

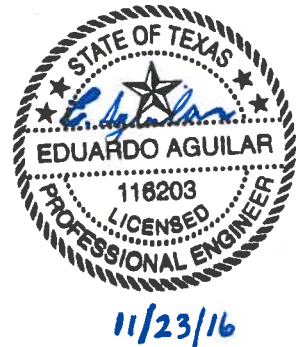
**PRELIMINARY ENGINEERING REPORT**

*for*

**SANDBRANCH DEVELOPMENT  
AND WATER SUPPLY CORPORATION**

**NEW WATER AND WASTEWATER  
SYSTEMS IMPROVEMENTS**

**NOVEMBER 2016**



Firm #2448  
Project #: 16483



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TBAE Firm #: BR 2261

TBPLS Firm #: 10024300 – Abilene

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**PRELIMINARY ENGINEERING REPORT**

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**SANDBRANCH DEVELOPMENT AND WATER SUPPLY CORPORATION  
PRELIMINARY ENGINEERING REPORT**

**NOVEMBER 2016**

**I. PROJECT PLANNING**

Sandbranch Development and Water Supply Corporation (SDWSC) intends to submit an application for funding through the United States Department of Agriculture Rural Development (USDA-RD) to complete water and wastewater system improvements. In June of 2016, SDWSC contracted JACOB & MARTIN, LLC. to perform a preliminary engineering report for the project and to assist with completion of the design for improvements. The following is a report of the findings for the new water and wastewater systems.

**A. Location**

SDWSC is an existing development located in the southeast portion of Dallas County and approximately fourteen miles southeast of Downtown Dallas. The planning area is within the service area as shown on the project maps in Appendix A and B. All of the improvements for the new water and wastewater systems will be completed within existing public right-of-ways, easements, and properties to be owned or leased by SDWSC. Photographs of the planning area are also included in Appendix C.

**B. Environmental Resources Present**

An Environmental Report is being prepared concurrently to this preliminary engineering report and will be submitted as a separate document.

**C. Population Trends**

Historical data pertaining to population are essential when designing new water and wastewater systems improvements. The following provides a summary of historic and projected population for the City of Seagoville. The SDWSC service area is located within the City of Seagoville's Extraterritorial Jurisdiction (ETJ) which could potentially be annexed by the City. According to the United States Census Bureau, the population for the City of Seagoville in 1990, 2000 and 2010 were 8,969, 10,823 and 14,835, respectively. Between 1990 and 2000, there was an increase in population of 20.7%. Between 2000 and 2010, there was also an increase in population of 37.1%. Table 1 illustrates the historical and projected population growth for the City of Seagoville from 1990 through the year 2060. Projected populations were taken from the Texas Water Development Board (TWDB) 2016 Regional C Water Plan. From 2020 to 2060, the City's population is projected to increase by 85.6% to 35,000. The population within Sandbranch is also expected to increase due to its proximity to the City of Dallas and being within the City of Seagoville's ETJ. Both city limit boundaries are within a mile of Sandbranch.

**TABLE 1  
HISTORICAL AND PROJECTED POPULATION**

	1990 Census	2000 Census	2010 Census	2020 Projected	2030 Projected	2040 Projected	2050 Projected	2060 Projected
Population	8,969	10,823	14,835	18,854	22,873	26,892	30,911	35,000

D. Community Engagement

SDWSC has hosted meetings open to the public to discuss the project planning process including the need for the project, funding, revenue strategies, and environmental concerns. SDWSC plans to host additional meeting to further discuss the project which will also be open to the public.

**II. EXISTING WATER AND WASTEWATER FACILITIES**

SDWSC was established on March 16, 2016, to provide water and wastewater systems services to the Sandbranch Community. Other than some private water wells and on-site sanitary facilities, there are no other existing water or wastewater systems or facilities within the SDWSC service area; therefore, this section is not applicable.

A. Location Map

Not Applicable.

B. History

Not Applicable.

C. Condition of Existing Facilities

Not Applicable.

D. Financial Status of Any Existing Facilities

Not Applicable.

E. Water/Energy/Waste Audits

Not Applicable.

**III. PROJECT NEED**

A. Health, Sanitation and Security

The water quality from the private wells in the service area have been determined to not meet the Environmental Protection Agency's (EPA) drinking water standards. The residents in the area rely on donated bottled water for drinking. Based on a site evaluation, there are some private septic systems in this area which may not meet the minimum acreage requirements. Since most homes in the area do not have running water, the homes do not have a septic system which can lead to health and sanitation issues.

#### B. Aging Water and Wastewater Infrastructure

There is no existing water or wastewater infrastructure; therefore, this section is not applicable.

#### C. Reasonable Growth

As previously mentioned in this Report, the projected capacities for the planning period of the water and wastewater systems were derived using the projected population from the Region C Water Plan and historical population trends. The projections are shown in Table 1 of this Report. The population in the SDWSC service area is expected to increase through the planning period. The proposed project would allow the WSC to comply with all of the TCEQ demand and capacity regulations for the water and wastewater systems.

