 36-inch Trunk Line Depth of Flow – Peak Week in 2045

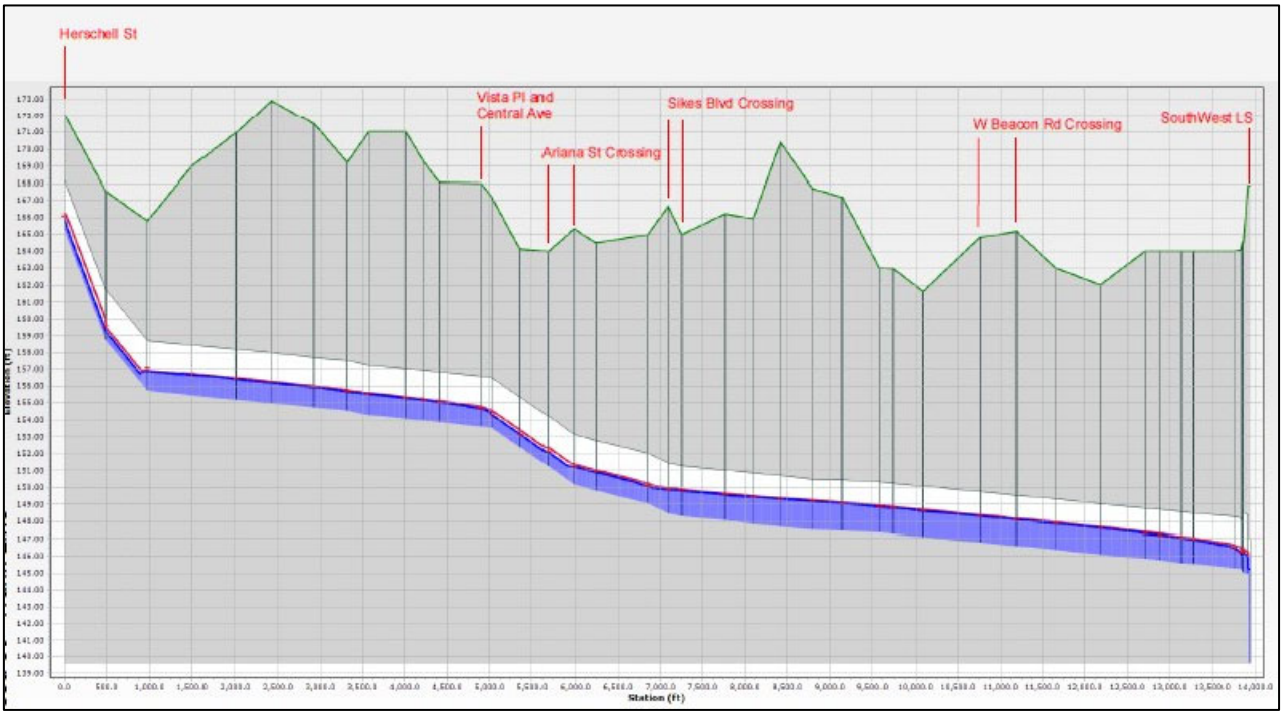


Figure 1-5. Proposed 36-inch Trunk Line Depth of Flow – Peak Day in 2045

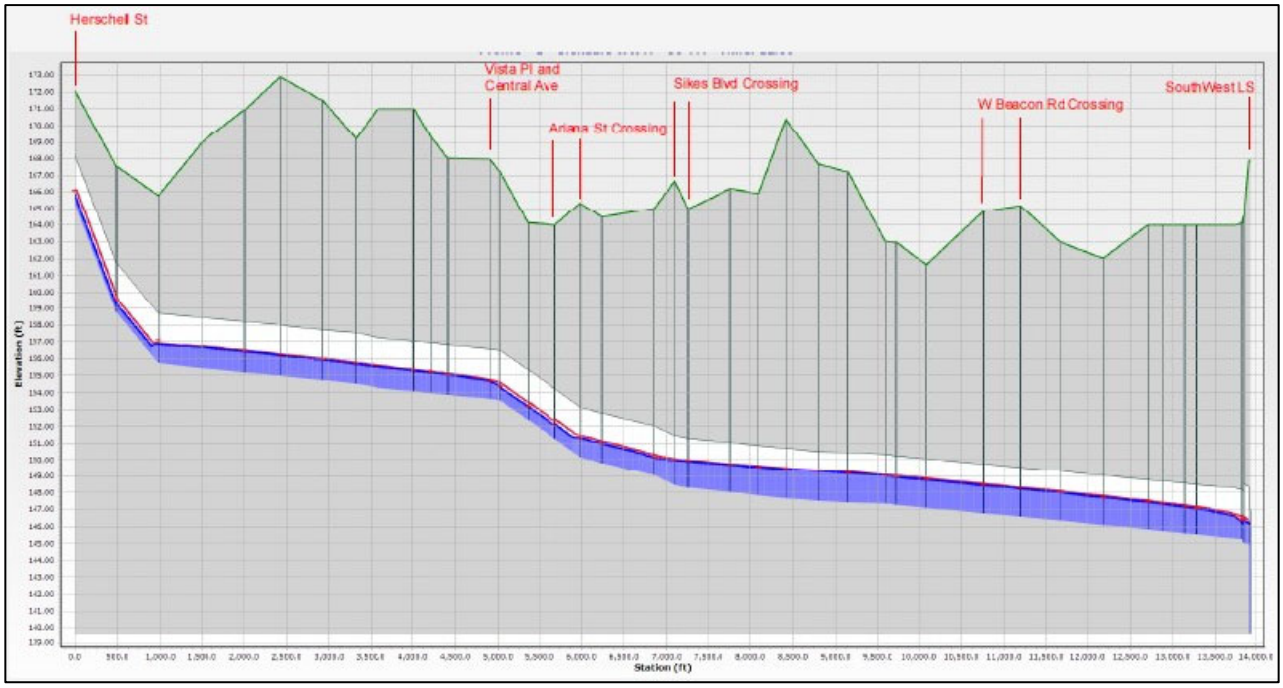


Figure 1-6. Proposed 36-inch Trunk Line Depth of Flow – Storm Event in 2045

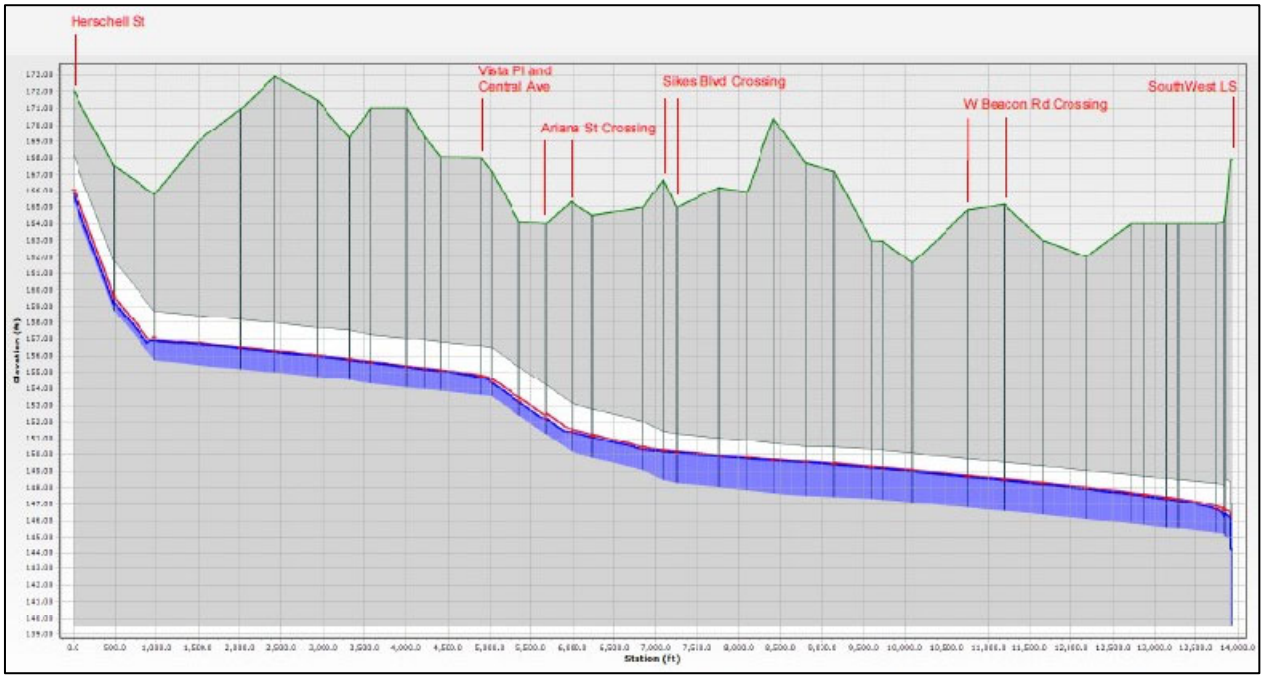


Figure 1-7. Proposed 42-inch Trunk Line Depth of Flow – Peak Week in 2045

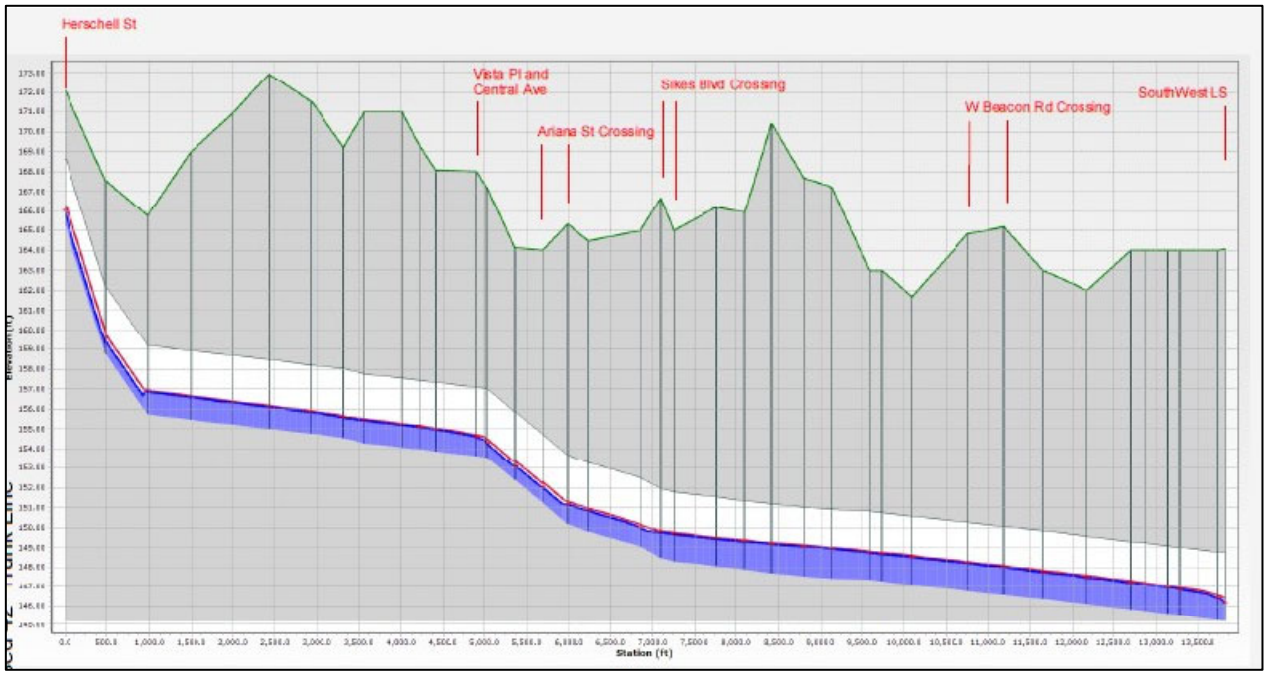


Figure 1-8. Proposed 42-inch Trunk Line Depth of Flow – Peak Day in 2045

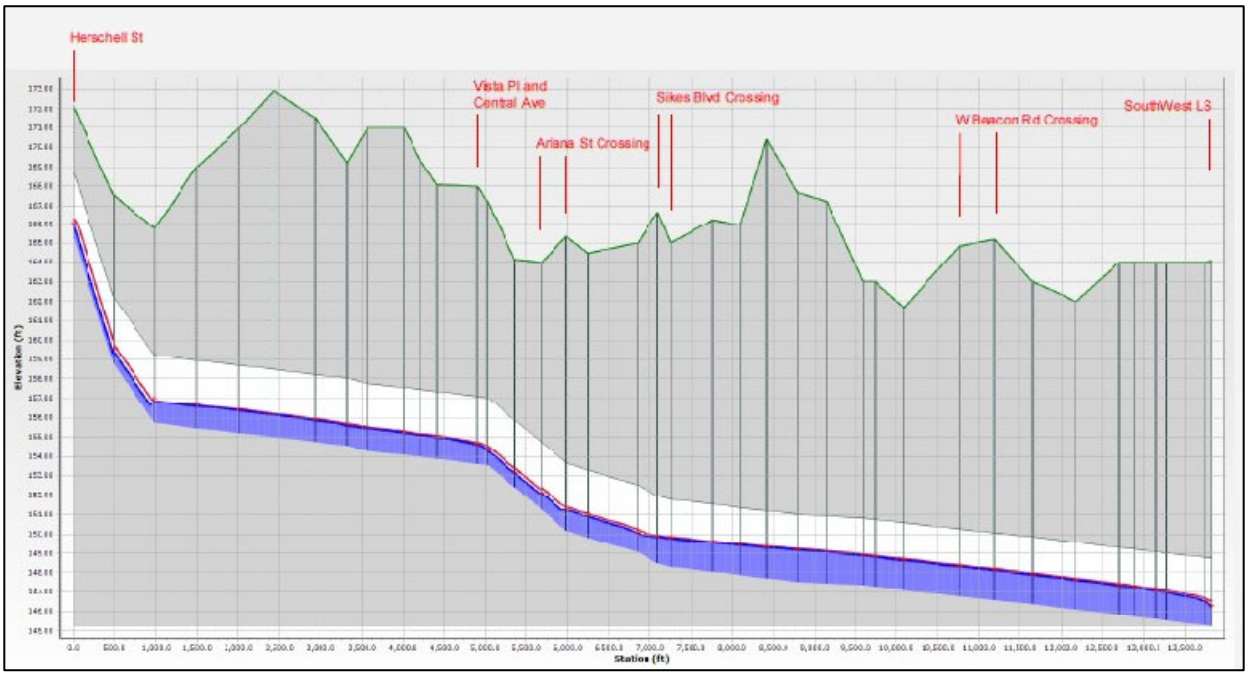
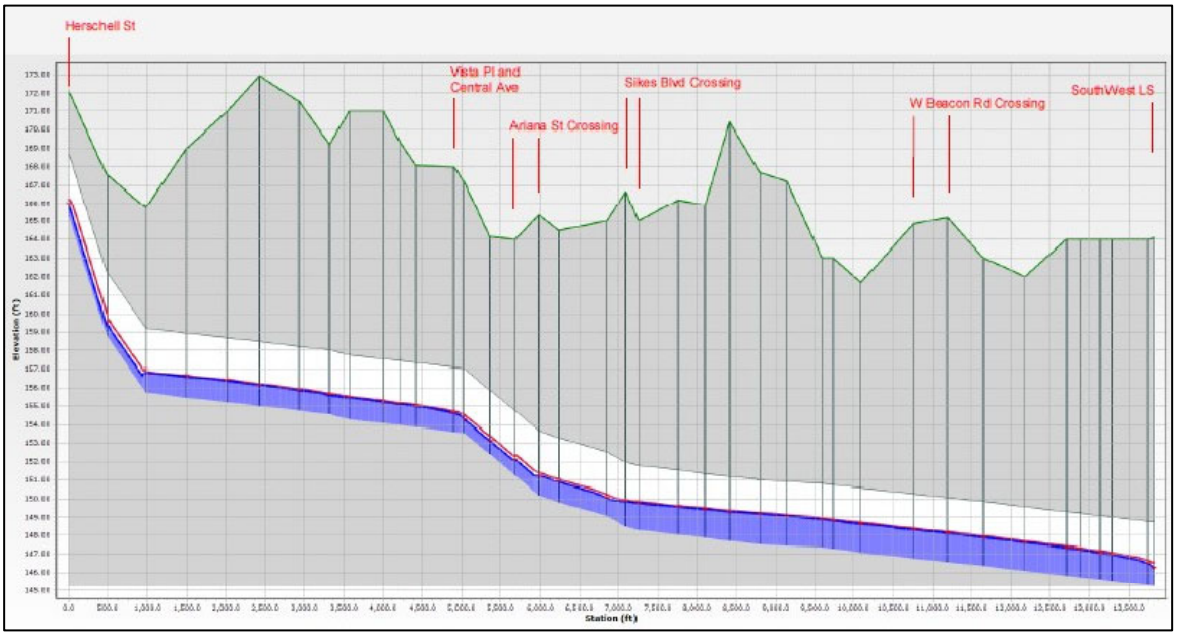


Figure 1-9. Proposed 42-inch Trunk Line Depth of Flow – Storm Event in 2045



1.6.2 Population Trends and Growth Areas

Population projections are based on Polk County Traffic Analysis Zone data and edited by the City's planning department. **Table 1-5** summarizes the population projections for the trunk line drainage area and the City's entire service area.

Table 1-5. Population Trends

Population Projections		
Year	**Trunk Line Drainage Area**	**City Service Area**
2020	24,294	146,777
2025	25,074	157,664
2030	25,937	169,100
2035	26,815	180,542
2040	27,796	191,269
2045	28,988	201,251

1.6.3 Wastewater Projected Flow Demands

The City's wastewater hydraulic model was recently improved to incorporate geocoded customer billing data and addresses to the nearest model element and established model generation rates and curves for residential and commercial accounts. The model was also updated to include base (dry weather), wet season flows, and estimations for infiltration and inflow. The current model projects wastewater flow through the year 2045.

Dry season flows were based on the average day flow from December 2021 through February 2022. Wet season flows were based on the highest 7-day rolling average from July 2022 through September 2022. The Trunk Line was also modeled for peak day during the wet season and a storm event (Hurricane Ian). Projected flows are shown in **Tables 1-6 and 1-7**.

Table 1-6. Wastewater Flow Projections for City Service Area

Wastewater Projections (MGD)		
Year	**Dry Season**	**Wet Season**
2020	13.62	18.16
2025	14.66	19.20
2030	15.67	20.21
2035	16.70	21.24
2040	17.75	22.29
2045	19.02	23.56

Table 1-7. Wastewater Flow Projections for Western Gravity Trunk Line

Wastewater Projections (MGD)				
Year	**Dry Season**	**Wet Season**	**Peak Day**	**Storm Event**
2020	2.34	3.79	4.66	5.92
2025	2.37	3.82	4.69	5.95
2030	2.40	3.85	4.72	5.98
2035	2.43	3.88	4.75	6.01
2040	2.47	3.92	4.79	6.05
2045	2.53	3.98	4.85	6.11

Section 2 – Alternatives Analysis

2.1 Western Trunk Gravity Sewer Replacement

2.1.1 Alternative 1 – New Gravity Trunk Line (Trail Alignment)

Alternative 1 involves replacement of the existing gravity trunk line with a new 42-inch diameter gravity line. Replacement of the line along the same corridor is challenging because of limited access and conflicts with existing homes. Therefore, alternative routes were evaluated.

Route Description - Alternative 1 alignment begins at the intersection of Herschell Street and Dade Avenue and proceeds west crossing the ditch line into Parcel 232823100500005040 (owned by True Investors Development LLC), turns south and proceeds along City-owned property (Parcels 232823000000014020, 232823000000023040, and 232823000000024010) to Patterson Street. At this point, the alignment follows the existing trunk line route to the south side of Ariana Street. The alignment then turns west on Ariana Street to Windermere Avenue, then south to Forest Park Street. At Forest Park Street, the alignment runs east to Harden Boulevard and crosses to the east side of Harden Boulevard at Forest Park Street and proceeds east to Webster Avenue, then south on Webster Avenue and rejoins the existing trunk line route at Queen Street and proceeds to the Southwest Pump Station via San Gully Road. This route is approximately 13,880 feet in length**.** **Figure 2-1** show the proposed route compared to the existing route. **Figure 2-2** shows the profile of Alternative 1.