### IV. ALTERNATIVES CONSIDERED

#### A. Description

Alternatives were considered for different methods and material to install the proposed water and wastewater systems. For instance, fusible PVC, standard gasket PVC and high-density polyethylene (HDPE) materials were all considered for pipe material of the lines. Fusible PVC Pipe costs seventy-five percent more than standard gasket PVC Pipe. HDPE Pipe costs fifty percent more than standard PVC. Other alternatives include constructing new water and wastewater treatment plants for drinking water and wastewater treatment. However, the capital costs for constructing new water and wastewater treatment plants is not feasible for the SDWSC. Finally, a "no action" was also considered not to provide water and wastewater services to this existing developed area, and the residents can continue to live without running water in their homes or a sanitary wastewater system.

#### B. Design Criteria

The design criteria for the proposed water and wastewater improvements consist and comply with the EPA, TCEQ and USDA RUS Standards and Regulations. The TCEQ Regulatory Requirements can be found in the Texas Administrative Code 30 TAC 217 and 290. The RUS Design Policies can be found in 7 CFR 1780.57.

#### C. Maps

There are two maps showing the proposed improvements which can be found in Appendix A and B. Appendix A shows the proposed water system improvements, and Appendix B shows the wastewater system improvements.

#### D. Environmental Impacts

An Environmental Report is being prepared concurrently to this preliminary engineering report and will be submitted as a separate document.

#### E. Land Requirements

The proposed improvements will be constructed within existing public right-of-ways and easements. Permits and easements from City of Dallas, Dallas County and the Texas Department of Transportation (TXDOT) will need to be acquired for construction activities on the water and wastewater lines. The SDWSC service area also falls within the City of Seagoville's Extraterritorial Jurisdiction (ETJ) which gives the local government the ability to exercise authority for land use.

#### F. Potential Construction Problems

There are no potential major construction problems. The project area is located in a developed area of Dallas County.

#### G. Sustainability Considerations

Not Applicable.

#### H. Cost Estimates

An itemized cost estimate showing the construction and non-construction costs for this alternative is included in the Section VI. The cost estimate shows the water and wastewater systems construction costs separately. An itemized annual operation and maintenance (O&M) cost is also provided in the Section VI for the proposed improvements.

### V. **SELECTION OF ALTERNATES**

Present worth cost analyses are shown in Table 2 and 3 for each alternative discussed in Sections A and B below for the selection of the water and wastewater systems improvements. Table 2 is the present worth analysis for the water system alternatives, and Table 3 is the present worth analysis for the wastewater system alternatives.

#### A. Life Cycle Cost Analysis

##### Water System

Alternative 1 in Table 2 include installing approximately 26,000 linear feet of new PVC water lines and appurtenances such as fire hydrants, gate valves, meter connections, bores, etc. This alternative includes installing a pump station with a water storage tank, pumps and disinfection facilities. This selection would also include a wholesale water agreement between SDWSC and Dallas Water Utilities (DWU). SDWSC has begun agreement negotiations with DWU for a wholesale water purchase agreement. Alternative 2 includes the same improvements as Alternative 1 with the addition of a water treatment plant, instead of a wholesale water purchase agreement with DWU. Alternative 2 would require a raw water purchase agreement with the Trinity River Authority (TRA) to pump raw water out of the Trinity River to be treated at the new water treatment plant. Alternative 3 would be “no action” taken by SDWSC which means the service area would remain without a drinking water source. Based on the present worth analysis, Alternative 1 is the most feasible selection for SDWSC water system improvements.

### Wastewater System

Alternative 1 in Table 3 includes installing approximately 30,000 linear feet of new PVC wastewater lines, a lift station and appurtenances such as manholes, sewer tap connections, cleanouts, etc. for the wastewater system improvements. This alternative would also include a wastewater agreement between SDWSC and Dallas Water Utilities (DWU) to treat the wastewater at the Southside Wastewater Treatment Plant (WWTP). SDWSC has begun agreement negotiations with DWU for a wastewater treatment agreement. Alternative 2 includes the same improvements as Alternative 1 with the addition of a new WWTP, instead of a wastewater treatment agreement with DWU. Alternative 3 would be “no action” taken by SDWSC which means the service area would remain without a sanitary wastewater system. Based on the present worth analysis in Table 2, Alternative 1 is the most feasible selection for the SDWSC wastewater system improvements. Also, tying into an existing regional wastewater system like DWU would be a more efficient alternative to constructing a new WWTP.

### B. Non-Monetary Factors

Environmentally, regional water and wastewater systems are more efficient alternatives to constructing new water and wastewater treatment plants. Therefore, Alternates 1 for the water and wastewater systems would be more efficient than Alternatives 2 which consists of constructing new treatment plants for both systems.



**TABLE 2  
Present Worth Analysis & Assessts for Water System**

Community Name: Sandbranch Development and Water Supply Corporation

Federal Discount Rate for Water/Sewer Resources Planning (Interest Rate) i =  
Number of Years, n =

0.04875  
20 years

Alternative 1: Wholesale Treated Water Purchase Agreement with DWU Water Lines and Pump Station	
Water Lines & Appurtenances =	\$2,040,000
Pumps Station & Generator =	\$700,000
<b>1. Initial Capital Costs =</b>	<b>\$2,740,000</b>
Annual Operations & Maintenance (O&M) Costs* =	\$45,000
PWO&M =	$\frac{(1+i)^n - 1}{i(1+i)^n} \times \text{Annual O\&M Cost}$
<b>2. Present Worth of 20 years of O&amp;M (PWO&amp;M) =</b>	<b>\$566,791</b>
Future Salvage Value (FSV) =	\$1,500,000
PWSV =	$\text{FSV} \times \frac{1}{(1+i)^n}$
<b>3. Present Worth of 20 yr Salvage Value (PWSV) =</b>	<b>\$578,964</b>
<b>Alternative 1 (Items Above 1 + 2 - 3)</b>	
<b>Total Present Worth =</b>	<b>\$2,727,827</b>

Alternative 2: Wholesale Raw Water Purchase Agreement with TRA WTP, Water Lines and Pump Station	
Water Lines & Appurtenances =	\$2,040,000
Pumps Station & Generator =	\$700,000
Water Treatment Plant =	\$2,500,000
<b>1. Initial Capital Costs =</b>	<b>\$5,240,000</b>
Annual Operations & Maintenance (O&M) Costs =	\$200,000
PWO&M =	$\frac{(1+i)^n - 1}{i(1+i)^n} \times \text{Annual O\&M Cost}$
<b>2. Present Worth of 20 years of O&amp;M (PWO&amp;M) =</b>	<b>\$2,519,072</b>
Future Salvage Value =	\$3,000,000
PWSV =	$\text{FSV} \times \frac{1}{(1+i)^n}$
<b>3. Present Worth of 20 yr Salvage Value (PWSV) =</b>	<b>\$1,157,929</b>
<b>Alternative 2 (Items Above 1 + 2 - 3)</b>	
<b>Total Present Worth =</b>	<b>\$6,601,143</b>

**Short-Lived Depreciated Assets**

Item	Years of Life Expectancy	Number of Units	Replacement Cost	Funds to Set Aside Yearly
<u>Water System</u>				
Pumps	15	2	\$10,000	\$1,333
Pump Controls	10	1	\$5,000	\$500
Chem Feed Equipment	10	1	\$3,000	\$300
Tank Painting	15	1	\$60,000	\$4,000

**Notes:**

1. This is not intended to include every piece of equipment in the system. It is to itemize the critical equipment or maintenance items that money should be set aside for via rates and charges.

2. No short lived assets > 15 years of life expectancy

**Long-Lived Depreciated Assets**

Item	Years of Life Expectancy	Number of Units	Replacement Cost	Funds to Set Aside Yearly
<u>Water System</u>				
Water Lines	40	26,000	\$30	\$19,500
Pump Station Building	40	1	\$50,000	\$1,250

\*See Table 5 Proposed Operating Budget for O&M Cost Breakdown (Half of Total Cost)

**TABLE 3**  
**Present Worth Analysis & Assessts for Wastewater System**

Community Name: Sandbranch Development and Water Supply Corporation

Federal Discount Rate for Water/Sewer Resources Planning (Interest Rate) i =  
Number of Years, n =

0.04875  
20 years

<b>Alternative 1:</b>	
Wastewater Treatment Agreement with DWU Sewer Lines and Lift Station	
Sewer Lines & Appurtenances =	\$4,795,000
Lift Station =	\$175,000
<b>1. Initial Capital Costs =</b>	<b>\$4,970,000</b>
Annual Operations & Maintenance (O&M) Costs* = \$45,000	
PWO&M = $\frac{(1+i)^n - 1}{i(1+i)^n} \times \text{Annual O\&M Costs}$	
<b>2. Present Worth of 20 years of O&amp;M (PWO&amp;M) =</b>	<b>\$566,791</b>
Future Salvage Value (FSV) =	\$3,000,000
PWSV = $\text{FSV} \times \frac{1}{(1+i)^n}$	
<b>3. Present Worth of 20 yr Salvage Value (PWSV) =</b>	<b>\$1,157,929</b>
<b>Alternative 1 (Items Above 1 + 2 - 3)</b>	
<b>Total Present Worth =</b>	<b>\$4,378,863</b>

<b>Alternative 2:</b>	
No Wastewater Treatment Agreement WWTP, Sewer Lines and Lift Station	
Sewer Lines & Appurtenances =	\$4,795,000
Lift Station =	\$175,000
Wastewater Treatment Plant =	\$1,500,000
<b>1. Initial Capital Costs =</b>	<b>\$5,240,000</b>
Annual Operations & Maintenance (O&M) Costs = \$200,000	
PWO&M = $\frac{(1+i)^n - 1}{i(1+i)^n} \times \text{Annual O\&M Costs}$	
<b>2. Present Worth of 20 years of O&amp;M (PWO&amp;M) =</b>	<b>\$2,519,072</b>
Future Salvage Value =	\$4,000,000
PWSV = $\text{FSV} \times \frac{1}{(1+i)^n}$	
<b>3. Present Worth of 20 yr Salvage Value (PWSV) =</b>	<b>\$1,543,905</b>
<b>Alternative 2 (Items Above 1 + 2 - 3)</b>	
<b>Total Present Worth =</b>	<b>\$6,215,167</b>

**Short-Lived Depreciated Assets**

Item	Years of Life Expectancy	Number of Units	Replacement Cost	Funds to Set Aside Yearly
<b>Sewer System</b>				
Lift Station Pumps	15	2	\$10,000	\$1,333
Chemical Feed Equipment	5	1	\$3,000	\$600

**Notes:**

1. This is not intended to include every piece of equipment in the system. It is to itemize the critical equipment or maintenance items that money should be set aside for via rates and charges.