Figure 2-1. Alternative 1 - Trunk Line Trail Route

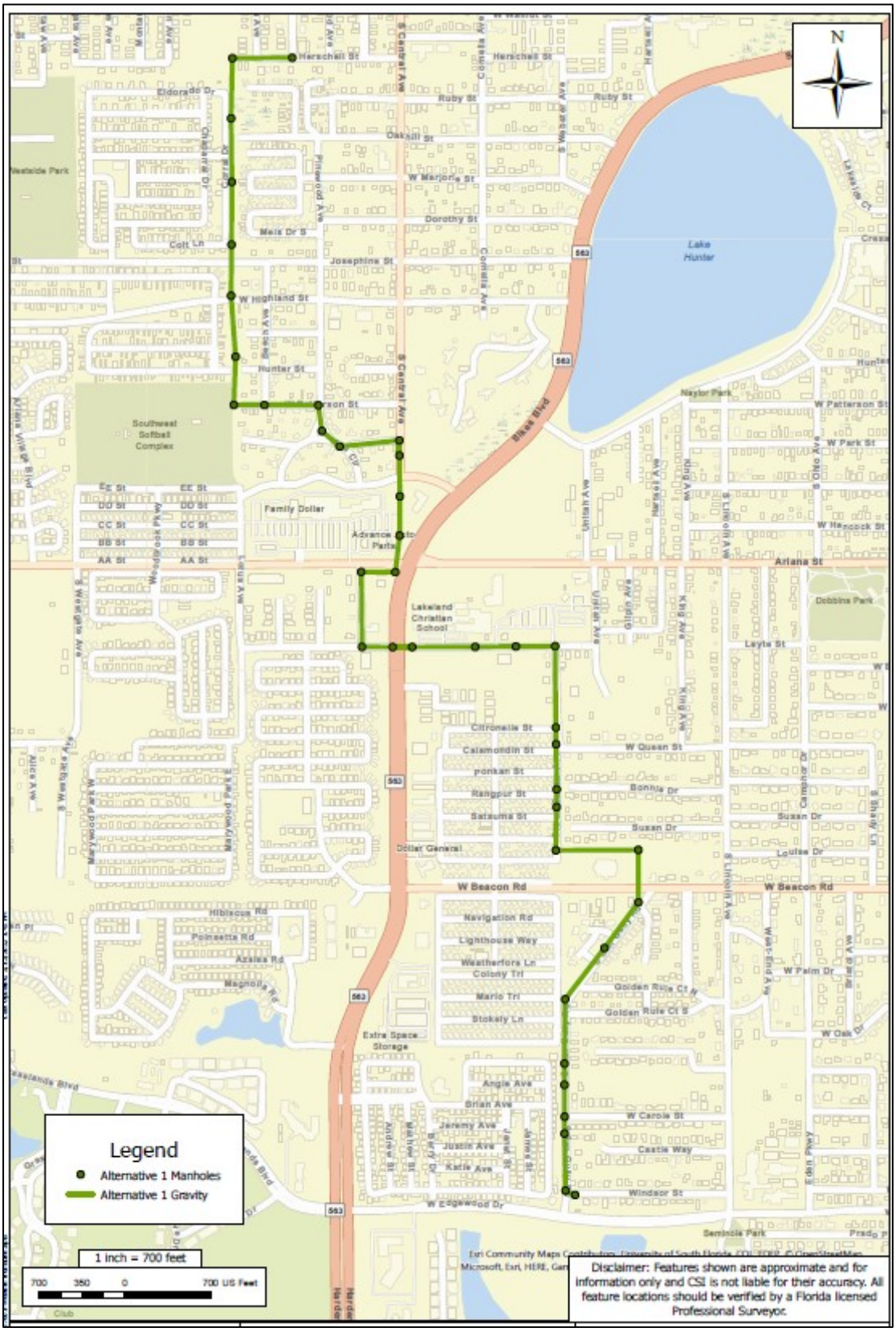
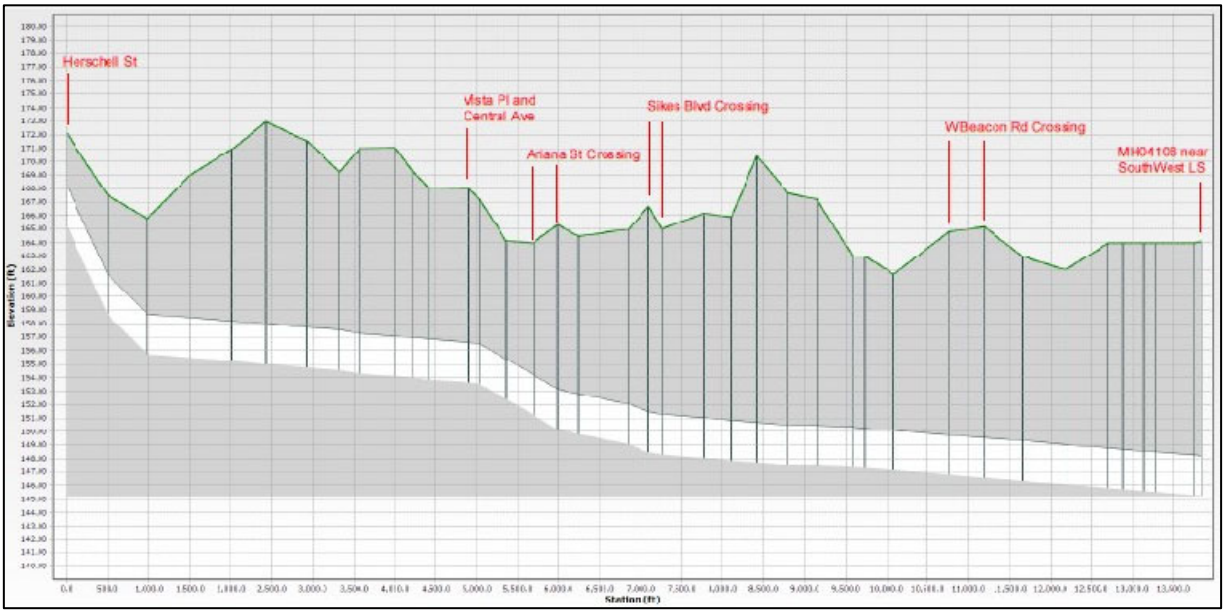


Figure 2-2. Alternative 1 - Trunk Line Trail Route Profile



Construction Challenges - A new multifamily development is planned at the True Investors Parcel west of Herschell Street. A review of the preliminary plans indicates a landscape buffer and 8-foot trail planned for the location of the proposed trunk line.

The trunk line will need to drop in depth by approximately 10 feet to cross the ditch lines. This will result in the line being 14 to 18 feet in depth along the trail to Pinewood Avenue. The depth will be 13 to 15 feet in depth along the Kew Circle and Vista Place to Central Avenue.

Construction from the south end of Central Avenue to the southwest corner of Ariana Street and Harden Boulevard will require a microtunnel approximately 500 feet in length. The casing will need to be 66-inch diameter to accommodate bell restraints. As an alternative, fusible pipe can be used which will reduce the casing diameter. A temporary construction easement may be required to receive the microtunnel casing adjacent to the Ariana Food Mart.

The corridor along the west side of Harden Boulevard to Forest Park has limited right-of-way, overhead power, 12-inch water main, communication cable, and

gas main. Therefore, the more constructable corridor would be to run west from the southwest corner of Ariana Street and Harden Boulevard to Windermere Avenue and south to Forest Park Street. Construction along the short section of Ariana Street may require temporary closure of the eastbound right turn lane. This alignment avoids Harden Boulevard, shifts the alignment along a lightly traveled street, and provides a better approach to cross Harden. The Windermere alignment would impact only three homes which would have access from the north or south.

The crossing of Harden Boulevard at Forest Park Street will be challenging construction. This crossing will also require a microtunnel approximately 150 feet in length. The only access to the small business park at the southwest corner of Harden Boulevard and Forest Park is from Forest Park, so construction will need to be staged to maintain the access.

At Forest Park and Harden, the proposed line will cross the existing trunk line and a 42-inch water transmission main in a 66-inch casing. The surface elevation at this location is approximately 165 feet. City record drawings do not indicate the invert elevation of the casing; however, they show that the casing and carrier pipe was installed by open cut in 1980 prior to the widening of Harden Boulevard. Assuming the casing has 4 feet of cover, the casing invert elevation would be approximately 156 feet. The invert of the existing gravity trunk line at this location is 151.79 feet. This does not leave sufficient vertical space to install the new trunk line between the two lines. Therefore, the new trunk line top of pipe elevation will need to be at 17 to 18 feet in depth at this location to maintain flow in the existing trunk line during construction.

Construction along Forest Park to Webster will need to be scheduled when Lakeland Christian School is not in session. The alignment along Webster will be 18 to 19 feet in depth. The existing clay sewer serving the homes along Webster will need to be removed and replaced to construct the trunk line.

The pipeline between Queen Street and Legacy Christian Church will be constructed along the east embankment along the ditch line. The existing trunk

line is within a 15-foot-wide easement along the north and east side of Legacy Christian Church. The easement will need to be widened to install the new line.

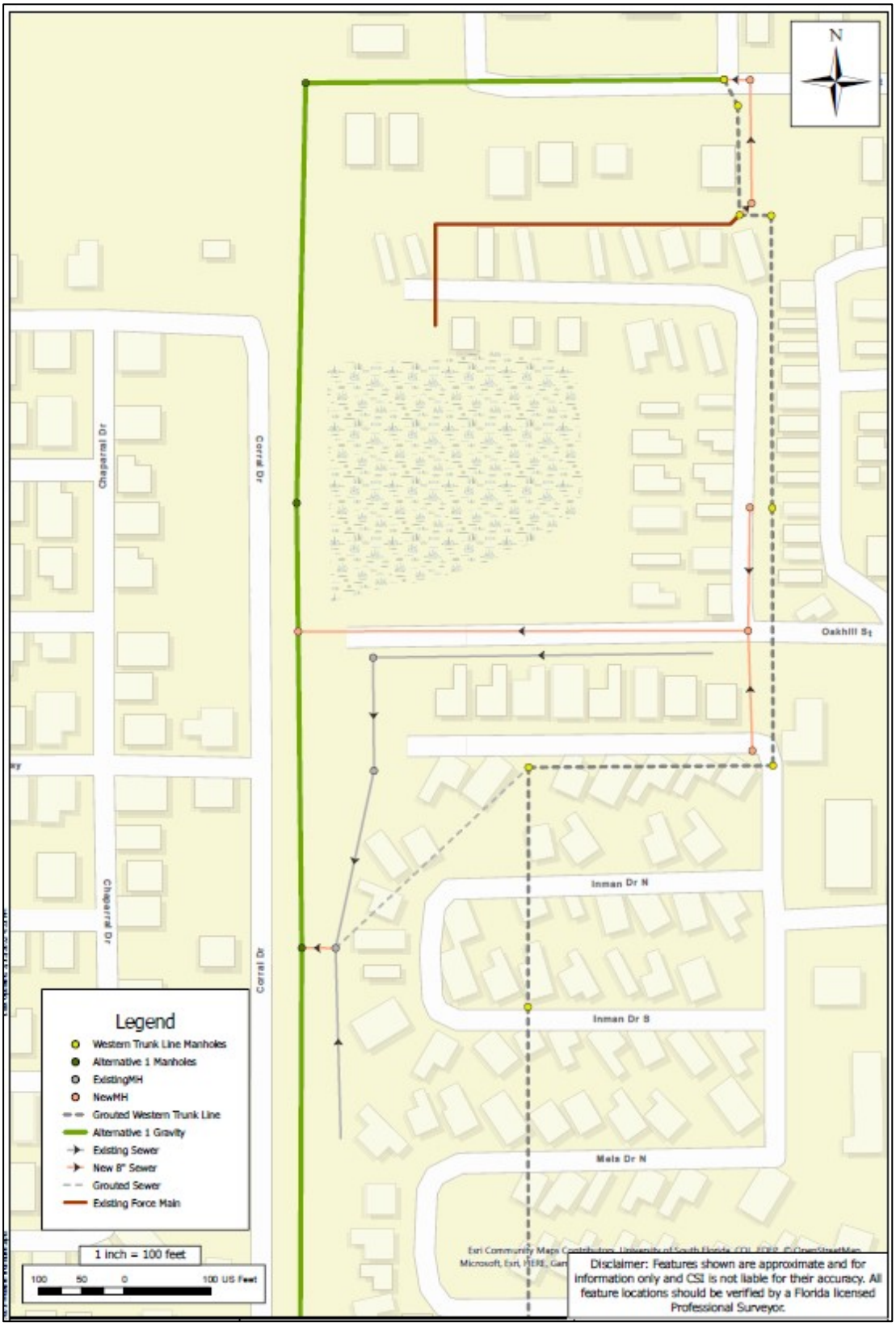
The line will cross Beacon Road at San Gully Road. Construction south of Beacon will be within the roadway of San Gully Road to the Southwest Pump Station. The homes along San Gully have alternative access during construction by approaching from either end of San Gully or via Lincoln Avenue.

Diversion of Tributary Flow into Alternative 1 Trunk Line

Alternative 1 route matches the existing trunk line alignment except for the section between Herschell Street and Patterson Street and along Forest Park Street and Webster Avenue. The new pipeline profile will allow collector sewers and services that enter the existing trunk line to be diverted to the new line.

The following diversions will be constructed at the sections that do not coincide with the existing trunk line: Collector flow from the northern portion of Oakhill MHP will be diverted north through a new 8-inch gravity line to Herschell Street. Collector flow from the central portion of Oakhill MHP will be diverted south to a new 8-inch gravity line that will run east along Oakhill Street to the new trunk line along the trail. Collector flow within the Colonial MHP at the northeast portion of Smithwood Drive will be diverted north to the 8-inch line on Oakhill Street. Initial investigation of the private collection system within the Colonial MHP indicates most of the collector lines converge on a private manhole near the northwest part of the property. This flow will be diverted from the private manhole west to the new trunk line **(Figure 2-3)**.

Figure 2-3. Alternative 1 - Trunk Line Trail Route -Collector Flow Diversion -Oakhill MHP



Collector flow entering MH 7006 between Mels Drive South and Josephine Street will be diverted to a new 8-inch gravity line that will be constructed along Beech Avenue south to Patterson Street. This will allow collector flow currently entering the existing truck line along Beech Avenue to enter the new trunk line **(Figure 2-4)**.

Figure 2-4. Alternative 1 - Trunk Line Trail Route -Collector Flow Diversion - Beech Avenue

The existing 8” clay sewer along Webster will likely need to be reconstructed to allow construction of the trunk line. Flow entering the existing trunk line along Citronelle Street on the north end of Citrus Center Colony MHP will be diverted into a new 8-inch gravity sewer to be constructed along the trunk line. The 8-inch sewer will flow east to the new trunk line at Webster Avenue **(Figure 2-5)**.

Figure 2-5. Alternative 1 - Trunk Line Trail Route -Collector Flow Diversion - Citronelle Street

2.1.2 Alternative 2 – New Gravity Trunk Line (Central Avenue/Pinewood Street Route)

Route Description

Alternative 2 involves construction of a new 42-inch diameter trunk line. The alignment begins at the intersection of Herschell Street and Dade Avenue and proceeds east to Central Avenue, south on Central to Oakhill Street, west on Oakhill, to Pinewood Avenue, south on Pinewood to Patterson Street. At this location, the alignment follows the same route as Alternative 1 to the Southwest Pump Station **(Figure 2-6)**. This route is approximately 14,280 feet in length.

Construction Challenges

The elevation increases by 24 feet from MH 7155 to Central Avenue. The proposed trunk line would be 25 to 32 feet in depth for 1000 linear feet along Central to Oakhill. **Figure 2-7** shows the profile of Alternative 2.

This route would require 4,500 linear feet of roadway to be reconstructed from MH 7155 to Pinewood and Patterson. The remaining route will have the same construction challenges as Alternative 1.

Figure 2-6. Alternative 2 - Trunk Line Central Ave/Pinewood St Route

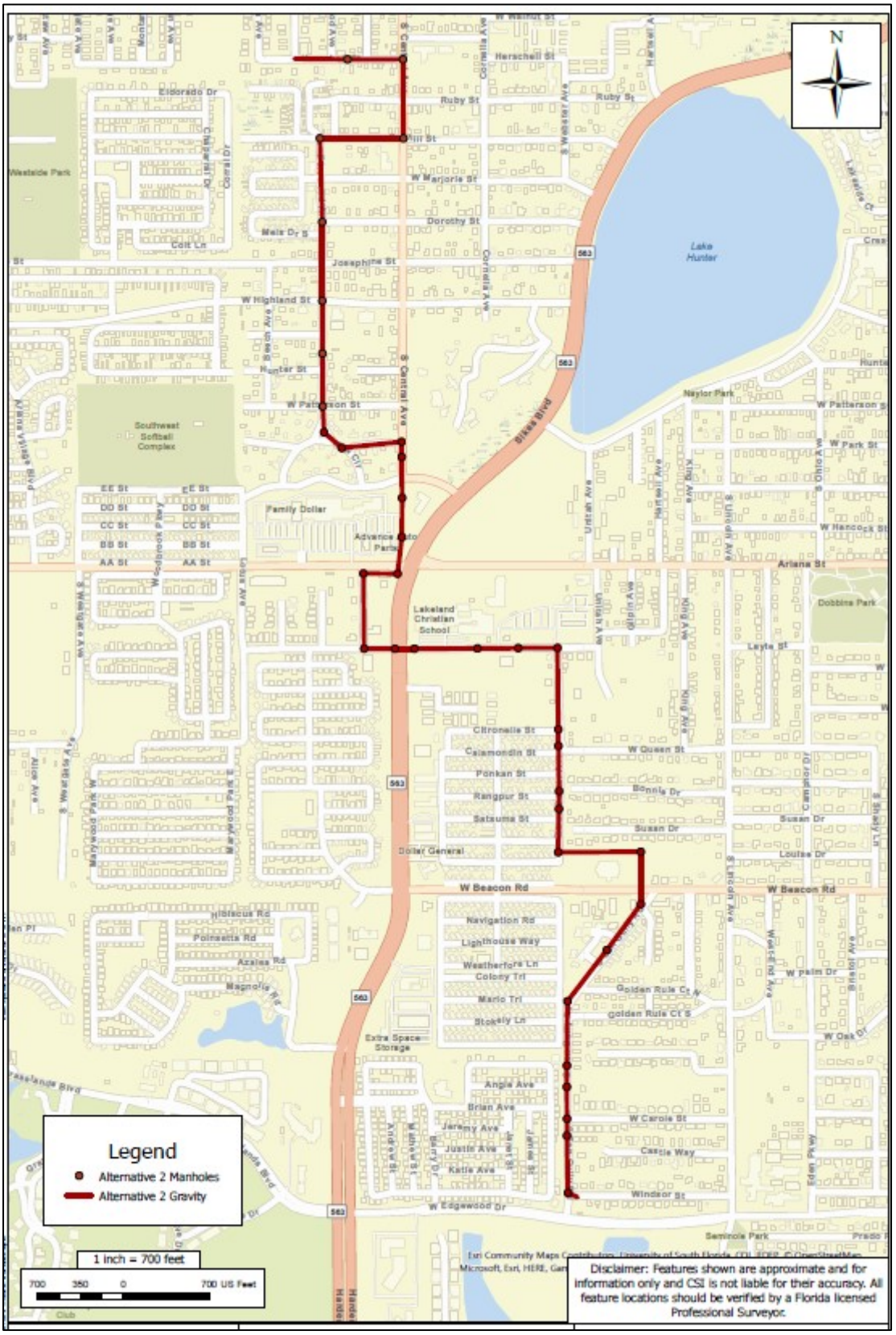
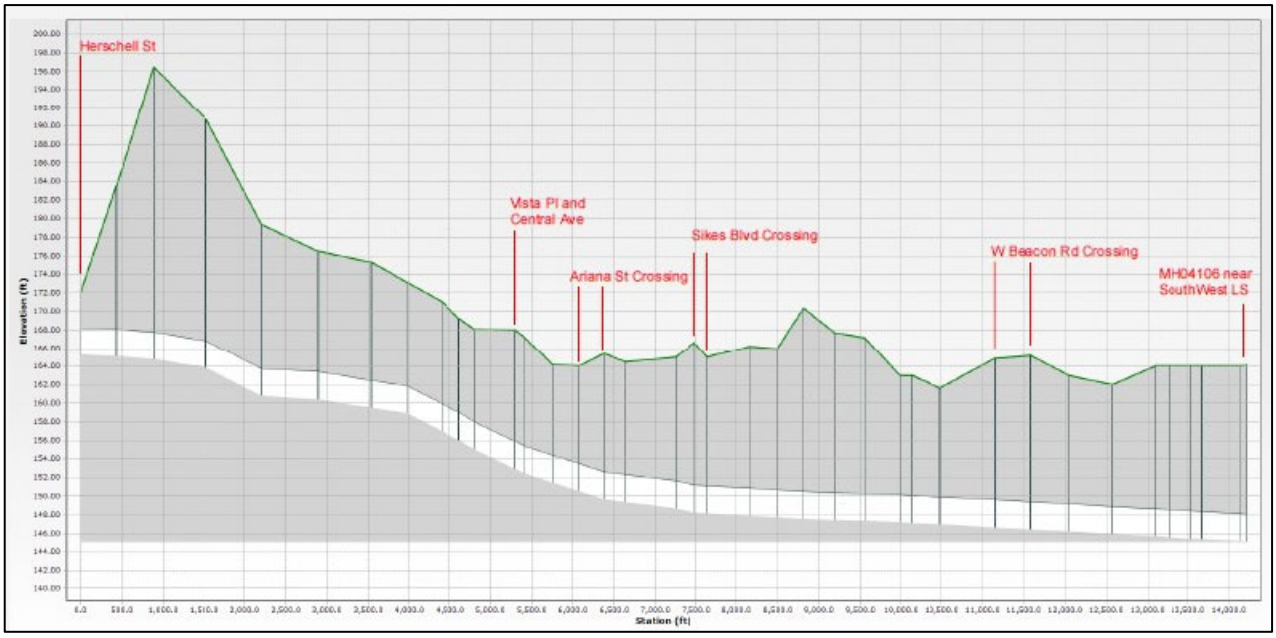


Figure 2-7. Alternative 2 - Trunk Line Central Ave/Pinewood Profile



Diversion of Tributary Flow into Alternative 2 Trunk Line

Alternative 2 route matches the Alternative 1 trunk line alignment with the exception of the section between Herschell Street and Patterson.