2. No short lived assets > 15 years of life expectancy

**Long-Lived Depreciated Assets**

Item	Years of Life Expectancy	Number of Units	Replacement Cost	Funds to Set Aside Yearly
<b>Sewer System</b>				
Lift Station	40	1	\$175,000	\$4,375
Sewer Lines	40	30,000	\$35	\$26,250

\*See Table 5 Proposed Operating Budget for O&M Cost Breakdown (Half of Total Cost)

## VI. PROPOSED PROJECT

SDWSC is proposing to construct new infrastructure to provide water and wastewater services throughout the service area. Alternative 1 for the water system improvements has been selected for the proposed project which would include installing approximately 26,000 linear feet of new PVC water lines and appurtenances such as fire hydrants, gate valves, meter connections, bores, etc. The proposed water system improvements also include installing a pump station with water storage, pumps and disinfection facilities. Alternative 1 for the wastewater system improvements has been selected for the proposed project which would include installing approximately 30,000 linear feet of new PVC wastewater lines, a lift station and appurtenances such as manholes, sewer tap connections, etc. Project maps showing the proposed pump station, water lines, lift station, and wastewater lines are included in Appendix A and B.

### A. Preliminary Project Design

#### i. Drinking Water

##### a. Water Supply

The water supply would consist of a wholesale treated water purchase agreement with DWU including a master metering site.

##### b. Storage and Pumping Station

The proposed pump station will consist of a ground storage tank with elevated storage, at least two pumps and disinfection facilities. The best location for the pump station site is near the intersection of South Beltline Road and Pin Oak Street as shown on the project map. However, other alternate sites have been identified on the project map. The minimum storage capacity of a ground tank should be 80,000 gallons with 40,000 gallons of elevated storage. The minimum storage is based on a fully developed area with 400 meter connections.

##### c. Distribution

The water distribution system improvements would include installing approximately 26,000 linear feet of new 6-inch and 8-inch PVC water lines and appurtenances such as fire hydrants, gate valves, meter connections, etc. The distribution system would have approximately 5 commercial meter connections and 65 residential meter connections when the system is installed. The projected use for each residential meter is 246 gallons per day and 230 gallons per day per commercial meter. These projections are based on historical water use data from the Texas Water Development Board (TWDB) for the State.

#### ii. Wastewater

a. Collection

The collection system improvements would include installing approximately 30,000 linear feet of new 6-inch and 8-inch PVC wastewater lines and appurtenances such as manholes, wastewater connections, etc. throughout the service area.

b. Storage and Pumping Station

A lift station, with at least two pumps, will collect the wastewater from the collection system. The lift station will also consist of a wet well sized for a fully developed area with 400 sewer connections.

c. Treatment

The wastewater collected in the lift station wet well will be pumped to the existing Southside WWTP which is owned and operated by Dallas Water Utilities (DWU). The Southside WWTP is located to the north and adjacent to the Sandbranch Development. A wastewater treatment agreement will need to be negotiated between SBWSC and DWU.

B. Project Schedule

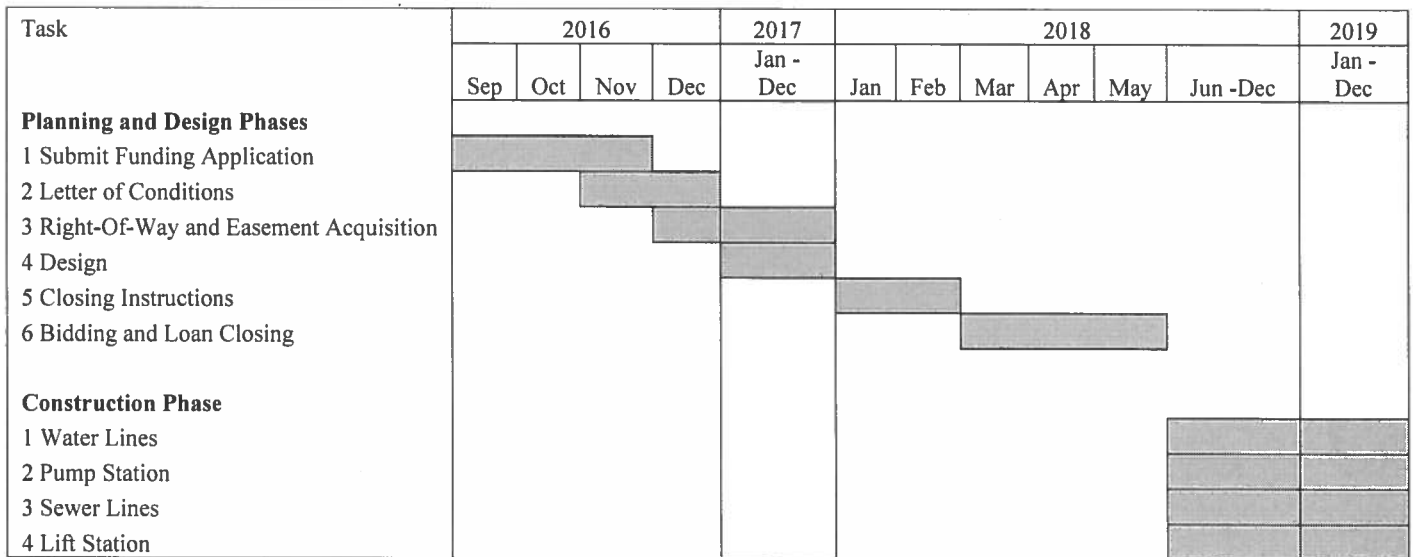


Figure 1 – Proposed Project Schedule

C. Permit Requirements

Plans and specifications for the proposed water and wastewater systems will be submitted to the TCEQ for review and approval. Permits will be required where water and wastewater lines cross or run parallel within TXDOT and County Right-Of-Ways.

D. Sustainability Considerations

Not Applicable.

E. Total Project Cost and Estimate

The opinion of probable costs for the proposed water and wastewater improvements are shown in Table 4. Based on the cost estimate, Jacob & Martin estimates the total project cost to be approximately \$6,500,000.

**TABLE 4**  
**SANDBRANCH DEVELOPMENT AND WSC**  
**WATER AND WASTEWATER SYSTEMS**  
**PRELIMINARY COST ESTIMATE**

**CONSTRUCTION COSTS**

**WATER SYSTEM**

	Unit	Quantity	Unit Cost	Total Cost
1 Pump Station with Standpipe	LS	1	\$650,000.00	\$650,000
2 6" PVC Water Line	LF	26,000	\$30.00	\$780,000
3 Valves	LS	1	\$200,000.00	\$200,000
4 Bores	LS	1	\$200,000.00	\$200,000
5 Fire Hydrants	EA	50	\$3,500.00	\$175,000
6 Meter Connections	EA	70	\$1,000.00	\$70,000
7 Pavement Repair	LF	5,000	\$25.00	\$125,000
8 Radio Read Metering System	LS	1	\$125,000.00	\$125,000
9 Master Meter and Vault	EA	1	\$50,000.00	\$50,000
10 Emergency Generator	EA	1	\$100,000.00	\$100,000
11 Water Project Contingencies				\$265,000
<b>SUBTOTAL</b>				<b>\$2,740,000</b>

**WASTEWATER SYSTEM**

	Unit	Quantity	Unit Cost	Total Cost
1 Lift Station	LS	1	\$175,000.00	\$175,000
2 8" PVC Sewer Line	LF	24,000	\$35.00	\$840,000
3 6" PVC Force Main	LF	6,000	\$25.00	\$150,000
4 Valves	LS	1	\$20,000.00	\$20,000
5 Bores	LS	1	\$50,000.00	\$50,000
6 Manholes	EA	75	\$6,000.00	\$450,000
7 Cleanouts	EA	20	\$500.00	\$10,000
8 Service Connections	EA	70	\$2,500.00	\$175,000
9 Pavement Repair	LF	5,000	\$30.00	\$150,000
10 Sewer Project Contingencies				\$210,000
<b>SUBTOTAL</b>				<b>\$2,230,000</b>

**TOTAL CONSTRUCTION COST** **\$4,970,000**

**NON-CONSTRUCTION COSTS**

Legal & Filing Fees	\$400,000
Basic Engineering	\$325,000
Preliminary Engineering	\$15,000
Environmental Assessment	\$15,000
Biological and Archeological	\$30,000
Surveying	\$150,000
Inspection	\$300,000
Testing	\$20,000
Land, ROW and Easement Acquisition	\$100,000
Permitting	\$30,000
Interest	\$145,000

**TOTAL NON-CONSTRUCTION COST** **\$1,530,000**

**TOTAL PROJECT COST** **\$6,500,000**

## F. Annual Operating Budget

### i. Income

The reserves and operation and maintenance (O&M) costs related to the project will require income to balance the costs. All of the income should be expected to come from new customers since this is a new system. A proposed rate schedule is included in Appendix D.

### ii. Annual Operation and Maintenance (O&M) Costs

SDWSC does not have a history of operation and maintenance. The projected annual O&M costs are shown in the operating budget in Table 5. Table 5 is shown in Section VI (E) (v) of this Report.

### iii. Debt Repayments

The total cost of the proposed project is approximately \$6,500,000. The estimated annual debt repayments would be approximately \$230,000. SDWSC should be eligible for a grant from USDA-RD. Based on a preliminary estimate for a one hundred percent loan, SDWSC would not be able to repay this loan amount unless the minimum monthly bill is approximately \$380 per connection.

### iv. Reserve

The short-lived and long-lived assets are shown in Tables 2 and 3 for each system. The short-lived assets for the water and wastewater systems include new service connections, recoating the elevated storage tank, replacing pumps, chemical feed equipment, and controls. The table includes each asset, expected year of replacement, and the anticipated cost of each.

### v. Operating Budget

SDWSC does not have a history of operating. Below in Table 5 is the proposed operating budget for the water and wastewater systems.