The following diversions will be constructed at the sections that do not coincide with the existing trunk line:

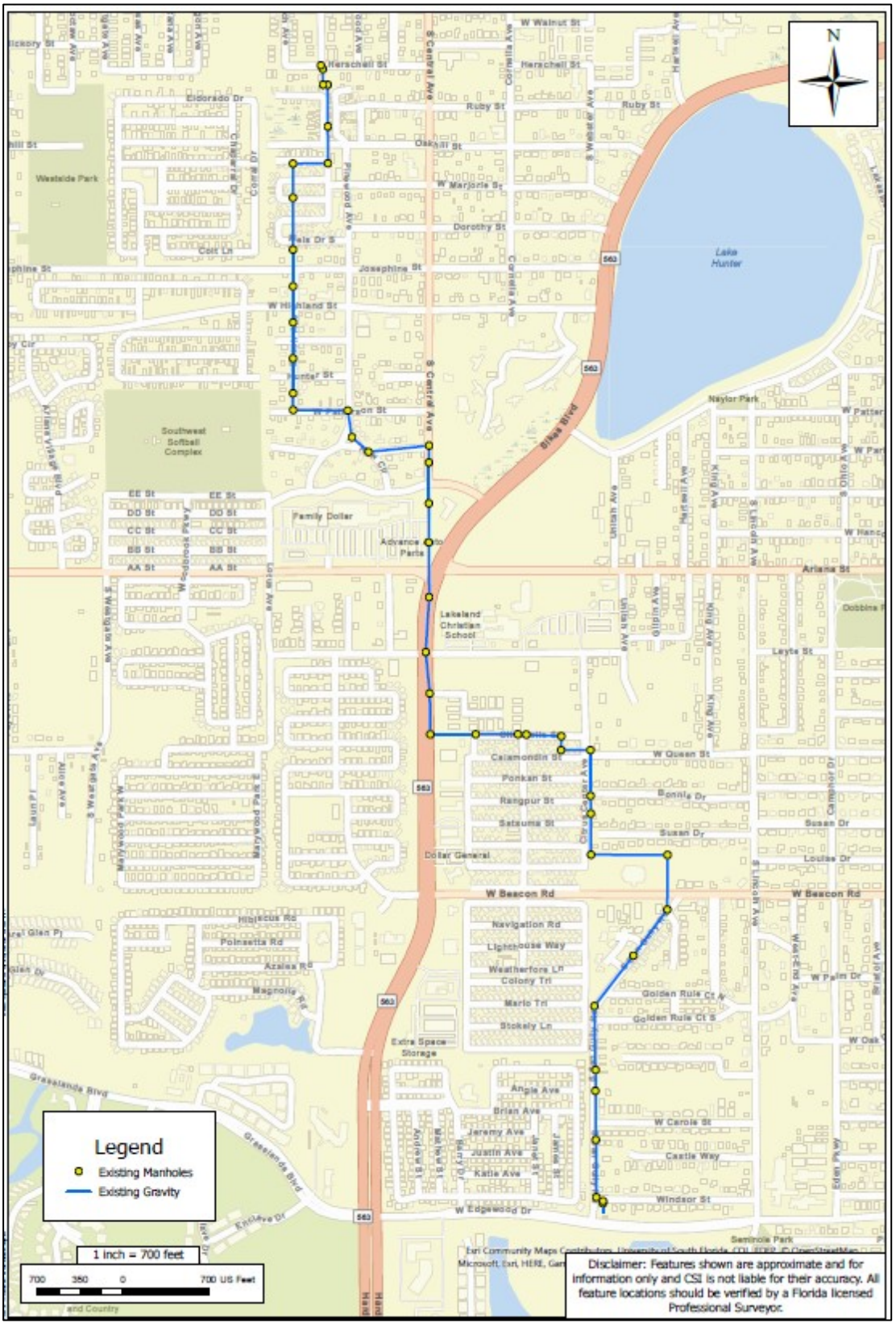
- It is unclear if collector flow from Oakhill and Colonial MHPs can be diverted to Alternative 2 trunk line as the elevation increases significantly going east.
- Collector flow entering MH 7006 between Mels Drive south and Josephine Street will be diverted to a new 8-inch gravity line that will be constructed along Beech Avenue south to the intersection of Patterson and Pinewood. This will allow collector flow currently entering the existing truck line along Beech Avenue to enter the new trunk line.
- The existing 8” clay sewer along Webster will likely need to be reconstructed to allow construction of the trunk line.
- Flow entering the existing trunk line along Citronelle Street on the north end of Citrus Center Colony MHP will be diverted into a new 8-inch gravity sewer

to be constructed along the trunk line. The 8-inch sewer will flow east to the new trunk line at Webster Avenue.

2.1.3 Alternative 3 – Remove and Replace Existing Trunk Line

This alternative involves removing the existing trunk line and replacing it with a new 42-inch diameter line within the same corridor **(Figure 2-8)**. This alternative will require incremental removal of the existing line while construction proceeds with the new line. Construction of this alternative will require significant bypass pumping, removal of mobile homes that conflict with the existing line, and additional temporary easements. This alternative does not meet the City's goal that the replacement trunk line should be readily accessible for operation and maintenance.

Figure 2-8. Alternative 3 Alignment



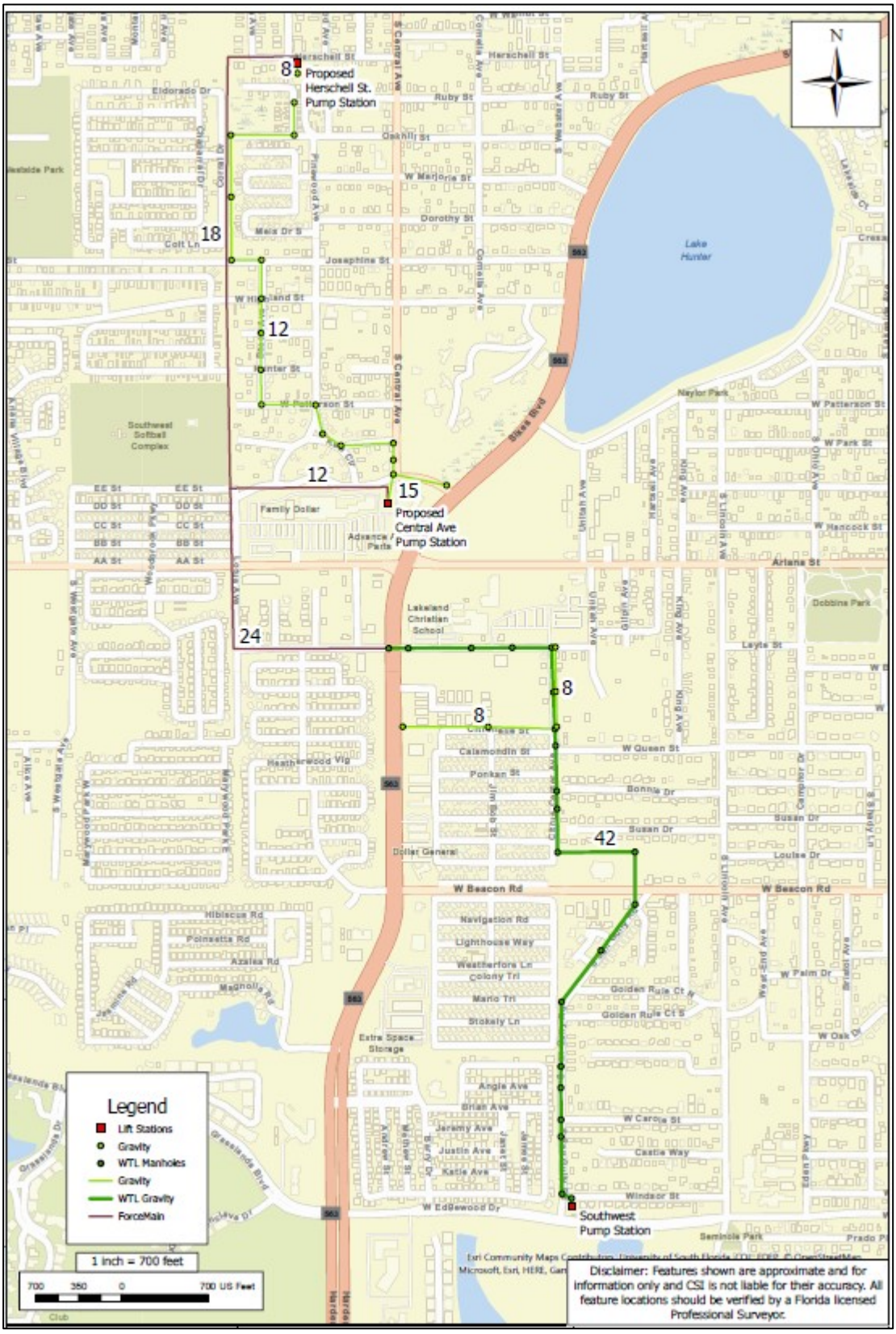
2.1.4 Alternative 4 – New Gravity Trunk Line and Pump Stations

Description

This alternative involves construction of a new master pump station (Herschell Street Pump Station) at Herschell Street which would receive flow from the Northwest Pump Station force main and the Publix force main and re-pump it through a new 18-inch force main which would be constructed along the trail route identified in Alternative 1. The force main would discharge to the new trunk line which would begin at the west side of Harden Boulevard at Forest Park Street. At this location the new trunk line would follow the same route identified in Alternative 1. The Herschell Street Pump Station is anticipated to be a 10-foot diameter wetwell with three pumps. Based on a conceptual design, the wetwell will be approximately 19 feet deep.

A 12-inch diameter gravity sewer line will need to be constructed from Oakhill Street south along Beech Avenue to a proposed second pump station (Central Avenue Pump Station) at Central Avenue south of Belmar Street. The 12-inch gravity sewer is needed to capture the flows currently entering the existing trunk line along this route. In addition, flows east of Sikes Boulevard along the east side of Lake Hunter would enter this pump station. The station would then pump through a 12-inch force main which would manifold with the new 18-inch force main at the intersection of Belmar Street and Lotus Avenue. The Central Avenue Pump Station is anticipated to be an 8-foot diameter wetwell with two pumps. Based on a conceptual design, the station will be approximately 24 feet deep. **Figure 2-9** shows the location of the two proposed pump stations, gravity sewer, and force mains.

Figure 2-9. Alternative 4 – Trunk Line and Pump Station Locations



2.2 Present Worth Analysis

2.2.1 Project O&M Cost

The following criteria was utilized to develop the present worth analyses for the three alternatives.

- Project O&M costs were developed based on data provided by the City for its current operating expenses.
- Electricity: $0.115 per kwh (based on average cost for City pump stations)
- Present worth evaluation period: n = 20 years
- Federal discount interest rate = 2.50% (OMB Circular A94 for 2023)
- Depreciation period: 20 years
- Useful life of components
  - Sewer 75 years
  - Manholes 40 years
  - Force mains 50 years
  - Rehabilitated pipe/manholes 40 years
  - Pumps and controls 20 years
  - Valves 20 years
  - Generators 30 years

The net present worth (NPW) of each alternative was calculated based on the following:

Capital costs (C) – Construction, design, and permitting
Present Worth (PW) of annual O&M cost = O&M cost x (UPW (uniform present worth, conversion factor)
PW of Short-lived assets (SLA) = SLA cost x SPW (single year PW, conversion factor
PW of Salvage Value = Construction cost x Useful life % x SPW (single year PW, conversion factor)
NPW = Construction cost + PW of annual O&M cost - PW of SLA

2.2.2 Cost to Construct Alternatives

The detailed costs for the proposed alternatives are presented in **Tables 2-1** through **2-8**.

Alternative	Construction Cost	20 Year O&M Cost (PW)	Salvage Values (PW)	20 Year Present Worth
Alternative 1 - Trail Route	$ 52,369,743	$ 714,015	$ 9,665,186	$ 43,418,572
Alternative 2 - Central Ave / Pinewood	$ 58,644,659	$ 776,216	$ 11,099,879	$ 48,320,995
Alternative 3 - Remove & Replace in Same Corridor	$ 63,559,396	$ 728,076	$ 807,069	$ 63,480,403
Alternative 4 - Combination Gravity Trunk Line & Pump Stations	$ 52,347,067	$ 2,208,780	$ 9,665,186	$ 44,890,661

Table 2-1. Estimated Project Costs for Alternative 1 – Gravity Trunk Line - Trail Route

Description	Cost Estimate
Preconstruction Services	
Easement Acqusition	$ 240,000
Phase 1 Planning, Survey/SUE Allowance	$ 781,683
Phase 2 Design	$ 1,592,839
Subtotal	**$ 2,614,522**
Construction	
General	
Mobilization	$ 1,864,581
Subtotal	$ 1,864,581
Construction & Coimmissioning of Trunk Main	
42" Diameter Gravity Trunk Line	$ 22,136,657
8" Gravity Collector Main	$ 1,606,028
Trunk Line Manholes	$ 4,213,379
Branch Manholes	$ 967,796
Force Main Relocations	$ 516,739
Trenchless Crossings	$ 5,616,890
CCTV Inspection	$ 238,492
Bypass Pumping	$ 900,599
Existing Utility Relocations	$ 390,374
Subtotal	$ 36,586,954
Existing Trunk Line Rehabilitation & Abandonment	
Maintenance of Traffic, Erosion Control, & Restoration	$ 5,279,130
Pipe Abandonment	$ 1,141,630
Pipe & Manhole Rehabilitation	$ 359,724
Subtotal	$ 6,780,484
Construction Subtotal	**$ 45,232,019**
Planning Level Contingency	$ 4,523,202
Total Capital Cost (rounded) for Present Worth Calculation	**$ 52,369,743**

Table 2-2. Present Worth Analysis for Alternative 1 – Gravity Trunk Line - Trail Route

PROJECT LIFE CYCLE (YEARS)		**20**		
DISCOUNT RATE (PERCENT)		**2.50%**		
	Projects	Years	Cost Estimate	Present Worth
1	Wastewater Improvements	50	$ 52,369,743	$ 52,369,743
			$ -	$ -
	Total Capital Cost		**$ 52,369,743**	**$ 52,369,743**
Replacement Costs/Salvage Values		Years	Salvage Value	Present Worth
1	Sewer	75	$ 14,245,611	$ 8,693,682
2	Manholes	40	$ 1,295,294	$ 790,480
3	Force Main	50	$ 206,696	$ 126,141
4	Pipe/Manhole Rehab	40	$ 89,931	$ 54,882
	Total Replacement Costs/Salvage Values		**$ 15,837,532**	**$ 9,665,186**
Operation & Maintenance Cost		Years	Cost Estimate	Present Worth
	Estimated O&M	20	**$ 45,802**	**$ 714,015**
	Total O&M Costs	20	**$ 45,802**	**$ 714,015**
Total Present Worth Costs				**$ 43,418,572**

Table 2-3. Estimated Project Costs for Alternative 2 – Gravity Trunk Line – Central Ave/Pinewood St Route

Description	Cost Estimate
Preconstruction Services	
Easement Acqusition	$ 230,000
Phase 1 Planning, Survey/SUE Allowance	$ 781,683
Phase 2 Design	$ 1,592,839
Subtotal	**$ 2,604,522**
Construction	
General	
Mobilization	$ 1,848,775
Subtotal	$ 1,848,775
Construction & Coimmissioning of Trunk Main	
42" Diameter Gravity Trunk Line	$ 25,989,172
8" Gravity Collector Main	$ 1,576,895
Trunk Line Manholes	$ 4,384,358
Branch Manholes	$ 1,044,410
Force Main Relocations	$ 506,660
Trenchless Crossings	$ 5,592,670
CCTV Inspection	$ 234,498
Bypass Pumping	$ 1,157,418
Existing Utility Relocations	$ 438,218
Subtotal	$ 40,924,297
Existing Trunk Line Rehabilitation & Abandonment	
Maintenance of Traffic, Erosion Control, & Restoration	$ 6,679,105
Pipe Abandonment	$ 1,137,605
Pipe & Manhole Rehabilitation	$ 355,797
Subtotal	$ 8,172,507
Construction Subtotal	**$ 50,945,579**
Planning Level Contingency	$ 5,094,558
Total Capital Cost (rounded) for Present Worth Calculation	**$ 58,644,659**

Table 2-4. Present Worth Analysis for Alternative 2 - Gravity Trunk Line – Central Ave/Pinewood St Route

PROJECT LIFE CYCLE (YEARS)		**20**		
DISCOUNT RATE (PERCENT)		**2.50%**		
	Projects	Years	Cost Estimate	Present Worth
1	Wastewater Improvements	50	$ 58,644,659	$ 58,644,659
			$ -	$ -
	Total Capital Cost		**$ 58,644,659**	**$ 58,644,659**
Replacement Costs/Salvage Values		Years	Salvage Value	Present Worth
1	Sewer	75	$ 16,539,640	$ 10,093,662
2	Manholes	40	$ 1,357,192	$ 828,255
3	Force Main	50	$ 202,664	$ 123,680
4	Pipe/Manhole Rehab	40	$ 88,949	$ 54,283
	Total Replacement Costs/Salvage Values		**$ 18,188,445**	**$ 11,099,879**
Operation & Maintenance Cost		Years	Cost Estimate	Present Worth
	Estimated O&M	20	**$ 49,792**	**$ 776,216**
	Total O&M Costs	20	**$ 49,792**	**$ 776,216**
Total Present Worth Costs				**$ 48,320,995**

Table 2-5. Estimated Project Costs for Alternative 3 – Gravity Trunk Line – Remove and Replace

Description	Cost Estimate
Preconstruction Services	
Easement Acqusition	$ 155,000
Phase 1 Planning, Survey/SUE Allowance	$ 781,683
Phase 2 Design	$ 1,592,839
Subtotal	**$ 2,529,522**
Construction	
General	
Mobilization	$ 1,830,042
Subtotal	$ 1,830,042
Construction & Coimmissioning of Trunk Main	
42" Diameter Gravity Trunk Line	$ 25,246,610
8" Gravity Collector Main	$ -
Trunk Line Manholes	$ 4,471,881
Branch Manholes	$ -
Force Main Relocations	$ 473,395
Trenchless Crossings	$ 5,564,160
CCTV Inspection	$ 229,796
Bypass Pumping	$ 10,667,996
Existing Utility Relocations	$ 378,060
Subtotal	$ 47,031,899
Existing Trunk Line Rehabilitation & Abandonment	
Maintenance of Traffic, Erosion Control, & Restoration	$ 6,619,762
Pipe Abandonment	$ -
Pipe & Manhole Rehabilitation	$ -
Subtotal	$ 6,619,762
Construction Subtotal	**$ 55,481,703**
Planning Level Contingency	$ 5,548,170
Total Capital Cost (rounded) for Present Worth Calculation	**$ 63,559,396**

Table 2-6. Present Worth Analysis for Alternative 3 - Gravity Trunk Line – Remove and Replace

PROJECT LIFE CYCLE (YEARS)		**20**		
DISCOUNT RATE (PERCENT)		**2.50%**		
	Projects	Years	Cost Estimate	Present Worth
1	Wastewater Improvements	50	$ 63,559,396	$ 63,559,396
			$ -	$ -
	Total Capital Cost		**$ 63,559,396**	**$ 63,559,396**
Replacement Costs/Salvage Values		Years	Salvage Value	Present Worth
1	Sewer	75	$ 15,148	$ 9,244
2	Manholes	40	$ 1,117,970	$ 682,265
3	Force Main	50	$ 189,358	$ 115,560
4	Pipe/Manhole Rehab	40	$ -	$ -
	Total Replacement Costs/Salvage Values		**$ 1,322,476**	**$ 807,069**
Operation & Maintenance Cost		Years	Cost Estimate	Present Worth
	Estimated O&M	20	**$ 46,704**	**$ 728,076**
	Total O&M Costs	20	**$ 46,704**	**$ 728,076**
Total Present Worth Costs				**$ 63,480,403**

Table 2-7. Estimated Project Costs for Alternative 4 – Gravity Trunk Line and Pump Stations

Description	Cost Estimate
Preconstruction Services	
Easement Acqusition	$ 260,000
Phase 1 Planning, Survey/SUE Allowance	$ 781,683
Phase 2 Design	$ 1,842,839
Subtotal	**$ 2,884,522**
Construction	
General	
Mobilization	$ 1,856,322
Subtotal	$ 1,856,322
Construction & Coimmissioning of Trunk Main	
42" Diameter Gravity Trunk Line	$ 13,430,035
8" & 12" Gravity Collector Main	$ 3,631,057
Trunk Line Manholes	$ 2,866,852
Branch Manholes	$ 1,960,726
Pump Station Construction	
Hershell Street Pump Station	
Wetwell & Coatings	$ 402,500
Pumps	$ 534,600
Generator	$ 390,000
Electrical and Controls	$ 738,000
Civil Site Work	$ 310,000
Central Ave Pump Station	
Wetwell & Coatings	$ 287,500
Pumps	$ 252,000
Generator	$ 240,000
Electrical and Controls	$ 498,000
Civil Site Work	$ 175,000
Force Main Relocations	$ 4,965,202
Trenchless Crossings	$ 3,367,835
CCTV Inspection	$ 236,405
Bypass Pumping	$ 791,822
Existing Utility Relocations	$ 440,918
Subtotal	$ 35,518,452
Existing Trunk Line Rehabilitation & Abandonment	
Maintenance of Traffic, Erosion Control, & Restoration	$ 6,044,057
Pipe Abandonment	$ 1,139,548
Pipe & Manhole Rehabilitation	$ 357,672
Subtotal	$ 7,541,277
Construction Subtotal	**$ 44,916,051**
Planning Level Contingency	$ 4,546,494
Total Capital Cost (rounded) for Present Worth Calculation	**$ 52,347,067**

Table 2-8. Present Worth Analysis for Alternative 4 - Gravity Trunk Line and Pump Stations

PROJECT LIFE CYCLE (YEARS)		**20**		
DISCOUNT RATE (PERCENT)		**2.50%**		
	Projects	Years	Cost Estimate	Present Worth
1	Wastewater Improvements	50	$ 52,347,067	$ 52,347,067
			$ -	$ -
	Total Capital Cost		**$ 52,347,067**	**$ 52,347,067**
Replacement Costs/Salvage Values		Years	Salvage Value	Present Worth
1	Sewer	75	$ 14,245,611	$ 8,693,682
2	Manholes	40	$ 1,295,294	$ 790,480
3	Force Main	50	$ 206,696	$ 126,141
4	Pipe/Manhole Rehab	40	$ 89,931	$ 54,882
	Total Replacement Costs/Salvage Values		**$ 15,837,532**	**$ 9,665,186**
Operation & Maintenance Cost		Years	Cost Estimate	Present Worth
	Estimated O&M	20	**$ 141,687**	**$ 2,208,780**
	Total O&M Costs	20	**$ 141,687**	**$ 2,208,780**
Total Present Worth Costs				**$ 44,890,661**

2.3 Ranking Analysis

2.3.1 Ranking Criteria

Differences which cannot be quantified monetarily may exist between the alternatives. Factors considered important when evaluating the alternatives summarized in **Table 2-9**.

Table 2-9. Non-Monetary Factors

Criterion	Considerations
Public Inconvenience	Complaints, business operations, traffic impacts, school operations, pedestrian traffic, mail delivery
Safety	Accessibility for emergency vehicles, adequate detour routes, traffic hazards, traffic proximity to construction workers, sufficient staging areas
Geotechnical Considerations	Dewatering, poor soil
Operation & Maintenance Accessibility	Future O&M convenience, avoid future public inconvenience, re-route trunk line out of mobile home parks
Long Range Planning	Consistency with future projects, development, and capacity
Environmental	Hazardous materials, contaminated soils, wetland/ecosystem impacts, dewatering activities

Each alternative was ranked how it best fit the criterion, from 1 to 4, with a least fit having a rank of 1 to a best fit having a rank of 4, as generally indicated in **Table 2-10**.

Table 2-10. Ranking Criteria

Criterion	Score of 1 (Least Fit)	Score of 5 (Best Fit)
Capital & Long-Term Cost	Highest Cost	Lowest Cost
Public Inconvenience	More Potential	Less Potential
Safety	More Potential Issues	Less Potential Issues
Geotechnical Considerations	Poorer Soils	Better Soils
Operation & Maintenance	Most O&M, less accessibility	Least O&M, more Accessibility
Long Range Planning	More Potential Impacts	Fewer Potential Impacts
Environmental	More Potential Impacts	Fewer Potential Impacts

2.3.2 Alternatives Ranking

Each alternative was ranked based on the ranking criteria in **Table 2-10**. The rankings are summarized in **Table 2-11**. Alternative 1 ranked as the most advantageous option, primarily based on cost, long-range planning, and O&M.

Alternative 1 and 4 were essentially the same project cost; however, when operating expenses were accounted for over a 20-year period, the present worth of Alternative 1 was approximately $1.5 million less than Alternative 4 and approximately $2.7 million when evaluated on a 30-year period. The difference in present worth of the two alternatives will continue to increase as the system ages. Alternative 4 ranked lower than Alternative 1 in long-range planning because the flow capacity of the two pump stations and associated force mains may eventually become a limiting factor for the collection system at some point in the future (20- to 75-year horizon). In addition, Alternative 4 will require the most

operation and maintenance due to mechanical equipment associated with the pump stations. Public inconvenience is also a concern due to siting a major pump station in a residential neighborhood.

Alternative 1 is favored over Alternative 2 because approximately 20% of the trunk line can be constructed within a City-owned trail and drainage area. This reduces impacts to the public, safety concerns, and traffic hazards. Alternative 1 is also more favorable than Alternative 2 based on total project cost ($52.37 million versus $58.64 million) and a 20-year present worth cost ($43.42 million versus $58.64 million).

Alternative 3 scored the worst of the four alternatives. The cost of Alternative 3 exceeded Alternative 1 by approximately $11 million based on total project cost and approximately $20 million based on 20-year present worth. This cost is driven primarily due to extensive bypass pumping required to construct the project. In addition, Alternative 3 will cause major public inconvenience and safety concerns due to its proximity within the Oakhill and Colonial MHPs.

Table 2-15. Alternative Ranking.

	Alternatives			
Ranking Criterion	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**
Cost	4	2	1	3
Public Inconvenience	3	3	1	2
Safety	3	2	1	3
Geotechnical Considerations	3	3	3	3
Operation & Maintenance	4	3	2	2
Long Range Planning	4	4	3	2
Environmental	3	3	3	3
Total	**24**	**20**	**14**	**18**

1 = Least Fit
5 = Best Fit

Section 3 – Selected Alternative

3.1 Western Trunk Gravity Sewer Replacement – Alternative 1 – Trail Route

The selected alternative is described as the construction of a new gravity trunk line to replace the existing line. The proposed project will consist of approximately 13,880 feet of 42-inch diameter sewer, 3,460 feet of collector sewers, and force main relocations.

The following permits will be required to construct the project:

- Florida Department of Environmental Protection (FDEP) “Construction of a Domestic Wastewater Collection/Transmission System Permit”.
- FDEP “NPDES Generic Permit for Stormwater Discharge from Large and Small Construction Activities”
- FDEP “Notice of Intent to Use an Environmental Resource General Permit”
- Florida Department of Transportation Utility Permit for construction within the Harden Boulevard right-of-way
- City of Lakeland Right-of-Way Use Permit
- Polk County Right-of-Way Use Permit for construction with the rights-of-way of Ariana Street and Highland Street.

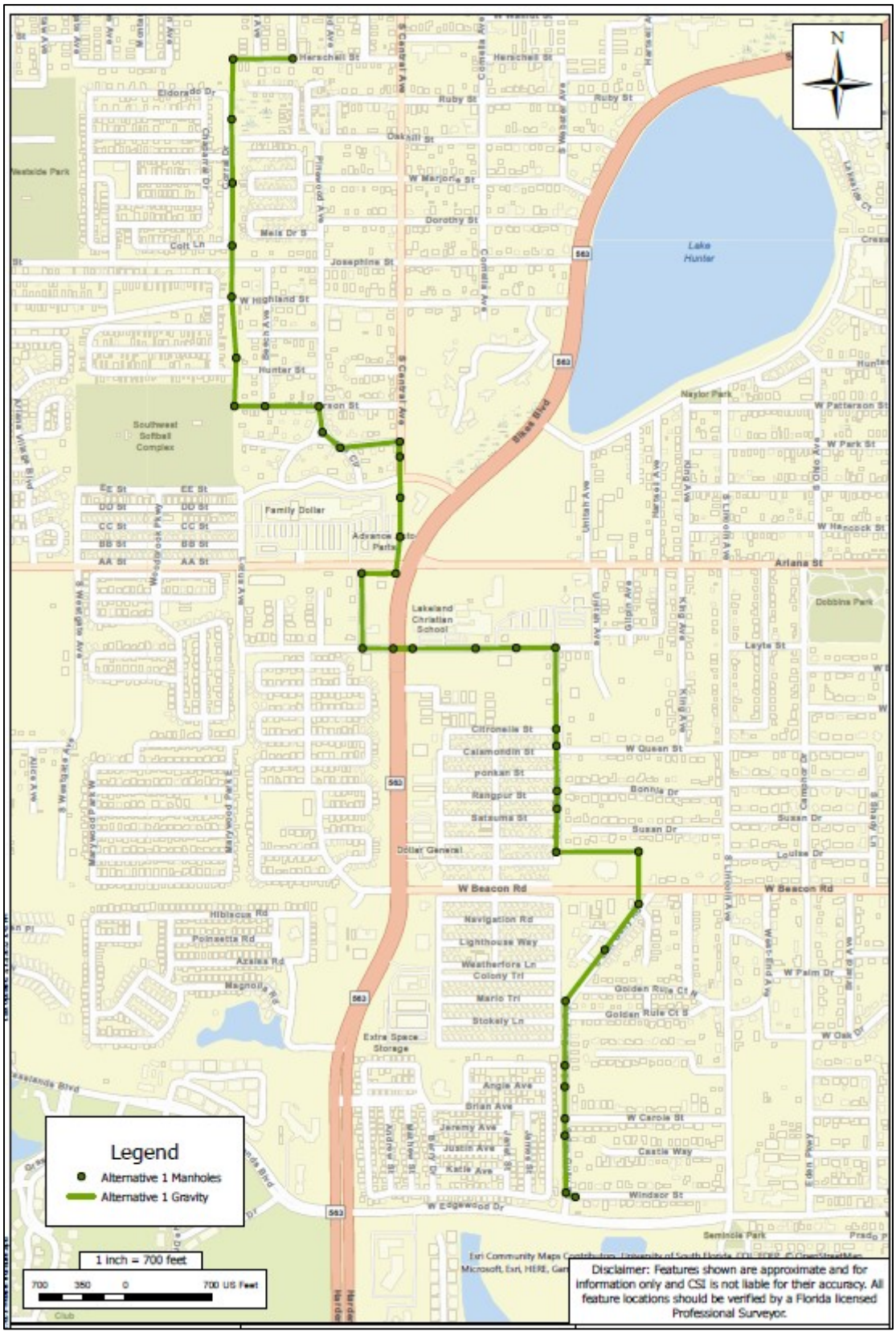
Table 3-1 lists the easements likely needed to construct and maintain the new trunk line. The easement dimensions will be determined during the design phase.

Table 3-1. Probable Easement Requirements.

Owner	Parcel Number	Address	Easement Type
True Investors Development LLC	232823100500005040	1506 Olive St	Permanent
Oakhill MHC	232823102000001120	1331 W. Oakhill St	Permanent & Temporary
Bedrock Colonial LLC	232823000000012010	745 Pinewood Ave	Permanent & Temporary
Ariana Central LLC	232826137110005131	1202 Ariana St	Temporary
Ariana Central LLC	232826137110005171	1202 Ariana St	Temporary
Bedrock Citrus Center LLC	232825000000034040	1111 W. Beacon Rd	Permanent & Temporary
Lakeland Christian Church	232825125000000401	901 W. Beacon Rd	Permanent & Temporary
Lakeland Christian Church	232825125000000407	821 W. Beacon Rd	Permanent & Temporary

Figure 3-1 illustrates the layout of the proposed project.

Figure 3-1. Selected Alternative – 42-inch Gravity Trunk Line – Trail Route



3.2 Total Projected Construction Cost Estimate

The estimated total projected construction cost is summarized in **Table 3-2**.

Table 3-2. Total Projected Construction Cost Estimate

Description	Cost
Construction	
Gravity Sewer	$ 23,742,685
Trenchless Road Crossings	$ 5,616,890
Manholes	$ 5,181,175
Force Main Relocations	$ 516,739
Existing Utility Relocations	$ 390,374
CCTV Inspection, Bypass Pumping	$ 1,139,091
Pipe Abandonment, Pipe/Manhole Rehabilitation	$ 1,501,354
MOT, Erosion Control, Restoration	$ 5,279,130
Mobilization/Demobilization	$ 1,864,581
Subtotal	**$ 45,232,019**
Planning, Design	$ 2,374,522
Easement Acquisition Allowance	$ 240,000
Contingency	$ 4,523,202
Total Project Cost	**$ 52,369,743**

Section 4 – Environmental Effects

4.1 Environmental Impacts of Proposed Facilities

Short-term impacts during construction will include increased air-borne particulates and sediments in stormwater runoff associated with site work activities. The construction documents will contain control measures to minimize these impacts.

The proposed projects will not have any adverse effects upon, flora, fauna, threatened or endangered plant or animal species, surface water bodies, prime agricultural lands, wetlands, or undisturbed areas.

Alternatives 1 and 3 would cross into a parcel of land west of Herschell Street that was previously impacted by the former Landia Chemical Company and Florida Favorite Fertilizer operations. These companies had a history of pesticide manufacturing and fertilizer blending operations. Chastain-Skillman's environmental risk scientist reviewed assessment and remediation reports available from 2001 through 2022. The findings indicate that the USEPA appears to have completed all required soil remediation activities along the proposed route. Based on the information reviewed, remaining soil and sediment contaminates of concern (COC) along the proposed route, if any, are limited. If needed, a soil management plan should account for any potentially remaining COCs. In addition, the inferred extent of groundwater impacts exceeding criteria in 2020 did not extend to the proposed route.

4.2 Land Use, Sensitive Lands, Listed Species, and Cultural Resources

Environmental Science Associates (ESA) performed a desktop environmental assessment of the proposed routes. The review included existing land use, wetlands and waterbodies, State and Federally listed wildlife species, cultural resources, and contamination. A copy of ESA's report is enclosed at **Appendix A**. Based on the desktop review, Alternative 2 offers a slight reduction in potential environmental impacts

to regulated/unregulated wetlands and surface waters, as well as impacts to listed species.

Section 5 – Public Participation Process

5.1 Public Meeting Minutes/Advertisement

This section will be completed after the Public Meeting is held and the information becomes available.

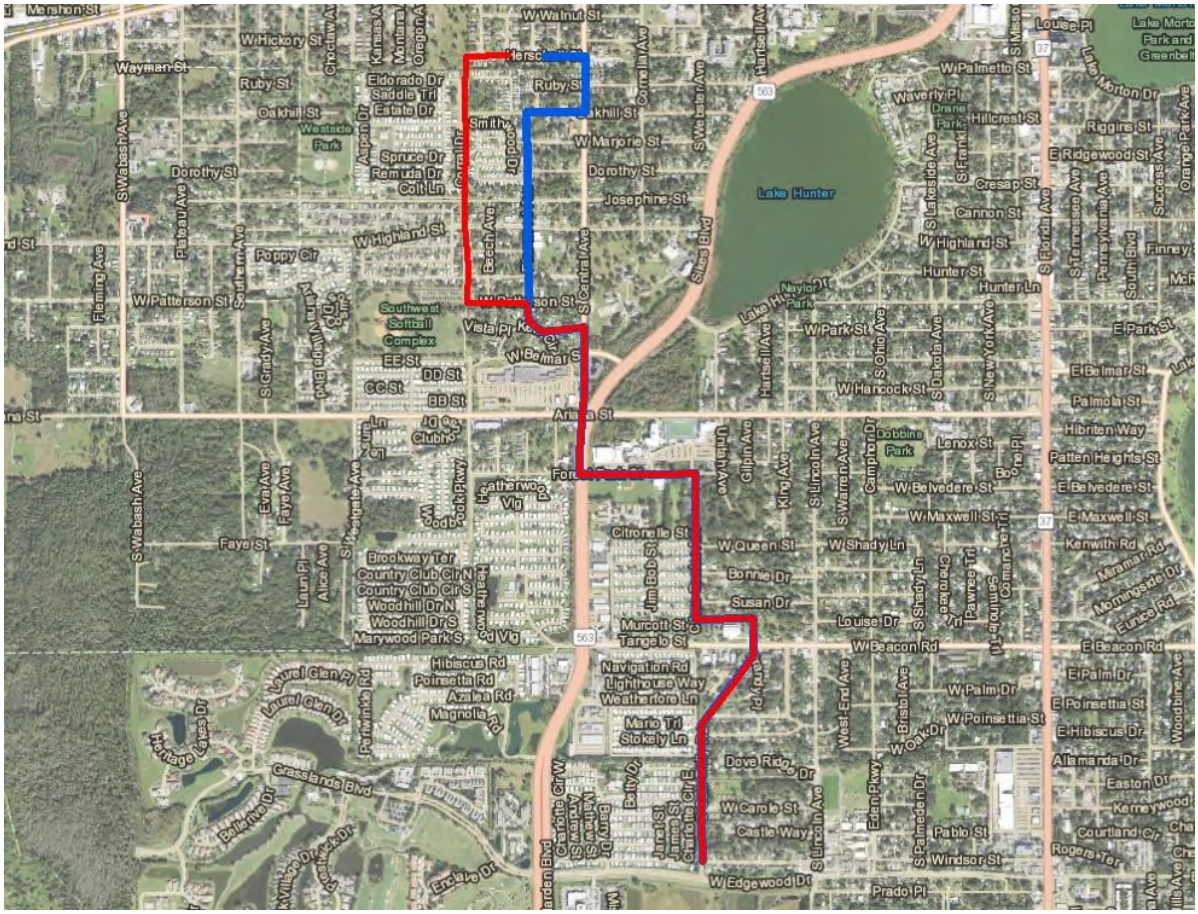
Appendix A – Environmental Assessment

ENVIRONMENTAL ALTERNATIVES REPORT

City of Lakeland – Lakeland Western Trunk Line

Prepared for:

February 2023



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City of Lakeland – Lakeland Western Trunk Line Environmental Alternatives Report

SECTION 1
Introduction

1.1 Introduction and Project Overview

The City of Lakeland (Client) proposes to replace an existing 36" gravity sewer transmission with a new transmission. This new transmission system is associated with the Lakeland Western Trunk Line – Phase I Project (Project). The Project proposes two (2) alternative alignments under environmental review, considered within this document. Both alignments are approximately 2.5 miles in length and generally located between Herschell Street and West Edgewood Drive, in Lakeland, Florida (**Appendix A** – **Exhibit 1**, **Project Location**). More specifically, the proposed Project review area extends from Lime Steet, south to East Oakbridge Boulevard, in Sections 23, 25 and 26, Township 28 South and Range 23 East (**Appendix A - Exhibit 2** – **Project Aerial**).

1.2 Extent of Review

This document "Environmental Alternatives Report", is provided as the initial environmental desktop review for the two (2) selected Project Alternatives. A second phase to physically review the accuracy of the desktop data, will be provided in a supplemental update to this Environmental Alternatives Report. For this review, it is anticipated that the installation of the gravity sewer line will require a 20-foot-wide working footprint. Therefore, for the purpose of identifying potential constraints within the immediate area, a 50-foot-wide corridor was assessed along each Project Route. The two (2) alignment routes **(Alternative 1 and Alternative 2)** are identified in **Exhibit 2**, found in **Appendix A** and their location is generally described as:

> **Alternative 1** is approximately 2.5 miles in length and aligns west of the existing transmission. Alternative 1 originates at the Dade Avenue and Herschell Street intersection and continues west to Corral Street sifting south to Patterson Street. At Patterson Street the alignment runs east to Pinewood Avenue, where the transmission will follow the exiting gravity sewer transmission alignment (continues south on Pinewood Avenue, east towards Central Avenue, south to Forest Park Steet, east to Webster Avenue, South to just past Susan Drive, east to align with and continue southeast and south along San Gully Road where it terminates at the intersection of Sand Gully Road and Windsor Street).

Alternative 2 is approximately 2.5 miles in length and aligns east of the existing transmission. Alternative 2 originates at the Dade Avenue and Herschell Street intersection and continues east to Central Avenue, south to Oakhill Street, west to Pinewood Avenue, and south to Patterson Street, where it continues south following the exiting gravity sewer transmission alignment, as described above.

The environmental review of the Alignment Routes was performed by conducting literature reviews, agency database searches, and gathering geographic information systems (GIS) data within each 50-foot assessment corridor. Data sources for the environmental review included:

Southwest Florida Water Management District (SWFWMD) – Florida Land Use Cover Classification System (FLUCCS) shapefiles (2017),
Florida Managed Areas (FLMA),
National Wetland Inventory (NWI),
Florida Natural Areas Inventory (FNAI),
Natural Resources Conservation Service (NRCS) Polk County Soil Survey,
United States Geological Survey (USGS) Topographic Map for Polk County,
Audubon Florida EagleWatch Nest Map (accessed February 2023),
Florida Fish and Wildlife Conservation Commission (FWC) Terrestrial GIS Records,
United States Fish and Wildlife Service (FWS) IPaC Guide (accessed February 2023),
Florida Department of Environmental Protection (FDEP) Data Files (accessed February 2023),
FWS Consultation Areas, and other Publicly Available Databases and
Florida Department of State, Division of Historical Resources –Data Search (accessed February 2023).