**TABLE 5**  
**Proposed Operating Budget**  
**For First Full Year After Construction - Water & Sewer**

**Community Name:** Sandbranch Development & WSC **County:** Dallas

**Address:** P.O. Box 983  
Seagoville, Texas 75159

**A. Applicant Fiscal Year:** From: 1-Jan To: 31-Dec

<b>B. Operating Income:</b>	From Water/Sewer Rates & Charges:	\$90,000
	Other	\$0
	<b>Total Operating Income:</b>	<u>\$90,000 *</u>

<b>C. Operating Expenses:</b>		
Utilities & Wholesale Contracts		\$50,000
Insurance/Audit		\$2,000
Salaries/Benefits		\$15,000
Vehicle Expense		\$3,000
Lab or other Costs		\$5,000
Repairs/Maintenance		\$7,500
Chemicals		\$5,000
Permitting		\$2,500
	<b>Total Operating Expenses:</b>	<u>\$90,000</u>

<b>D. Non Operating Income:</b>		
Interest:		\$100
Other:		\$0
	<b>Total Non Operating Income:</b>	<u>\$100</u>

<b>E. Expenditures/Transfers</b>		
Repair, Replacement & Improvement Fund		\$0
Bond Reserve		\$0
Payment to USDA Loan - Proposed		\$230,000
Payment to Other Loans		\$0
	<b>Total Expenditures/Transfers:</b>	<u>\$230,000</u>
	<b>Excess/Deficit over net income:</b>	-\$230,000

\*Estimated revenue to cover O&M expenses.



**VII. CONCLUSIONS AND RECOMMENDATIONS**

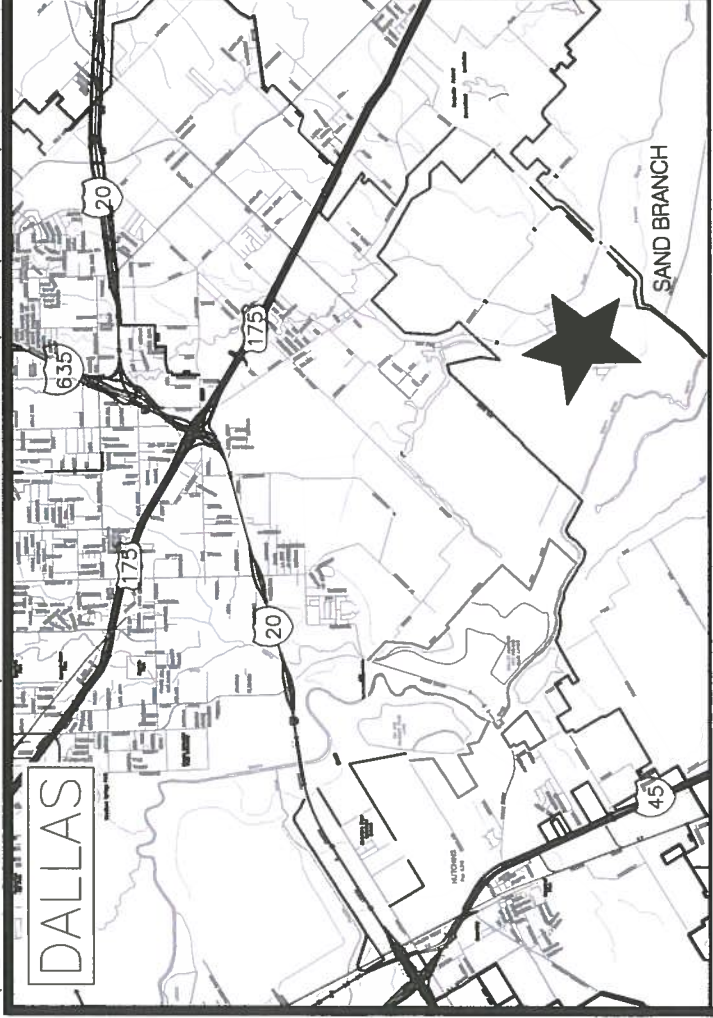
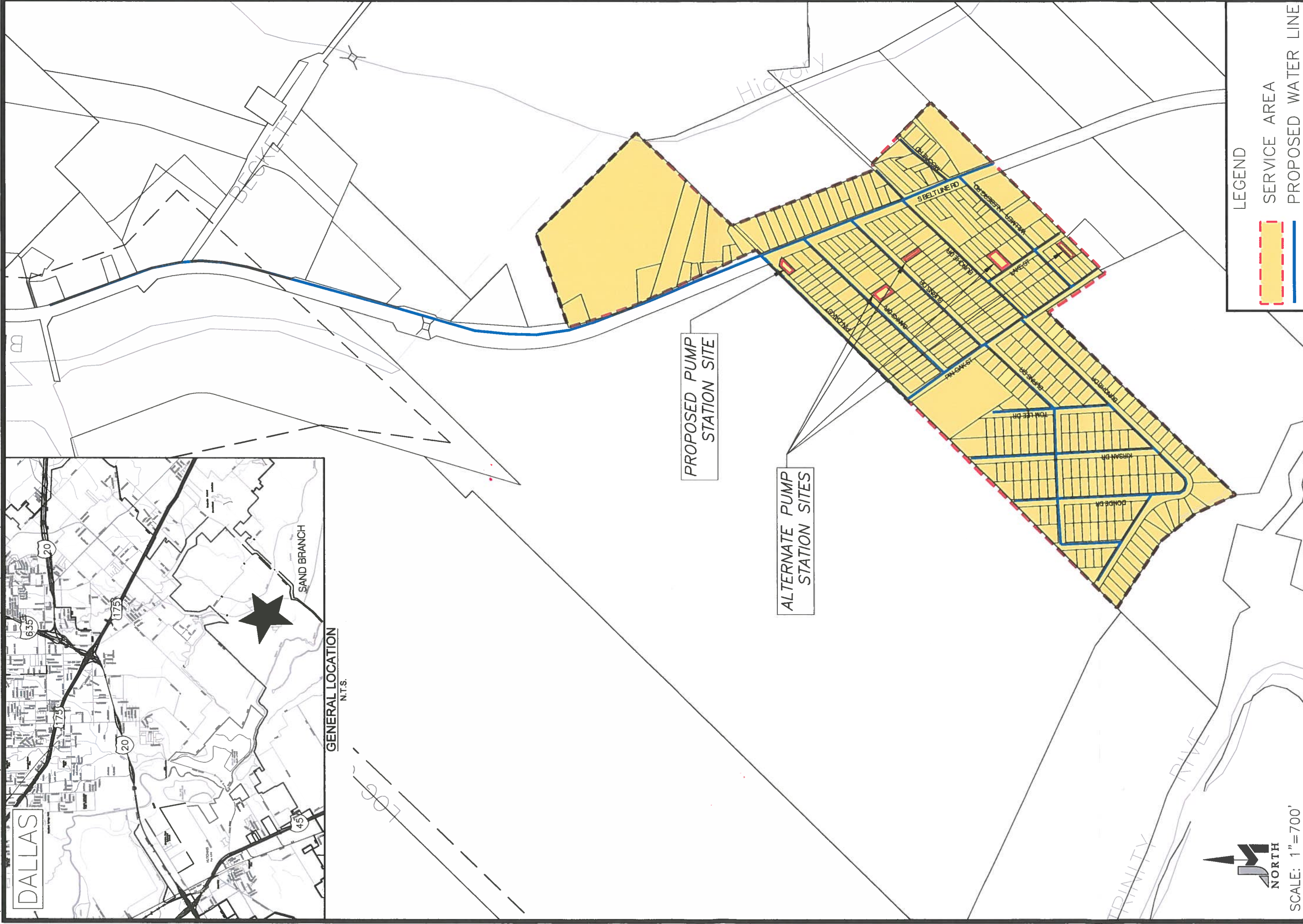
The proposed project presented in this Report is the most feasible alternative for the SDWSC to provide water and wastewater services to its residents and to comply with all State and Federal requirements. It is recommended that the SDWSC continue to pursue grant funding from the USDA-Rural Development in order to move forward with the design, acquisition and construction phases of the proposed improvements as recommended in this report.