Based upon the available desktop datasets the following environmental constraints were reviewed and are discussed within **Section 2** – **Environmental Conditions**.

- Existing Land Use
- Wetlands and Waterbodies,
- State and Federally Listed Wildlife and Plant Species,
- Critical Habitat,
- Cultural Resources, and
- Contamination.

SECTION 2
Ecological Conditions

2.1 Existing Land Use

The vegetative communities are classified using GIS aerial photography and Southwest Florida Water Management District's (SWFWMD) Florida Land Use Cover Classification System (FLUCCS) shapefiles. Included in **Appendix A,** as **Exhibit 3** - **Land Use,** that illustrates the existing land use within and adjacent (within a 50-foot review corridor) to the proposed alignment alternatives. Land use characteristic that was identified within each corridor are provided below.

Alternative 1 – Land use identified within the 50-foot corridor is illustrated on Exhibit 3 and included the following FLUCCS classifications:

- 1200 – Residential Medium Density
- 1300 – Residential High Density
- 5100 – Ditches / Canals

Alternative 2 – Land use identified within the 50-foot corridor is illustrated on Exhibit 3 and include the following FLUCCS classifications:

- 1200 – Residential Medium Density
- 1300 – Residential High Density
- 1700 – Institutional
- 5100 – Ditches / Canals

Both alignment alternatives largely traverse residential communities (with medium and high-density housing). The area is generally characterized as urbanized development, that supports a variety of housing communities, institutional buildings, light industrial activities, and recreational areas.

Where both alignments converge together (Patterson Street - existing gravity sewer transmission), the following land use classifications are identified.

- 1200 – Residential Medium Density
- 1300 – Residential High Density
- 1400 – Commercial and Services

- 1700 – Institutional
- 8100 – Transportation
- 5100 – Ditches / Canals

This segment is also considered heavily urbanized with both medium and high residential communities, commercial and service buildings, institutional buildings, and major highways (identified as Transportation, above).

2.2 Wetlands and Waterbodies

As identified in **Exhibit 4**, found in **Appendix A**, both alignments appear to contain wetlands and waterbodies that were assessed utilizing the 2023 National Wetlands Inventory (NWI) desktop dataset, within a 50-foot buffer. It should be noted that NWI is utilized as a desktop tool and that field verifications within the Project alternatives have not occurred. Therefore, the actual (delineated) wetland and waterbody boundaries are not included within this evaluation. In addition, NWI data may miss and/or not include applicable wetland and waterbody features due to inconsistent data and new construction within the focus area. As such, it is suggested that wetland and waterbody evaluations be validated by a field review.

2.2.1 General Conditions and Permitting

At this time, it does not appear that either of the two Alignments Routes will impact wetlands, or jurisdictional wetlands that will require mitigation. Several ditch / canal and swale features exist along both Routes that typically do not require mitigation, only documentation within the appropriate permit application. Alternative 1 does appear to impact more of these features than Alignment 2. However, where the two (2) alignments converge there is one riverine / canal crossing (north of the intersection of Ariana Street and Sikes Boulevard) that appears to have adjacent wetland features. This remnant wetland area is part of the historical slough system that has now been channelized. It is anticipated that trenchless construction methods (such as microtunneling) will be utilized to cross this surface water and intersection. It should be noted, that although mitigation is not expected for this activity, the crossing of the surface water will also need to be documented within the appropriate permit application. Additionally, a safe upland deployment pit and retrieval pit should be delineated, to ensure that the adjacent wetland features associated with the surface water, will not be impacted at this location.

Should trenchless construction methods not be applied, or the Project incurs unavoidable impacts to wetland features considered jurisdictional, mitigation may be required. If

unavoidable impacts occur, mitigation compensation through the purchase of wetland credits at a FDEP and FDEP 404 Program approved mitigation bank can be acquired. The proposed Project is located within the Hillsborough River Drainage Basin, therefore, mitigation banks that support the basin include Hillsborough River Phases 1 & 2, Two Rivers Ranch, Fox Branch Ranch and Wiggins Prairie.

2.3 State and Federally Listed Wildlife Species

The environmental review used to identify the potential presence of state and federally listed wildlife species was conducted by initiating a literature review to determine the potential occurrence of listed species within the area, identifying and reviewing the land use potential within the Project alternatives, and obtaining information from available FWS and FWC data base sources (**Appendix B, FNAI – Polk County**). At this time, it appears that each corridor may support listed species as identified in **Table 1**, below. Project routes with a greater potential to support listed species are also identified within the Table 1.

Table 1. Potential Listed Species within the Project Alternatives and Potential Impacts to Those Species

Common Name		Scientific Name	Listing Status		Potential for Impacts
			Federal	State	
Birds	Florida Grasshopper Sparrow	*Ammondramus savannarum floridanus*	E	E	*None*. Proposed Alternatives are not anticipated to impact habitat.
	Florida Sand Hill Crane	*Antigone canadensis paratensis*		T	*None*. Proposed Alternatives are not anticipated to impact habitat.
	Florida Scrub Jay	*Aphelocoma coerulescens*	T	T	*None*. Proposed Alternatives are not anticipated to impact habitat.
	Burrowing owl	*Athene cunicularia floridana*	MBTA	T	*None.* Proposed Project Alternatives are not anticipated to impact habitat.
	Crested Caracara	*Caracara cheriway*	T	T	*None.* Proposed Alternatives are not anticipated to impact habitat.
	Red-cockaded woodpecker	*Dryobates borealis*	E	E	*None.* Proposed Alternatives are not anticipated to impact habitat.
	Little Blue Heron	*Egretta caerulea*		T	*Low.* **Alternative 1** and **Alternative 2** impacts to habitat are considered minimal and temporary in nature.
	Tricolored Heron	*Egretta tricolor*		T	*Low.* **Alternative 1** and **Alternative 2** impacts to habitat are considered minimal and temporary in nature.

Common Name		Scientific Name	Listing Status		Potential for Impacts
			Federal	State	
	Southeaster American Kestrel	*Falco sparverius paulus*		T	*None.* Proposed Alternative are not anticipated to impact habitat.
	Bald Eagle	*Haliaeetus leucocephalus*	MBTA, BGEA		*None*. There are no identified bald eagle nests within the 660-foot Nest Protection Buffer Zone for the proposed Alternatives.
	Wood Stork	*Mycteria americana*	T	T	*Moderate.* **Alternative 1** and **Alternative 2** impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations.
Reptiles and Amphibians	American Alligator	*Alligator mississippiensis*		T (S/A)	*Low*. **Alternative 1** and **Alternative 2** impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations.
	Eastern Indigo Snake	*Drymarchon couperi*	T	T	*Low*. **Alternative 1** and **Alternative 2** impacts to habitat are considered minimal and temporary in nature. Areas that may support appropriate habitat will need to be verified during field evaluations. Standard Protection Measures for the Eastern Indigo Snake will be implemented and gopher tortoise burrows (should they be found within 25 feet of the project corridor) will be permitted and relocated. Coordination with FWS may be required. based upon field reviews. **Alternative 1** offers a greater potential to impact Eastern indigo snake habitat as the corridors offers a greater acreage of vegetative communities that may also support a greater number of gopher tortoise's and their burrows.
	Gopher tortoise	*Gopherus polyphemus*		T	*low.* Minimal habitat exists within both Project alternatives, with a greater potential occurring within **Alternative 1**. At least 90 days' prior the initiation of construction activities, a 100 percent gopher tortoise burrow survey will need to be performed within 25 feet of the project footprint of the selected route. Gopher tortoise burrows observed will be identified, permitted, and relocated to an off-site FWC approved long term-recipient site.
	Short-tailed snake	*Lampropeltis extenuate*		T	*None*. Proposed Alternatives are not anticipated to impact habitat.
	Pine snake	*Pituophis melanoleucus*		T	*None.* Proposed Alternatives are not anticipated to impact habitat.
	Blue-tailed mole skink	*Plestiodon egregius lividus*	T	T	*Low - None.* A minimal amount of appropriate skink soils is identified within both Alternatives, however, these areas that are identified as containing historic skink soils have been urbanized and contain medium to high residential areas. Habitat may no longer exist and will need to be filed verified.

Common Name		Scientific Name	Listing Status		Potential for Impacts
			Federal	State	
	Sand skink	*Plestiodon reynoldsi*	T	T	*Low - None.* A minimal amount of appropriate skink soils is identified within both Alternatives, however, these areas that are identified as containing historic skink soils have been urbanized and contain medium to high residential areas. Habitat may no longer exist and will need to be field verified.

Source: FNAI, IPAC and ESA, 2023

Key
T= Threatened
E= Endangered
MBTA = Migratory Bird Treaty Act
BGEA = Bald and Golden Eagle Act
S/A = Similar in Appearance

Based on the available desktop data the following species are most likely to occur, or habitat will need to be field verified within the Alignment Routes: little blue heron, tri-colored heron, wood stork, Eastern indigo snake, gopher tortoise, American alligator, and sand / blue-tailed mole skinks. At this time, it appears that **Alternative 1** is more likely to support additional gopher tortoises, little blue herons, tri-colored herons, and wood storks, since this route supports supplemental areas of potential habitat.

Alternative 1 supports potential sand and bluetail mole skink soils (located in **Appendix A**, **Exhibit 5**, **NRCS Soils**), identified as 30 – Pompano Fine Sand, as well as appropriate skink elevations (please refer to **Appendix A**, **Exhibit 6**, **USGS Topographic**). However, areas denoted with these soil classifications may no longer support skink habitat as the surrounding area has been completely developed and most open areas support non-native grass species that is heavily maintained. These areas should be field verified and an email coordination with FWS should be initiated to reduce and/or request concurrence that skink surveys are not warranted within the Project area. The route for **Alternative 2** does not appear to traverse suitable sand and blue-tail mole skink soils, therefore, it is anticipated impacts to this species is not expected as a result of the construction of this alternative.

2.3.1 Critical Habitat

Critical habitat was not identified within **Alternative 1** or **Alternative 2**.

2.4 Cultural Resources

A search of reasonably available databases and maps was conducted to identify historic resources on or adjacent to the Project area that are listed in, or previously determined to be

eligible for listing in the National Register of Historic Places (NRHP). A search of the Florida Master Site File was also conducted to identify any previously recorded archaeological and cultural resource sites. A 500-foot buffer was utilized to review cultural resources and/or surveys that may have been performed and recorded along the two (2) Alignment Routes (found as **Appendix C**, **Florida Master Site File Correspondence**). The review of available data identified no Florida Structures, Historical Sites, or Resource Groups associated with **Alternative 1** (please refer to Appendix C). While **Alternative 2** contains several Florida Sites (including several single-family residences – PO06298, PO06348, PO06347 and a National Guard Armory, 116th Artillery – PO08525) and one (1) Resource Group (Lake Hunter Terrace Neighborhood – Historical District PO6535) that occur within close proximity of the route. Although these structures and resources exist near the proposed alignment, impacts are not anticipated as the construction activities will occur within previously delineated right-of-way (ROW) or under current sidewalk and/or road structures (please refer Appendix C).

2.5 Contamination

A search of the following additional databases was conducted to evaluate the Alternative Routes and adjacent properties within one quarter mile (buffer review area) for hazardous materials and related environmental concerns:

- *Florida Department of Environmental Protection online "Contamination Locator Map"*
- *US Environmental Protection Agency "NEPAssist" website*
- *US Environmental Protection Agency "My Environment" website*

Based on the February 2023 database search of the alternative routes there are no Resource Conservation and Recovery Act (RCRA) sites, Petroleum Contamination Tracking Sites (PCTS), or Storage Tank Contamination Monitoring Sites (SCTM) within proximity to the **Alternate 1** and **Alternate 2**. However, once the alignments converge there is a total of four (4) RCRA sites, two (2) PCTS sites and three (3) SCTM sites (please refer to **Table 2**, **Identified FDEP Hazardous Waste Sites Within Close Proximity of the Project Area (2023)**, provided below and found in **Appendix A**, **Exhibit 7A** - **RCRA Sites and 7B - Other Contamination**). In addition, one Brownfield Area was also identified within one quarter mile from **Alternate 2** and is also identified within Table 2. At this time, these facilities appear to be in compliance with FDEP handling procedures.

Table 2. ***Identified FDEP Hazardous Waste Sites Within Close Proximity of the Project Area (2023)***

ID Number	FDEP ID	Facility Name	Permit Type	Compliance	Location
RCRA Sites					
1100356635827	FLTMP9404776	Traman Corporation	Small Hazardous Waste Generator	Yes	Converged Alignment – West Beacon Road
1100043986853	FLR000178582	Lakeland Christian School	Small Hazardous Waste Generator	Yes, Since 2011	Converged Alignment – Forest Park Street
110054828718	FLR000195883	PHOSLAB Environmental Services	Small Hazardous Waste Generator	Yes, Since 2012	Converged Alignment – Beacon Road
110007441278	FLD984186064	Ariana Friends Incorporated	Small Hazardous Waste Generator	Yes	Converged Alignment – Ariana Street
PCTS Sites					
8623499	31221	Ariana Friends Incorporated	Permit for Petroleum Discharge	N/A	Converged Alignment – Ariana Street
8628541	29918	City of Lakeland SW Pumping Station	Permit for Petroleum Discharge	N/A	Converged Alignment – Edgewood Drive
SCTM Sites					
8623499	42416	Ariana Friends Incorporated	Tanks – Petroleum Contamination	Open, Monitoring	Converged Alignment – Ariana Street
8624246	41973	Sykes Friends Incorporated	Tanks – Petroleum Contamination	Closed	Converged Alignment – West Beacon Road
8628541	41578	City of Lakeland SW Pumping Station	Tanks – Petroleum Contamination	Open, Monitoring	Converged Alignment – Edgewood Drive
Brownfield					
BF531701000	428	West Lake Apartments – Green Reuse Area	Data Not Obtained – Located Between Herschell Street and West Walnut Street		

FDEP 2023

SECTION 3
Summary

In order to determine the alternative that offers the least amount of environmental impacts, only segments of **Alternative 1** and **Alternative 2** that are separated, were assessed. Environmental impacts for the sections where both alignments merge, is not addressed below, but are addressed within this document.

Based on the desktop review of the environmental parameters assessed within this Report, **Alternative 2** offers a slight reduction in potential environmental impacts to regulated/unregulated wetlands and surface waters, as well as, impacts to listed species. Therefore, this assessment identifies **Alternative 2** as the route that provides the least amount of potential impacts to the assessed environmental parameters. **Table 3**, below is provided as a ***Summary of the Environmental Parameters Assessed for the Project Alternatives***.

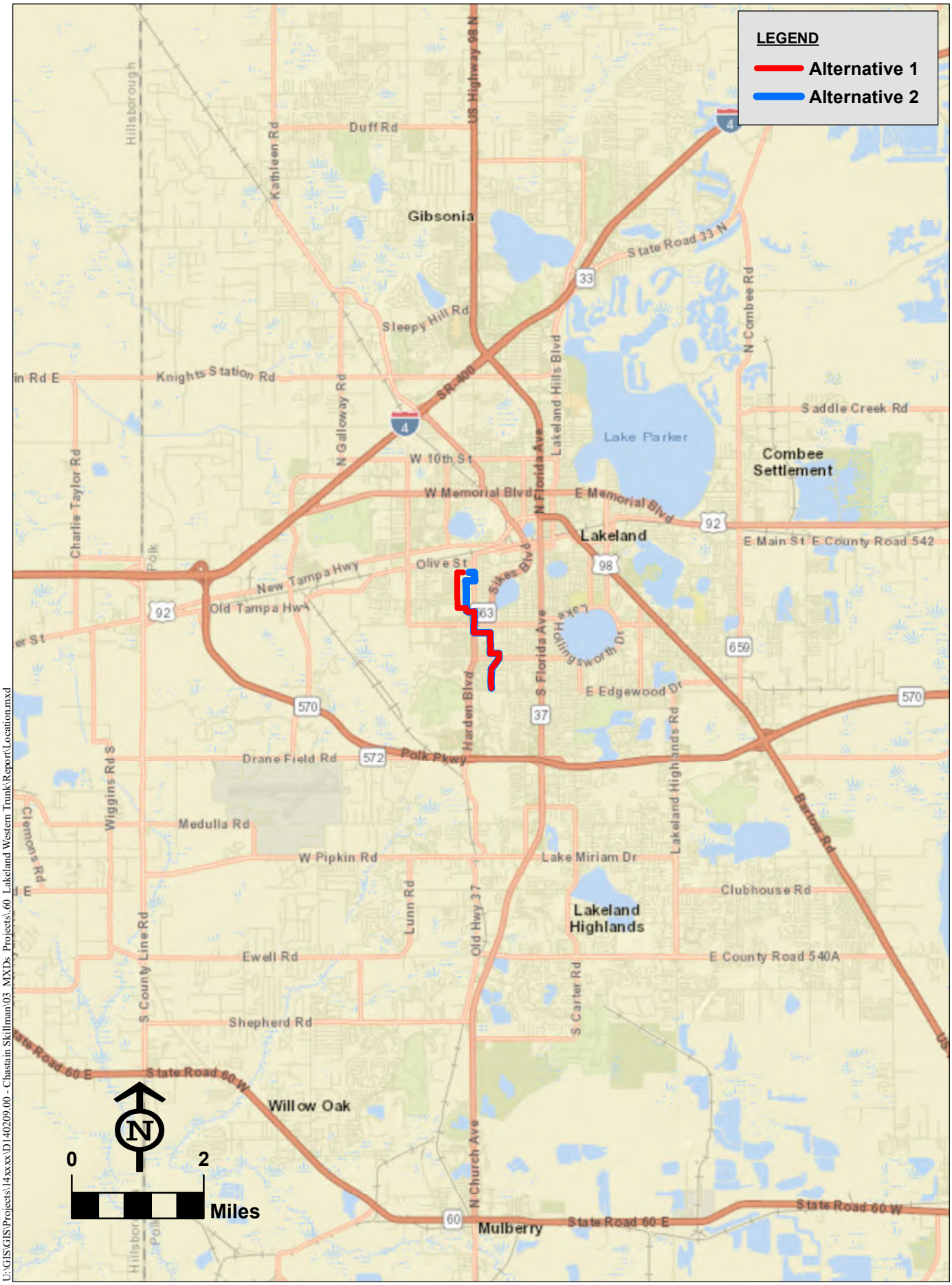
Table 3. Summary of the Environmental Parameters Assessed for the Project Alternatives

	Project Alternatives	
Potential Environmental Constraints	**Alternative 1**	**Alternative 2**
Land Use		
Open Areas	N/A	N/A
Other Surface Waters (Ditches/Swales)	Moderate	Low
State / Federally Listed Wildlife		
Eastern Indigo snake	Minimal	Minimal
Gopher tortoise	Minimal	None
Blue-tailed mole skink	Minimal	Minimal to None
Sand skink	Minimal	Minimal to None
Wood stork	Minimal to None	Minimal to None
Critical Habitat		
	None	None
Cultural Resources		
Resources Identified	None	Close Proximity Not anticipated to Impact Resources
Contamination		
Issues Identified	None Within Close Proximity	None Within Close Proximity

Source: ESA 2023

APPENDICES

Appendix A
Project Exhibits



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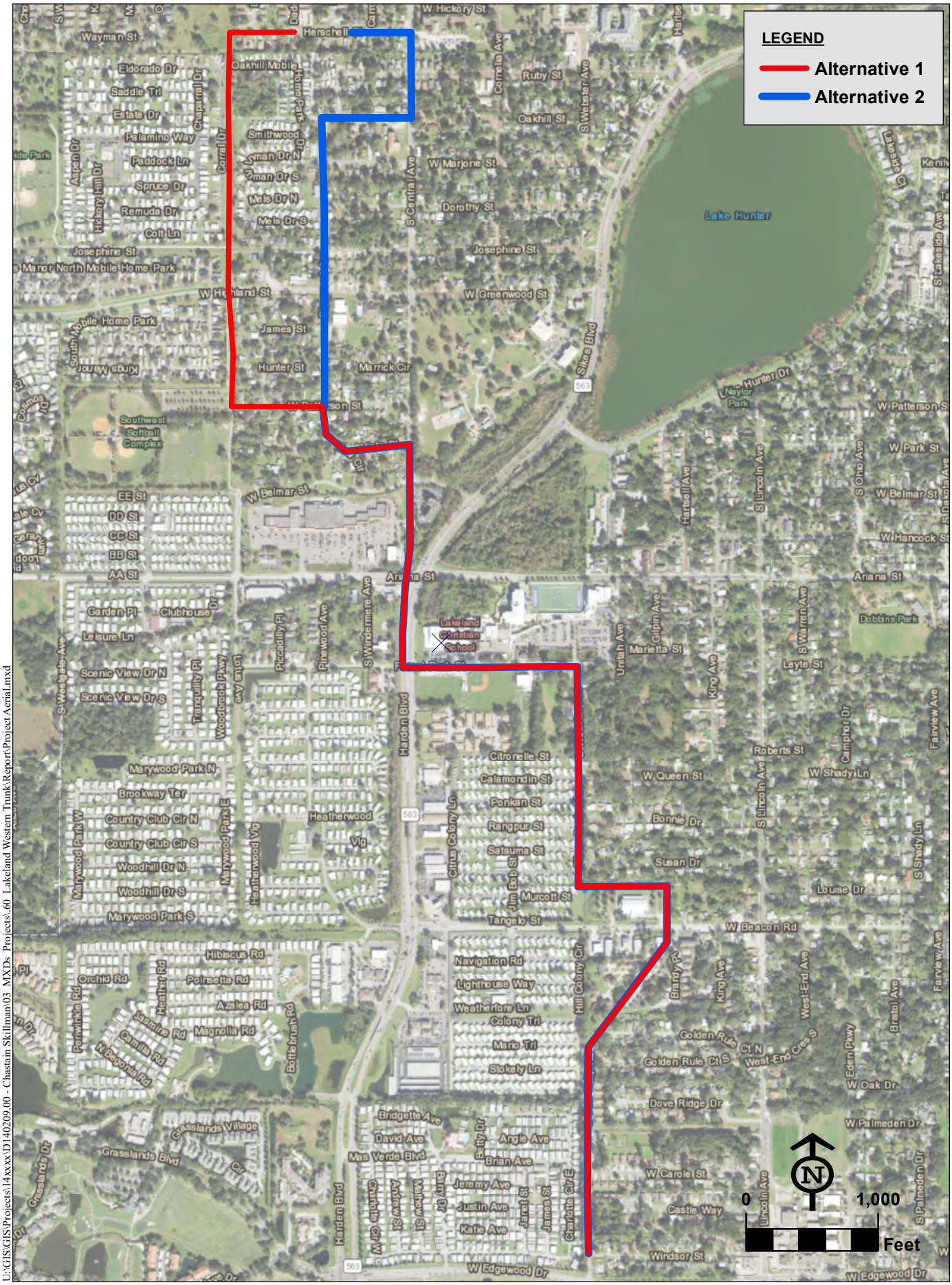
Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, USGS 2022, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 1

PROJECT LOCATION



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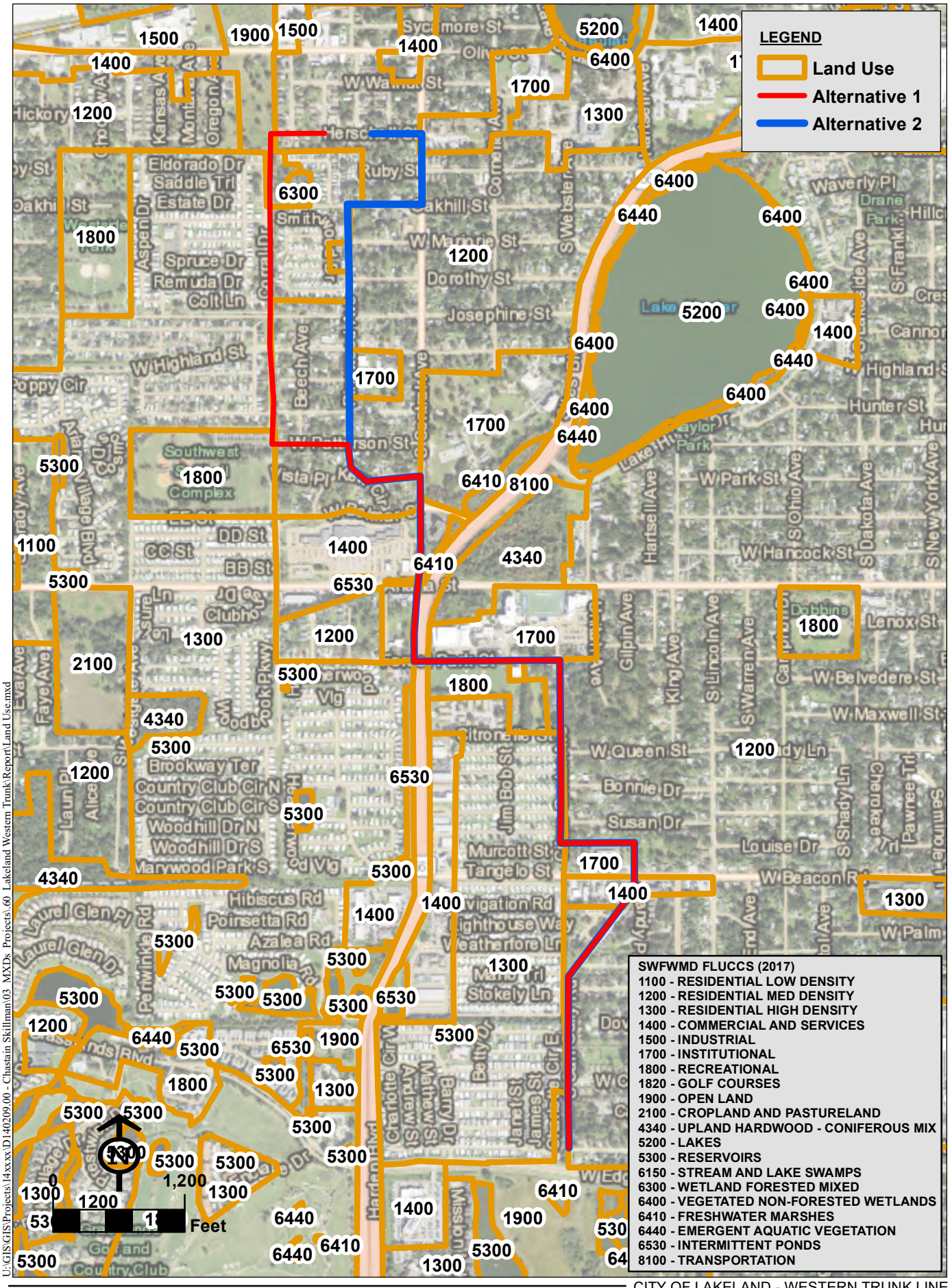
CITY OF LAKELAND - WESTERN TRUNK LINE

Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, CSI 2022, ESA, 2023

EXHIBIT 2
PROJECT AERIAL

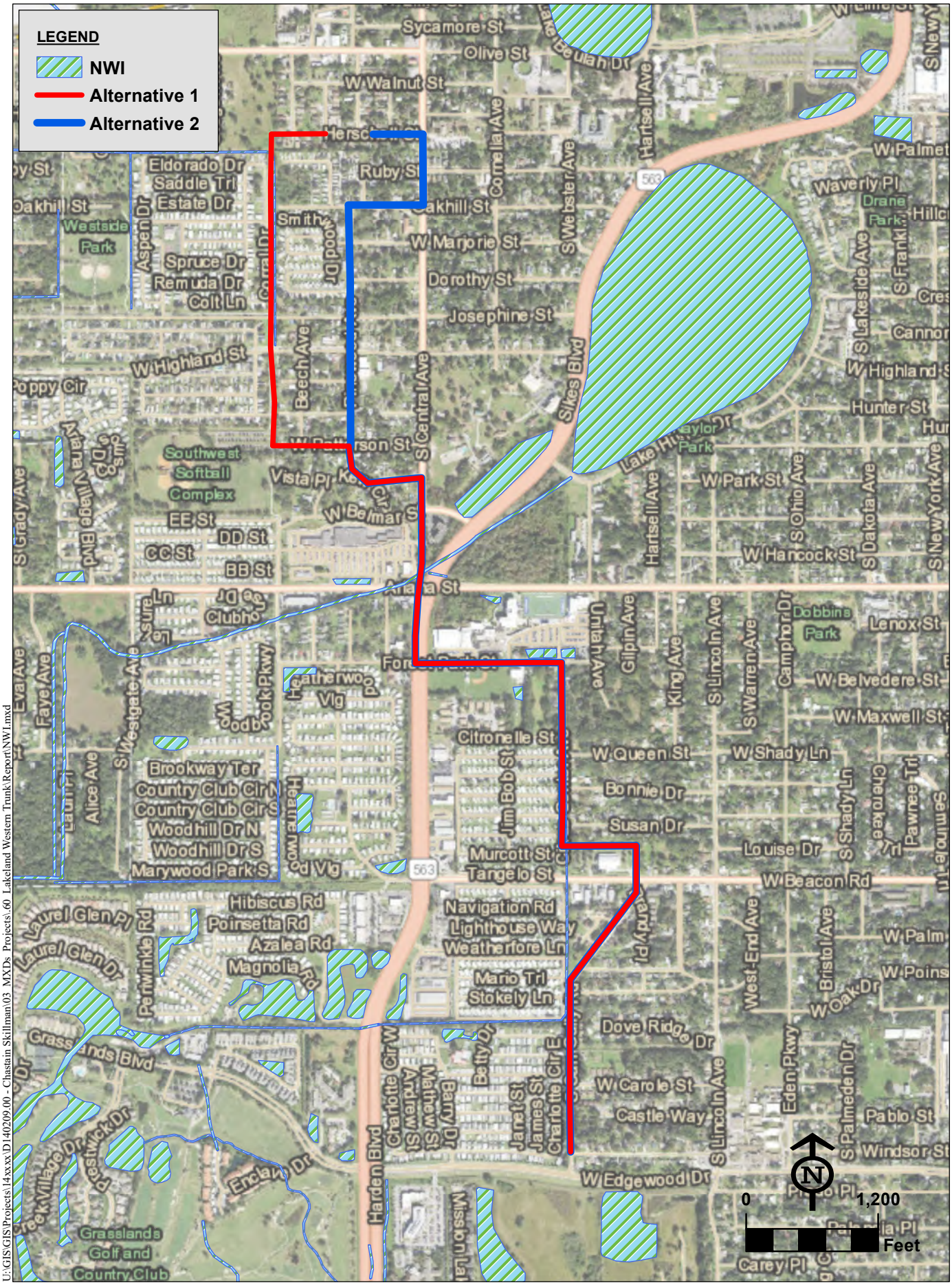


Source: Esri, DigitalGeoEye, Earthstar, USDA 2022, SWFWMD 2017, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 3

LAND USE



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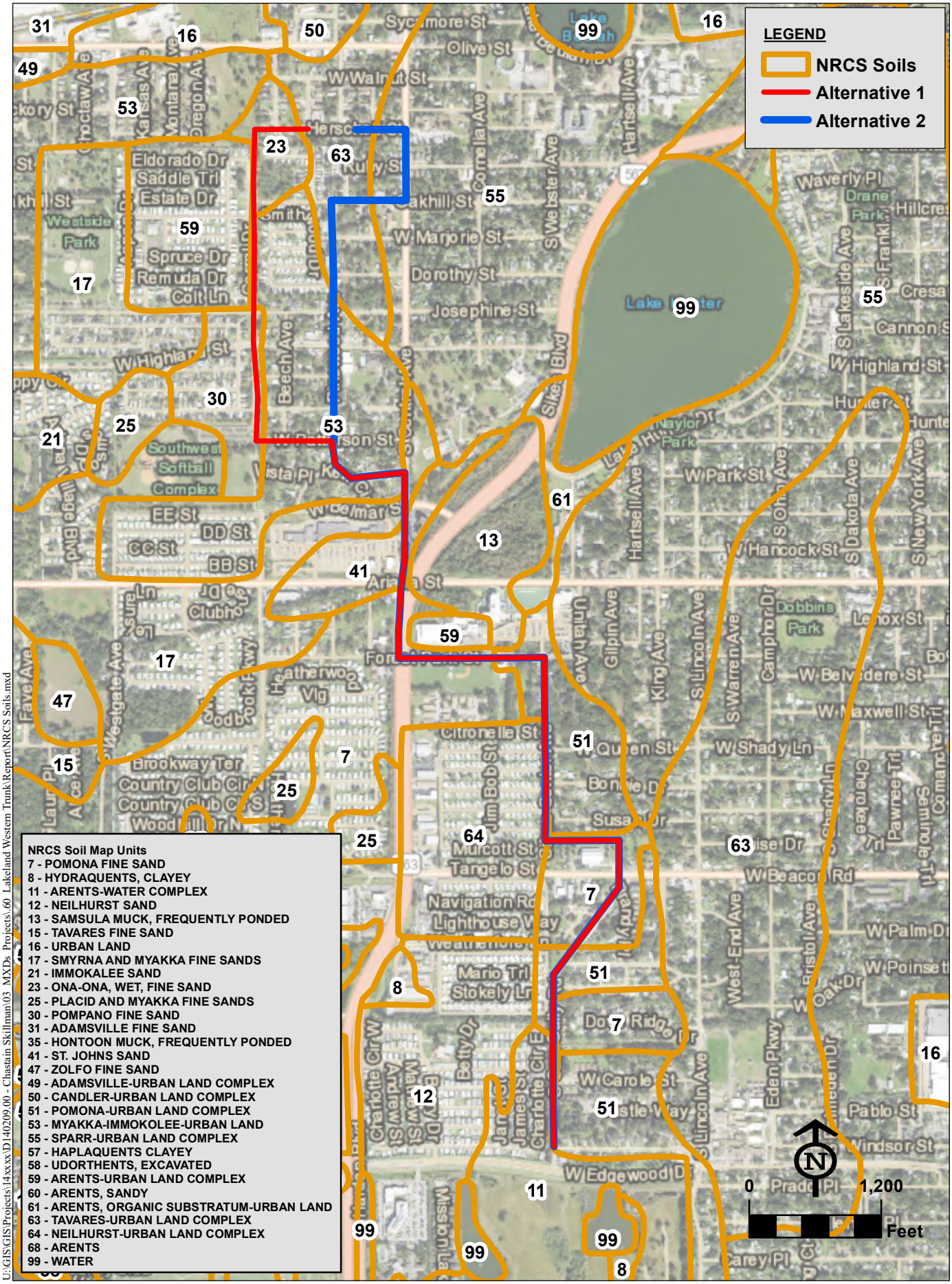
CITY OF LAKELAND - WESTERN TRUNK LINE

Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, USFWS 2023, CSI 2022, ESA, 2023

EXHIBIT 4

NATIONAL WETLANDS INVENTORY (NWI)



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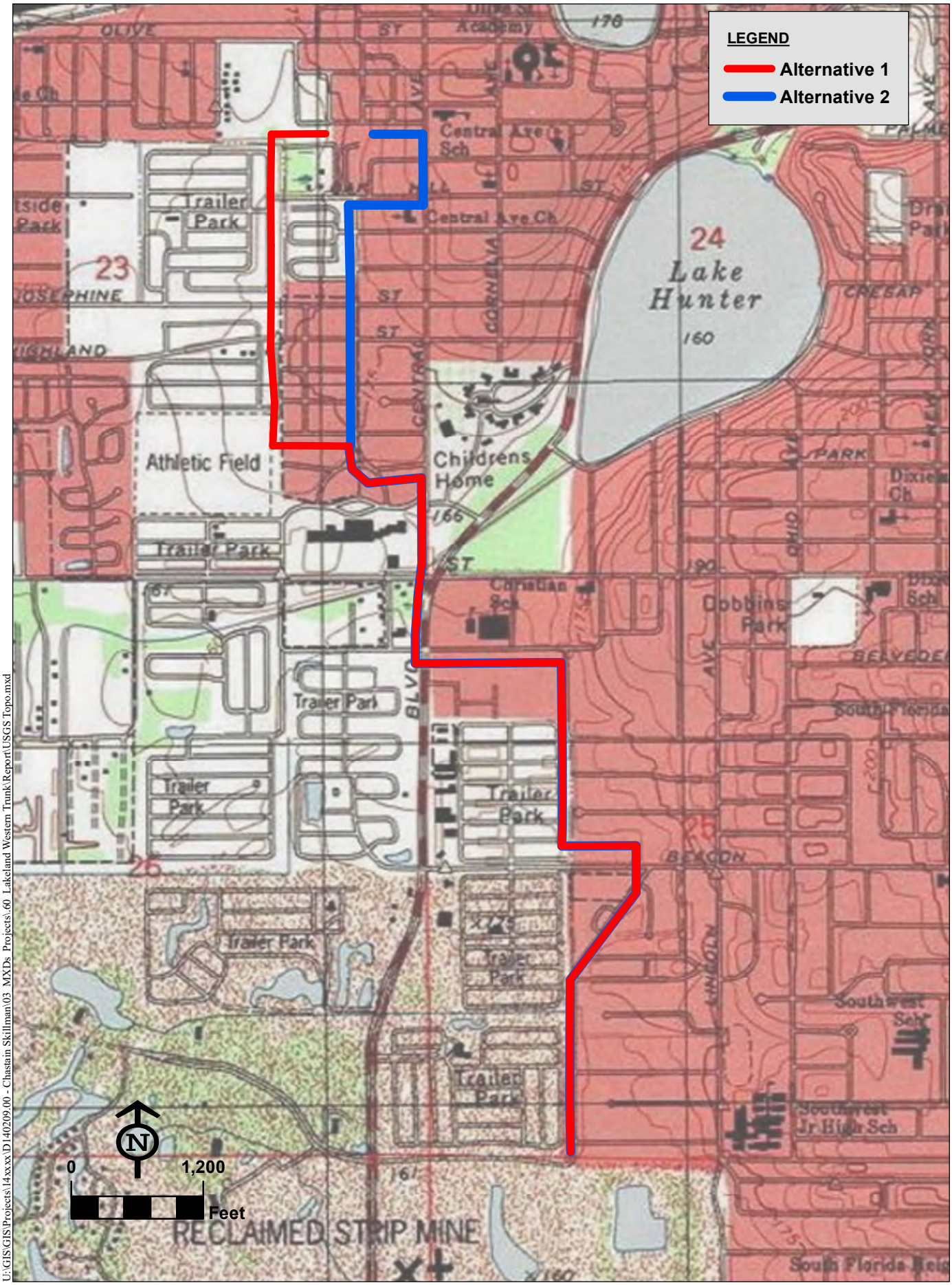
Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, NRCS 2022
CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 5
NRCS SOILS



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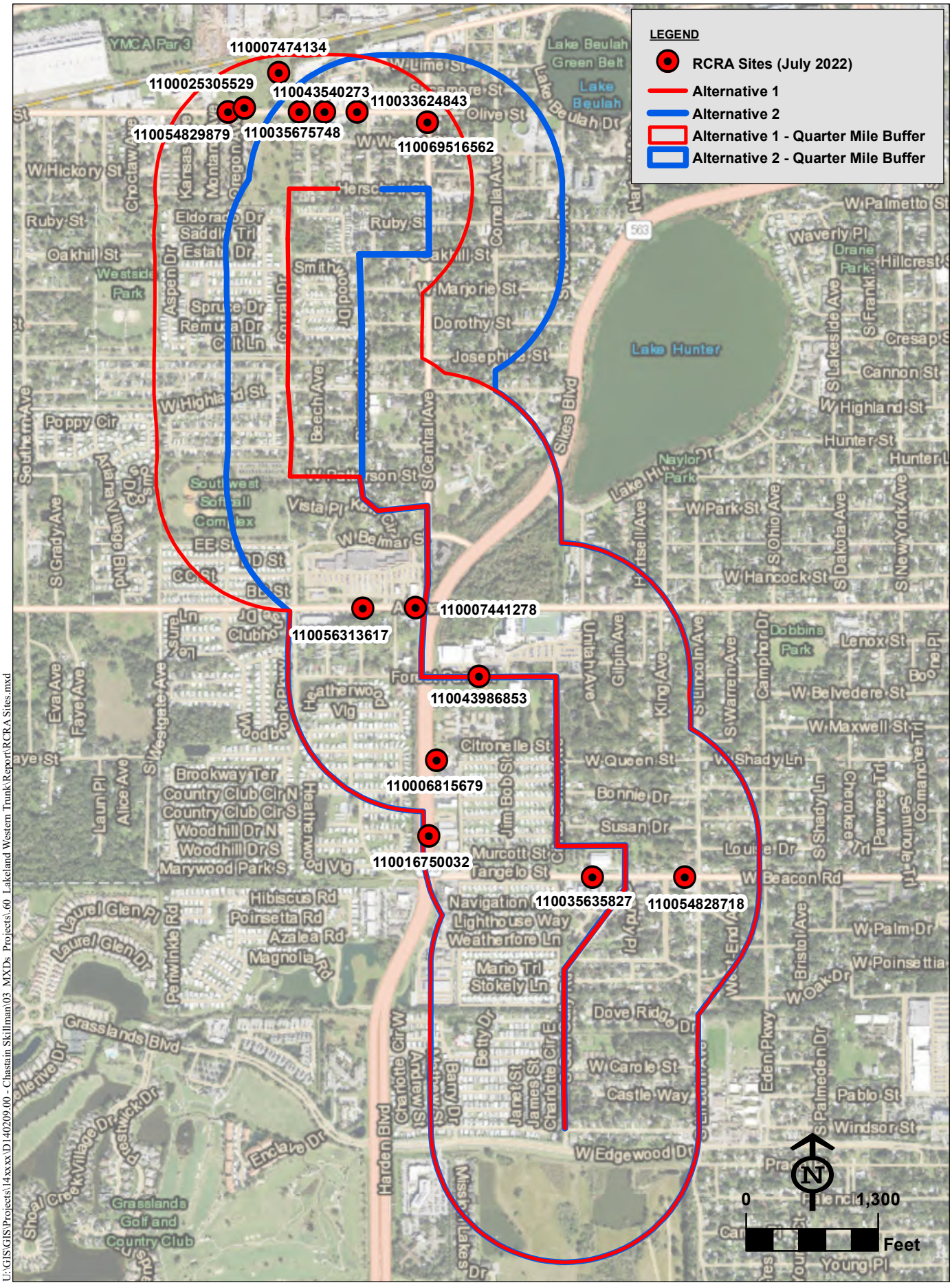
Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, USGS 2022, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 6

USGS TOPOGRAPHIC



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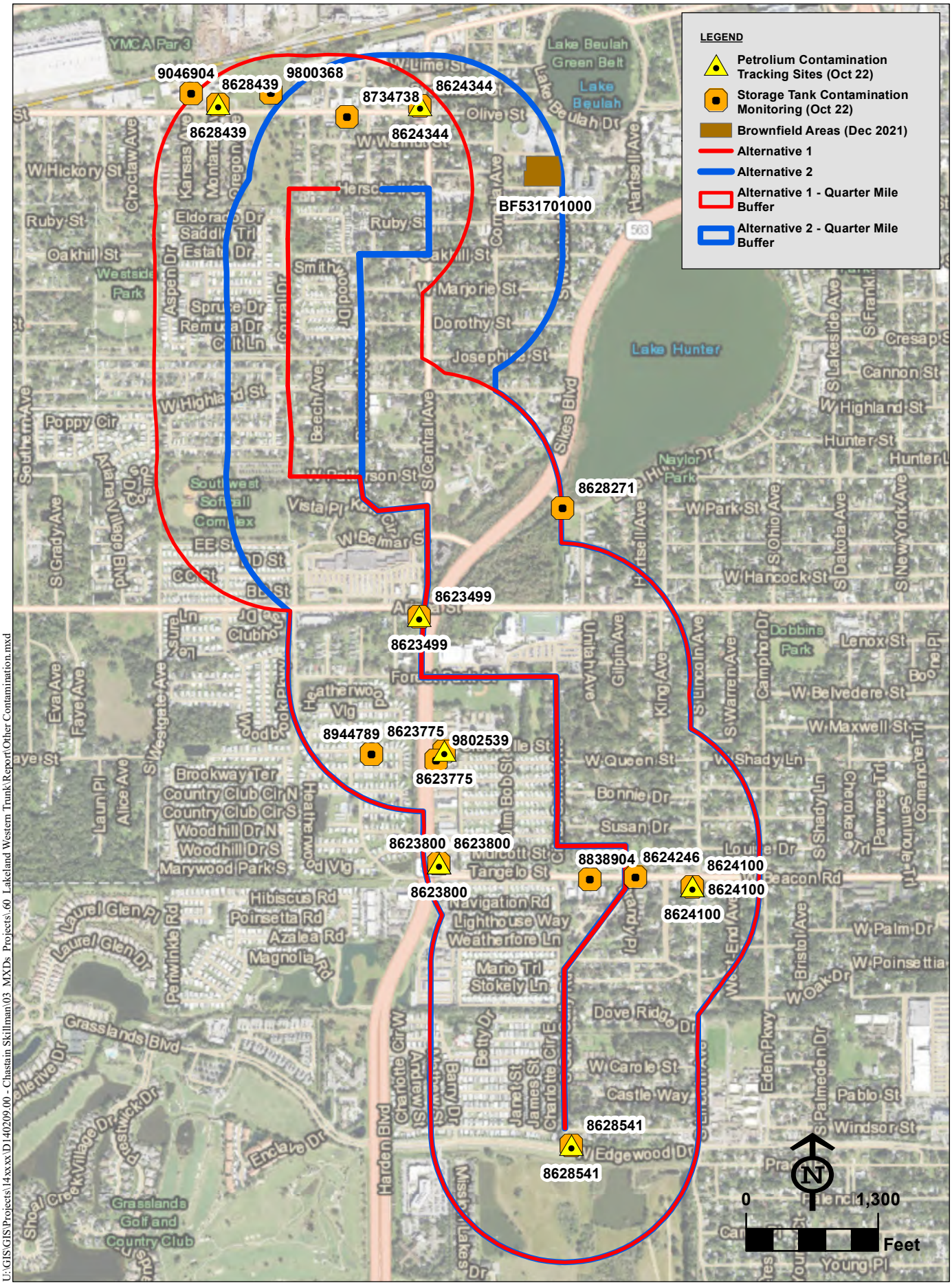
Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, FDEP 2022, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 7A

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) SITES



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Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA 2022, FDEP 2022, CSI 2022, ESA, 2023

CITY OF LAKELAND - WESTERN TRUNK LINE

EXHIBIT 7B

OTHER CONTAMINATION

Appendix B
Florida Natural Areas Inventory (FNAI) – Polk County

ESA

Polk County, Florida
February 2023

Group	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status	Tracked?
Fishes	*Enneacanthus chaetodon*	Blackbanded Sunfish	G3G4	S1S3		N	Y
Amphibians	*Lithobates capito*	Gopher Frog	G2G3	S3		N	Y
Reptiles	*Alligator mississippiensis*	American Alligator	G5	S4	SAT	FT(S/A)	Y
Reptiles	*Clemmys guttata*	Spotted Turtle	G5	S2S3		N	Y
Reptiles	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	G3	S3		N	Y
Reptiles	*Drymarchon couperi*	Eastern Indigo Snake	G3	S2?	T	FT	Y
Reptiles	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	NR	ST	Y
Reptiles	*Lampropeltis extenuata*	Short-tailed Snake	G3	S3		ST	Y
Reptiles	*Lampropeltis floridana*	Florida Kingsnake	G2	S2		N	Y
Reptiles	*Pituophis melanoleucus*	Pine Snake	G4	S3		ST	Y
Reptiles	*Plestiodon egregius lividus*	Blue-tailed Mole Skink	G5T2	S2	T	FT	Y
Reptiles	*Plestiodon reynoldsi*	Sand Skink	G3	S3	T	FT	Y
Reptiles	*Sceloporus woodi*	Florida Scrub Lizard	G2G3	S2S3		N	Y
Birds	*Ammodramus savannarum floridanus*	Florida Grasshopper Sparrow	G5T1	S1	E	FE	Y
Birds	*Antigone canadensis pratensis*	Florida Sandhill Crane	G5T2	S2		ST	Y

Birds	*Aphelocoma coerulescens*	Florida Scrub-Jay	G1G2	S1S2	T	FT	Y
Birds	*Aramus guarauna*	Limpkin	G5	S3		N	Y
Birds	*Athene cunicularia floridana*	Florida Burrowing Owl	G4T3	S3		ST	Y
Birds	*Buteo brachyurus*	Short-tailed Hawk	G4G5	S1		N	Y
Birds	*Caracara plancus*	Crested Caracara	G5	S2	T	FT	Y
Birds	*Dryobates borealis*	Red-cockaded Woodpecker	G3	S2	E, PT	FE	Y
Birds	*Dryobates villosus*	Hairy Woodpecker	G5	S3		N	Y
Birds	*Egretta caerulea*	Little Blue Heron	G5	S4		ST	Y
Birds	*Egretta thula*	Snowy Egret	G5	S3		N	Y
Birds	*Egretta tricolor*	Tricolored Heron	G5	S4		ST	Y
Birds	*Elanoides forficatus*	Swallow-tailed Kite	G5	S2		N	Y
Birds	*Eudocimus albus*	White Ibis	G5	S4		N	Y
Birds	*Falco sparverius paulus*	Southeastern American Kestrel	G5T4	S3		ST	Y
Birds	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3		N	Y
Birds	*Mycteria americana*	Wood Stork	G4	S2	T	FT	Y
Birds	*Nyctanassa violacea*	Yellow-crowned Night-heron	G5	S3		N	Y
Birds	*Nycticorax nycticorax*	Black-crowned Night-heron	G5	S3		N	Y
Birds	*Pandion haliaetus*	Osprey	G5	S3S4		N	Y
Birds	*Peucaea aestivalis*	Bachman's Sparrow	G3	S3		N	Y
Birds	*Plegadis falcinellus*	Glossy Ibis	G5	S3		N	Y

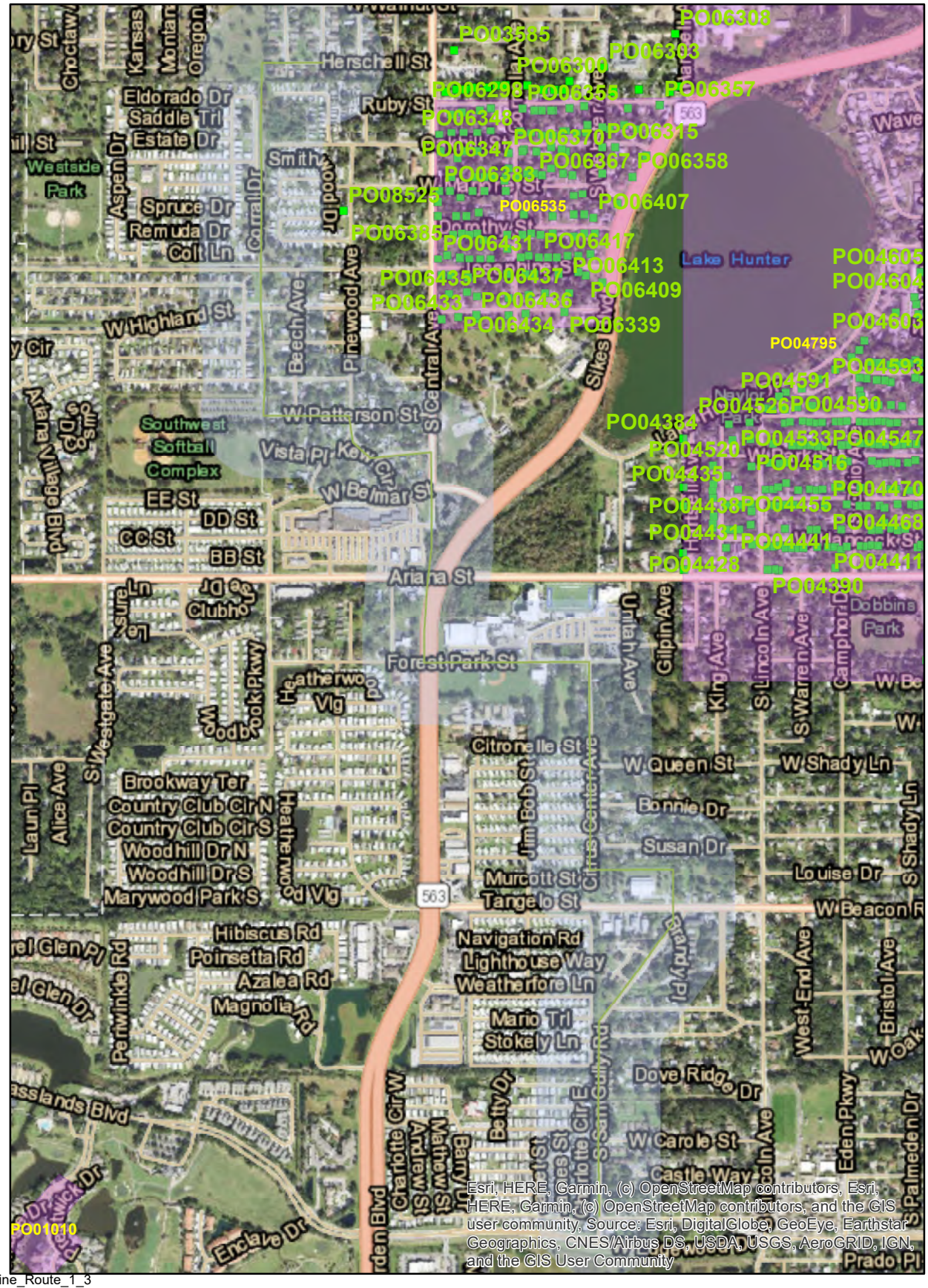
Birds	*Rostrhamus sociabilis*	Snail Kite	G4G5	S2	E	FE	Y
Birds	*Sternula antillarum*	Least Tern	G4	S3	N	ST	Y
Mammals	*Eptesicus fuscus*	Big Brown Bat	G5	S3		N	Y
Mammals	*Eumops floridanus*	Florida bonneted bat	G1	S1	E	FE	Y
Mammals	*Mustela frenata peninsulae*	Florida Long-tailed Weasel	G5T3?	S3?		N	Y
Mammals	*Neofiber alleni*	Round-tailed Muskrat	G2	S2		N	Y
Mammals	*Podomys floridanus*	Florida Mouse	G3	S3		N	Y
Mammals	*Sciurus niger niger*	Southeastern Fox Squirrel	G5T5	S3		N	Y
Mammals	*Ursus americanus floridanus*	Florida Black Bear	G5T4	S4		N	Y

Appendix C
Florida Master Site File Correspondence

ESA

Date: 2/1/2023

Alternative 1



Legend

- Buffer_of_Pipeline_Route_1_3
- Pipeline_Route_1
- FloridaSites
- HistoricalCemeteries
- ResourceGroups
- FloridaStructures

440 220 0 440 Meters

N

Alternative 1

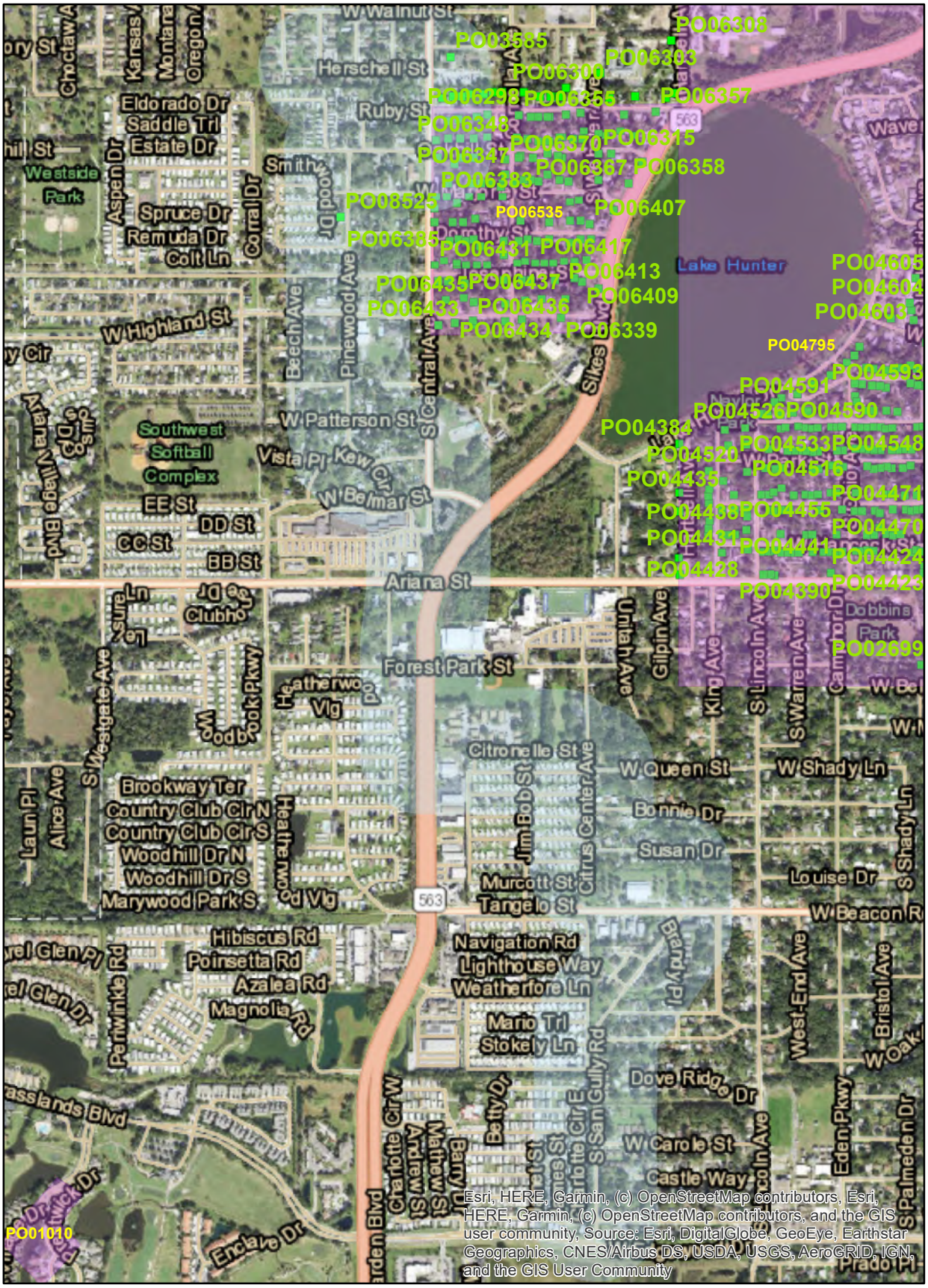
Manuscript Roster

Total=2

MS#	Title	Publication Information	Year
5828	Archaeological Site Location Predictive Model for the City of Lakeland	ARCHAEOLOGICAL CONSULTANTS, INC. SUBMITTED TO CITY OF LAKELAND, COMMUNITY DEVELOPMENT DEPARTMENT, 1999	1999
2132	Cultural resource assessment for the Oakbridge DRI, Drummond Properties, Lakeland, Polk Co., Florida	Water and Air Research, Inc., Gainesville.	1985

Date: 2/1/2023

Alternative 2



Legend

- Buffer_of_Pipeline_Route_2_2
- FloridaSites
- HistoricalCemeteries
- ResourceGroups
- FloridaStructures

440 220 0 440 Meters

N

AR=0
SS=28
CM=0
RG=1
BR=0
Total=29

Alternative 2

Cultural Resource Roster

Created: 2/1/2023

SiteID	Type	Site Name	Address	Additional Info	SHPO Eval	NR Status
PO03585	SS	CENTRAL AVENUE ELEMENTARY SCHOOL	604 S CENTRAL AVE, LAKELAND	1926 Masonry Vernacular		NR Listed - Jul 22, 1999
PO06287	SS	1145 RUBY ST	1145 RUBY ST, LAKELAND	c1924 Bungalow		NR Contrib - PO06535
PO06288	SS	1148 RUBY ST	1148 RUBY ST, LAKELAND	c1943 Frame Vernacular		NR Contrib - PO06535
PO06289	SS	1141 RUBY ST	1141 RUBY ST, LAKELAND	c1943 Frame Vernacular		NR Contrib - PO06535
PO06290	SS	1139 RUBY ST	1139 RUBY ST, LAKELAND	c1924 Bungalow		
PO06291	SS	1140 RUBY ST	1140 RUBY ST, LAKELAND	c1925 Frame Vernacular		
PO06292	SS	1133 RUBY ST	1133 RUBY ST, LAKELAND	c1924 Bungalow		NR Contrib - PO06535
PO06293	SS	1134 RUBY ST	1134 RUBY ST, LAKELAND	c1930 Bungalow		NR Contrib - PO06535
PO06294	SS	1125 RUBY ST	1125 RUBY ST, LAKELAND	c1926 Bungalow		NR Contrib - PO06535
PO06295	SS	1126 RUBY ST	1126 RUBY ST, LAKELAND	c1929 Frame Vernacular		NR Contrib - PO06535
PO06331	SS	1148 OAKHILL STREET	1148 OAKHILL ST, LAKELAND	c1949 Frame Vernacular		NR Contrib - PO06535
PO06341	SS	1117 OAKHILL STREET	1117 OAKHILL ST, LAKELAND	c1946 Frame Vernacular		NR Contrib - PO06535
PO06342	SS	1120 OAKHILL STREET	1120 OAKHILL ST, LAKELAND	1944 Masonry Vernacular		NR Contrib - PO06535
PO06343	SS	1128 OAKHILL STREET	1128 OAKHILL ST, LAKELAND	c1927 Frame Vernacular		NR Contrib - PO06535
PO06344	SS	1127 OAKHILL STREET	1127 OAKHILL ST, LAKELAND	c1926 Bungalow		NR Contrib - PO06535
PO06345	SS	1132 OAKHILL STREET	1132 OAKHILL ST, LAKELAND	c1924 Frame Vernacular		NR Contrib - PO06535
PO06346	SS	1135 OAKHILL STREET	1135 OAKHILL ST, LAKELAND	c1946 Frame Vernacular		NR Contrib - PO06535
PO06347	SS	1145 OAKHILL STREET	1145 OAKHILL ST, LAKELAND	c1948 Masonry Vernacular		NR Contrib - PO06535
PO06348	SS	1149 OAKHILL STREET	1149 OAKHILL ST, LAKELAND	c1946 Masonry Vernacular		NR Contrib - PO06535
PO06376	SS	1117 WEST MARJORIE STREET	1117 W MARJORIE ST, LAKELAND	c1942 Masonry Vernacular		
PO06377	SS	1121 WEST MARJORIE STREET	1121 W MARJORIE ST, LAKELAND	c1947 Masonry Vernacular		
PO06379	SS	1126 WEST MARJORIE STREET	1126 W MARJORIE ST, LAKELAND	c1925 Bungalow		NR Contrib - PO06535
PO06380	SS	1134 WEST MARJORIE STREET	1134 W MARJORIE ST, LAKELAND	c1948 Masonry Vernacular		NR Contrib - PO06535
PO06381	SS	1137 WEST MARJORIE STREET	1137 W MARJORIE ST, LAKELAND	c1947 Frame Vernacular		NR Contrib - PO06535
PO06382	SS	1140 WEST MARJORIE STREET	1140 W MARJORIE ST, LAKELAND	c1948 Frame Vernacular		NR Contrib - PO06535
PO06383	SS	6383 SOUTH CENTRAL AVENUE	6545 S CENTRAL AVE, LAKELAND	c1948 Frame Vernacular		NR Contrib - PO06535
PO06384	SS	842 SOUTH CENTRAL AVENUE	842 S CENTRAL AVE, LAKELAND	c1950 Frame Vernacular		NR Contrib - PO06535
PO06535	RG	Lake Hunter Terrace Historic District	Lakeland	Historical District - 163 Contrib Resources	Eligible	NR Listed - Dec 20, 2002
PO08525	SS	National Guard Armory, 116th Artillery	845 Pinewood AVE, Lakeland	c1925 Frame Vernacular		

Alternative 2

Manuscript Roster

Total=4

MS#	Title	Publication Information	Year
26685	Phase I Archaeological Survey Letter For Trileaf Corporation; Trileaf Project 655216 (Legacy / FL7092N), Lakeland, Polk County, Florida	Johson, Mirmiran & Thompson, prepared for Trileaf Corporation	2019
6545	The Lake Hunter Terrace Neighborhood of The City of Lakeland, Florida	SIDNEY P. JOHNSTON, DELAND. Submitted TO THE CITY OF LAKELAND COMMUNITY DEVELOPMENT DEPARTMENT, LAKELAND	2000
5828	Archaeological Site Location Predictive Model for the City of Lakeland	ARCHAEOLOGICAL CONSULTANTS, INC. SUBMITTED TO CITY OF LAKELAND, COMMUNITY DEVELOPMENT DEPARTMENT, 1999	1999
2132	Cultural resource assessment for the Oakbridge DRI, Drummond Properties, Lakeland, Polk Co., Florida	Water and Air Research, Inc., Gainesville.	1985

ENVIRONMENTAL ALTERNATIVES REPORT

City of Lakeland – Lakeland Western Trunk Line

Prepared for:
City of Lakeland
228 South Massachusetts Avenue
Lakeland, FL 33801

February 2023

5401 South Kirkman Road, Suite 475
Orlando, Florida 32815
www.esassoc.com

Appendix B – Capital Financing Plan

CAPITAL FINANCING PLAN

City of Lakeland
(Project Sponsor)

Shawn Sherrouse, City Manager
(Authorized Representative and Title)

Lakeland, FL 33801
(City, State, and Zip Code)

Michael Brossart, Finance Director
(Capital Financing Plan Contact, Title and Telephone Number)

228 S. Massachusetts Ave.
(Mailing Address)

Lakeland, FL 33801
(City, State, and Zip Code)

The Department needs to know about the financial capabilities of potential State Revolving Fund (SRF) loan applicants. Therefore, a financial capability demonstration (and certification) is required well before the evaluation of the actual loan application.

The sources of revenues being dedicated to repayment of the SRF loan are: The gross revenues derived yearly from the operation of the Utilities Systems after payment of the operation and maintenance expense and the satisfaction of all yearly payment obligations on account of the senior revenue obligations.

(Note: Projects pledging utility operating revenues should attach a copy of the existing/proposed rate ordinance)

Estimate of Proposed SRF Loan Debt Service

Capital Cost*	$	26,930,005
Loan Service Fee (2% of capital cost)**	$	538,600
Subtotal	$	27,468,605
Capitalized Interest***	$	249,989
Total Cost to be Amortized	$	27,718,594
Interest Rate****		0.30%
Annual Debt Service	$	1,429,546
Annual Debt Service Including Coverage	$	1,643,978

* Capital Cost = Allowances + Construction Cost (including a 10% contingency) + Technical Services After Bid Opening.
** Estimated Capitalized Interest = Subtotal times Interest Rate times construction time in years divided by two.
*** 20 GO Bond Rate times Affordability Index divided by 200.
**** Coverage factor is generally 15%. However, it may be higher if other than utility operating revenues are pledged.

SCHEDULE OF PRIOR AND PARITY LIENS

List annual debt service beginning two years before the anticipated loan agreement date and continuing at least fifteen fiscal years. Use additional pages as necessary.

IDENTIFY EACH OBLIGATION

#1	#2	#3
FDEP State Revolving Fund Loan CW 60815P	**FDEP State Revolving Fund Loan CW 608160**	**FDEP State Revolving Fund Loan CW 608180**
Coverage % 115%	*Coverage %* 115%	*Coverage %* 115%
Insured (Yes/No) No	*Insured (Yes/No)* No	*Insured (Yes/No)* No
#4	#5	#6
FDEP State Revolving Fund Loan CW 608190	**FDEP State Revolving Fund Loan CW 530610**	**FDEP State Revolving Fund Loan CW 530630**
Coverage % 115%	*Coverage %* 115%	*Coverage %* 115%
Insured (Yes/No) No	*Insured (Yes/No)* No	*Insured (Yes/No)* No
#7	#8	#9
FDEP State Revolving Fund Loan CW 530650	**FDEP State Revolving Fund Loan CW 530651**	**FDEP State Revolving Fund Loan CW 530652**
Coverage % 115%	*Coverage %* 115%	*Coverage %* 115%
Insured (Yes/No) No	*Insured (Yes/No)* No	*Insured (Yes/No)* No
#10	#11	#12
FDEP State Revolving Fund Loan CW 530670	**FDEP State Revolving Fund Loan DW 530660**	**FDEP State Revolving Fund Loan DW 530661**
Coverage % 115%	*Coverage %* 115%	*Coverage %* 115%
Insured (Yes/No) No	*Insured (Yes/No)* No	*Insured (Yes/No)* No
#13	#14	#15
Water and Wastewater Revenue Refunding and Improvement Bonds, Series 2021	**Water and Wastewater Revenue Note, Series 2015**	
Coverage % 120%	*Coverage %* 120%	*Coverage %*
Insured (Yes/No) No	*Insured (Yes/No)* No	*Insured (Yes/No)*

FISCAL YEAR	ANNUAL DEBT SERVICE (PRINCIPAL + INTEREST)															TOTAL NON SRF DEBT SERVICE W/COVERAGE	TOTAL SRF DEBT SERVICE W/COVERAGE
	#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**	**#9**	**#10**	**#11**	**#12**	**#13**	**#14**	**#15**		
2020	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$855,276.25		$1,026,331.50	$3,193,256.45
2021	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$0.00	$0.00	$0.00	$0.00	$44,828.51	$0.00	$0.00	$855,276.99		$1,026,332.39	$3,937,268.08
2022	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$0.00	$0.00	$0.00	$89,657.02	$0.00	$2,913,321.00	$855,276.85		$4,522,317.42	$4,043,071.08
2023	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$374,118.64	$0.00	$56,434.00	$89,657.02	$966,289.70	$2,907,646.56	$855,276.53		$4,515,507.71	$5,649,439.77
2024	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$0.00	$56,434.00	$89,657.02	$966,289.70	$2,907,205.94	$855,276.46		$4,514,978.88	$6,079,676.20
2025	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$89,657.02	$966,289.70	$2,906,494.09	$4,771,749.85		$9,213,892.73	$6,222,986.90
2026	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$89,657.02	$966,289.70	$2,905,262.96	$0.00		$3,486,315.56	$6,222,986.90
2027	$113,970.36	$841,811.58	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$89,657.02	$966,289.70	$2,908,261.44	$0.00		$3,489,913.73	$6,222,986.90
2028	$0.00	$0.00	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$89,657.02	$966,289.70	$2,904,986.53	$0.00		$3,485,983.84	$5,123,837.67
2029	$0.00	$0.00	$1,194,608.40	$547,925.62	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$89,657.02	$966,289.70	$2,905,441.56	$0.00		$3,486,529.87	$5,123,837.67
2030	$0.00	$0.00	$0.00	$273,962.81	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$89,657.02	$966,289.70	$2,904,123.10	$0.00		$3,484,947.72	$3,434,980.78
2031	$0.00	$0.00	$0.00	$0.00	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$44,828.51	$966,289.70	$2,905,233.28	$0.00		$3,486,279.94	$3,068,370.76
2032	$0.00	$0.00	$0.00	$0.00	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$56,434.00	$0.00	$966,289.70	$2,901,519.58	$0.00		$3,481,823.50	$3,016,817.98
2033	$0.00	$0.00	$0.00	$0.00	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,951,918.88
2034	$0.00	$0.00	$0.00	$0.00	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,951,918.88
2035	$0.00	$0.00	$0.00	$0.00	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,951,918.88
2036	$0.00	$0.00	$0.00	$0.00	$78,428.78	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,951,918.88
2037	$0.00	$0.00	$0.00	$0.00	$0.00	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,861,725.78
2038	$0.00	$0.00	$0.00	$0.00	$0.00	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,861,725.78
2039	$0.00	$0.00	$0.00	$0.00	$0.00	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,861,725.78
2040	$0.00	$0.00	$0.00	$0.00	$0.00	$602,138.12	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,861,725.78
2041	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$47,174.10	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,169,266.94
2042	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$748,237.28	$124,618.00	$0.00	$0.00	$966,289.70	$0.00	$0.00		$0.00	$2,115,016.73
2043	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$374,118.64	$124,618.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$573,547.14
2044	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$124,618.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$143,310.70
2045	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00
2046	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00
2047	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00
2048	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00
2049	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00
2050	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	$0.00

SCHEDULE OF ACTUAL REVENUES AND DEBT COVERAGE FOR PLEDGED REVENUE

(Provide information for the two fiscal years preceding the anticipated date of the SRF Loan Agreement)

		FY 2021	FY 2022
(a.)	Operating Revenues (Identify)		
	Charges for Service	$ 75,182,288	$ 78,420,261
	Misc	$ 403,099	$ 777,423
		$ -	$ -
(b.)	Interest Income	$ 3,840,914	$ 2,894,628
(c.)	Other Incomes or Revenues (Identify)		
(d.)	Total Revenues	$ 79,426,301	$ 82,092,312
(e.)	Operating Expenses (excluding interest on debt, depreciation, and other non-cash items)	$ 38,990,703	$ 36,426,426
(f.)	**Net Revenues (f = d - e)**	**$ 40,435,598**	**$ 45,665,886**
(g.)	Debt Service (including coverage) Excluding SRF Loans	$ 1,026,332	$ 4,522,317
(h.)	Debt Service (including coverage) for Outstanding SRF Loans	$ 3,937,268	$ 4,043,071
(i.)	**Net Revenues After Debt Service (i = f - g - h)**	**$ 35,471,998**	**$ 37,100,498**

Source:
City of Lakeland, Florida Annual Comprehensive Financial Report for the Fiscal Year Ending September 30, 2021
City of Lakeland, Florida Annual Comprehensive Financial Report for the Fiscal Year Ending September 30, 2022

Notes:

SCHEDULE OF PROJECTED REVENUES AND DEBT COVERAGE FOR PLEDGED REVENUE

(Begin with the fiscal year preceding first anticipated semiannual loan payment)

		FY 2028	FY 2029	FY 2030	FY 2031	FY 2032
(a.)	Operating Revenues (Identify)					
	Charges for Service	$ 104,491,560	$ 109,611,646	$ 114,982,617	$ 120,616,765	$ 126,526,987
	Misc	$ 1,035,882	$ 1,086,640	$ 1,139,886	$ 1,195,740	$ 1,254,331
		$ -	$ -	$ -	$ -	$ -
(b.)	Interest Income	$ -	$ -	$ -	$ -	$ -
(c.)	Other Incomes or Revenues (Identify)					
(d.)	Total Revenues	**$ 105,527,442**	**$ 110,698,287**	**$ 116,122,503**	**$ 121,812,505**	**$ 127,781,318**
(e.)	Operating Expenses[1]	$ 48,536,616	$ 50,914,910	$ 53,409,740	$ 56,026,818	$ 58,772,132
(f.)	**Net Revenues (f = d - e)**	**$ 56,990,826**	**$ 59,783,377**	**$ 62,712,762**	**$ 65,785,688**	**$ 69,009,186**
(g.)	Existing Debt Service on Non-SRF Projects (including coverage)	$ 3,485,984	$ 3,486,530	$ 3,484,948	$ 3,486,280	$ 3,481,823
(h.)	Existing SRF Loan Debt Service (including coverage)	$ 5,123,838	$ 5,123,838	$ 3,434,981	$ 3,068,371	$ 3,016,818
(i.)	**Total Existing Debt Service (i = g + h)**	**$ 8,609,822**	**$ 8,610,368**	**$ 6,919,929**	**$ 6,554,651**	**$ 6,498,641**
(j.)	Projected Debt Service on Non-SRF Future Projects (including coverage)	$ -	$ -	$ -	$ -	$ -
(k.)	Projected SRF Loan Debt Service (including coverage)	$ 1,643,978	$ 1,643,978	$ 1,643,978	$ 1,643,978	$ 1,643,978
(l.)	**Total Debt Service (Existing and Projected) (l = i + j + k)**	**$ 10,253,799**	**$ 10,254,345**	**$ 8,563,906**	**$ 8,198,628**	**$ 8,142,619**
(m.)	**Net Revenues After Debt Service (m = f - l)**	**$ 46,737,027**	**$ 49,529,032**	**$ 54,148,856**	**$ 57,587,059**	**$ 60,866,567**

Source:

Notes: (I.e. rate increases, explanations, etc.)
FY 2028-2032 revenues and expenditures have been projected using current CPI of 4.9% from FY2022 audited figures.

CERTIFICATION

I, Michael Brossart ,certify that I have reviewed the information
Chief Financial Officer (please print)

included in the preceding capital financing plan worksheets, and to the best of my knowledge, this information accurately reflects the financial capability of City of Lakeland
Project Sponsor

I further certify that City of Lakeland has the financial capability to ensure
Project Sponsor

adequate construction, operation, and maintenance of the system, including this SRF project.

Signature

Date

ANGIEBREWER.COM
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SRF PROJECT COST WORKSHEET / LOAN CALCULATION

Construction, Demolition and Related Procurement		**$**	**45,232,019**
Eligible Land		$	0
Contingency (10% or 5% of construction and land)		$	4,523,202
Technical Services After Bid Opening		$	4,523,202
Interim Financing (excluding SRF capitalized interest)		$	0
Start-up Services		$	0
Allowance		$	0
Other Funding			
ARPA		$	15,348,418
City Funds		$	12,000,000
Total Non-SRF Funds		$	27,348,418
Subtotal (Estimated Costs minus Non-SRF Funds)		**$**	**26,930,005**
Years to Construct / Capitalized Interest	3	$	249,989
Total Cost for Priority List		**$**	**27,179,994**
Service Fee (2% of subtotal)		$	538,600
Total SRF Cost for Amortization		**$**	**27,718,594**
Estimated Interest Rate	**0.30%**		
Semi-annual Payment Start Date / Annual Payment	**1/15/2029**	**$**	**1,429,546**
Annual Payment with 115% Coverage		**$**	**1,643,978**
Total Payments		**$**	**28,589,829**

Notes:

Angie Brewer & Associates, L.C.

Estimated SRF WW Amortization Schedule

Enter Values	
Loan Amount	$ 27,718,593.74
Annual Interest Rate	0.304%
Loan Period in Years	20
Number of Payments Per Year	2
Start Date of Loan	7/15/2028
Coverage Factor	1.15

Loan Summary	
Scheduled Payment	$ 714,772.84
Scheduled Number of Payments	40
Actual Number of Payments	40
Total Early Payments	$ -
Total Interest	$ 872,319.67
Annual Payment	$ 1,429,545.67
Annual Payment with Coverage	$ 1,643,977.53
Total Payments	$ 28,589,828.50

Lender Name: FDEP

Pmt No.	Payment Date	Beginning Balance	Scheduled Payment	Extra Payment	Total Payment	Principal	Interest	Ending Balance
1	1/15/2029	$ 27,718,593.74	$ 714,772.84	-	$ 714,772.84	$ 672,636.66	$ 42,136.18	$ 27,045,957.08
2	7/15/2029	27,045,957.08	714,772.84	-	714,772.84	673,659.16	41,113.67	26,372,297.92
3	1/15/2030	26,372,297.92	714,772.84	-	714,772.84	674,683.22	40,089.62	25,697,614.70
4	7/15/2030	25,697,614.70	714,772.84	-	714,772.84	675,708.83	39,064.00	25,021,905.87
5	1/15/2031	25,021,905.87	714,772.84	-	714,772.84	676,736.01	38,036.83	24,345,169.87
6	7/15/2031	24,345,169.87	714,772.84	-	714,772.84	677,764.74	37,008.10	23,667,405.13
7	1/15/2032	23,667,405.13	714,772.84	-	714,772.84	678,795.04	35,977.80	22,988,610.09
8	7/15/2032	22,988,610.09	714,772.84	-	714,772.84	679,826.90	34,945.93	22,308,783.19
9	1/15/2033	22,308,783.19	714,772.84	-	714,772.84	680,860.33	33,912.50	21,627,922.85
10	7/15/2033	21,627,922.85	714,772.84	-	714,772.84	681,895.34	32,877.50	20,946,027.52
11	1/15/2034	20,946,027.52	714,772.84	-	714,772.84	682,931.92	31,840.92	20,263,095.60
12	7/15/2034	20,263,095.60	714,772.84	-	714,772.84	683,970.07	30,802.77	19,579,125.53
13	1/15/2035	19,579,125.53	714,772.84	-	714,772.84	685,009.80	29,763.04	18,894,115.73
14	7/15/2035	18,894,115.73	714,772.84	-	714,772.84	686,051.11	28,721.72	18,208,064.62
15	1/15/2036	18,208,064.62	714,772.84	-	714,772.84	687,094.01	27,678.83	17,520,970.61
16	7/15/2036	17,520,970.61	714,772.84	-	714,772.84	688,138.49	26,634.35	16,832,832.13
17	1/15/2037	16,832,832.13	714,772.84	-	714,772.84	689,184.55	25,588.28	16,143,647.57
18	7/15/2037	16,143,647.57	714,772.84	-	714,772.84	690,232.21	24,540.62	15,453,415.36
19	1/15/2038	15,453,415.36	714,772.84	-	714,772.84	691,281.46	23,491.37	14,762,133.90
20	7/15/2038	14,762,133.90	714,772.84	-	714,772.84	692,332.31	22,440.53	14,069,801.59
21	1/15/2039	14,069,801.59	714,772.84	-	714,772.84	693,384.75	21,388.09	13,376,416.84
22	7/15/2039	13,376,416.84	714,772.84	-	714,772.84	694,438.79	20,334.04	12,681,978.05
23	1/15/2040	12,681,978.05	714,772.84	-	714,772.84	695,494.44	19,278.40	11,986,483.61
24	7/15/2040	11,986,483.61	714,772.84	-	714,772.84	696,551.69	18,221.15	11,289,931.93
25	1/15/2041	11,289,931.93	714,772.84	-	714,772.84	697,610.54	17,162.29	10,592,321.38
26	7/15/2041	10,592,321.38	714,772.84	-	714,772.84	698,671.01	16,101.82	9,893,650.37
27	1/15/2042	9,893,650.37	714,772.84	-	714,772.84	699,733.09	15,039.75	9,193,917.28
28	7/15/2042	9,193,917.28	714,772.84	-	714,772.84	700,796.78	13,976.05	8,493,120.50
29	1/15/2043	8,493,120.50	714,772.84	-	714,772.84	701,862.09	12,910.74	7,791,258.41
30	7/15/2043	7,791,258.41	714,772.84	-	714,772.84	702,929.02	11,843.81	7,088,329.38
31	1/15/2044	7,088,329.38	714,772.84	-	714,772.84	703,997.57	10,775.26	6,384,331.81
32	7/15/2044	6,384,331.81	714,772.84	-	714,772.84	705,067.75	9,705.09	5,679,264.06
33	1/15/2045	5,679,264.06	714,772.84	-	714,772.84	706,139.55	8,633.28	4,973,124.51
34	7/15/2045	4,973,124.51	714,772.84	-	714,772.84	707,212.98	7,559.85	4,265,911.52
35	1/15/2046	4,265,911.52	714,772.84	-	714,772.84	708,288.05	6,484.79	3,557,623.48
36	7/15/2046	3,557,623.48	714,772.84	-	714,772.84	709,364.75	5,408.09	2,848,258.73
37	1/15/2047	2,848,258.73	714,772.84	-	714,772.84	710,443.08	4,329.76	2,137,815.65
38	7/15/2047	2,137,815.65	714,772.84	-	714,772.84	711,523.05	3,249.78	1,426,292.60
39	1/15/2048	1,426,292.60	714,772.84	-	714,772.84	712,604.67	2,168.17	713,687.93
40	7/15/2048	713,687.93	714,772.84	-	713,687.93	712,603.02	1,084.91	0.00