Respectfully submitted,

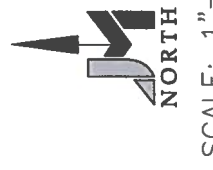
JACOB & MARTIN, LLC.  
Architects - Engineers

By:  \_\_\_\_\_  
Eduardo Aguilar, P.E.

**APPENDIX A – WATER SYSTEM PROJECT MAP**



GENERAL LOCATION  
N.T.S.



LEGEND

 SERVICE AREA

 PROPOSED WATER LINE

**SANDBRANCH DEVELOPMENT & W.S.C.**  
DALLAS COUNTY, TEXAS

**WATER SYSTEM PROJECT MAP**

OCTOBER 2016

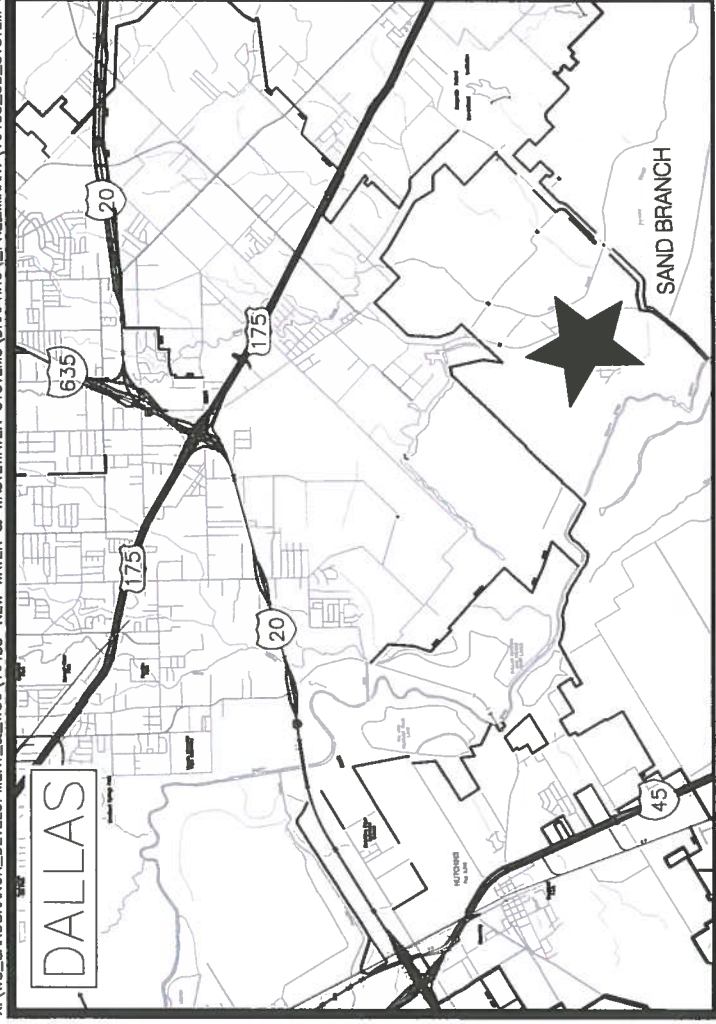
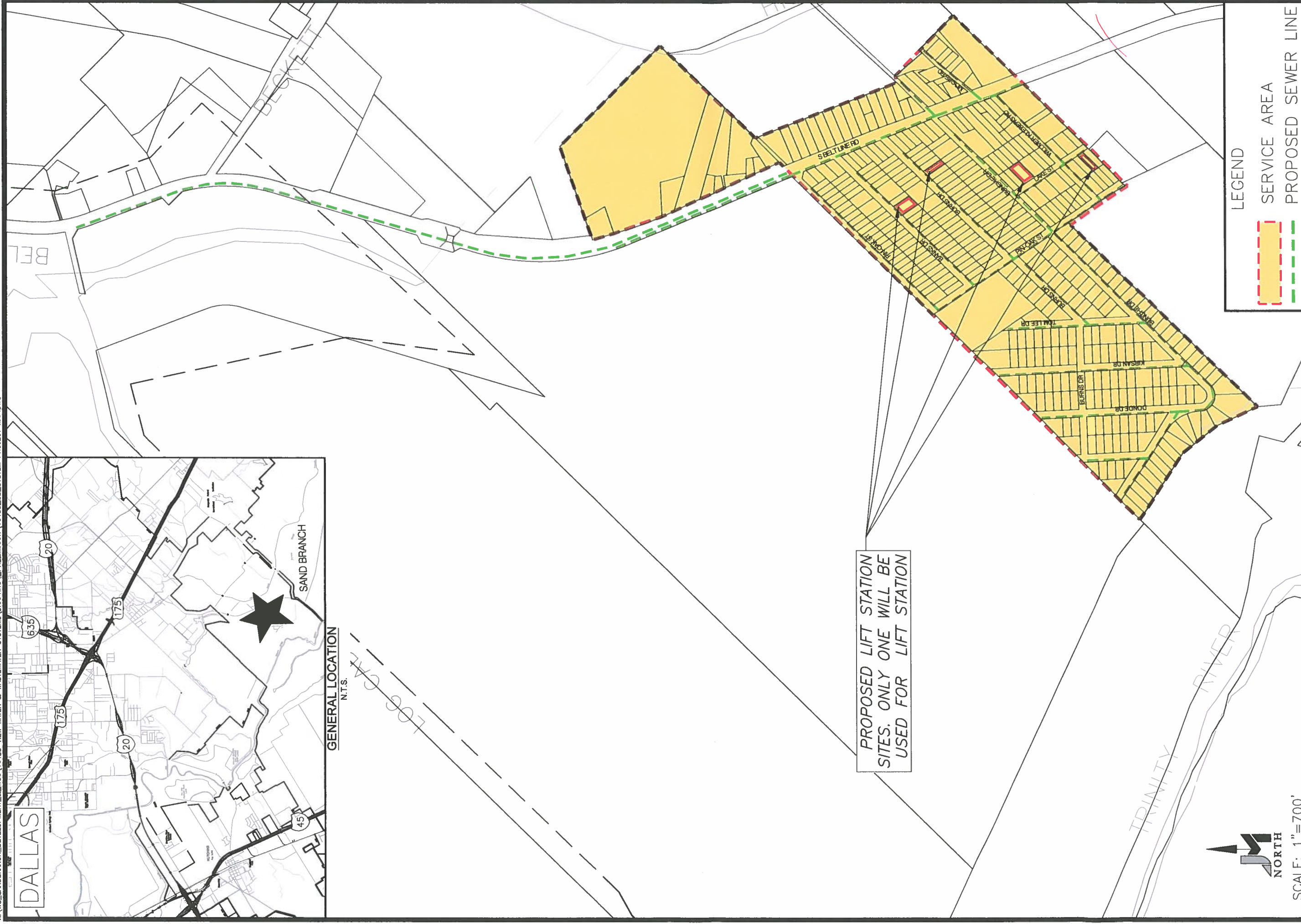
3485 CURRY LANE  
ABILENE, TX 79606  
325-895-1070  
1508 SANTA FE DR, STE 203  
WEATHERFORD, TX 76086  
817-594-9880  
FIRM# F-2448



**APPENDIX B – WASTERWATER SYSTEM PROJECT MAP**

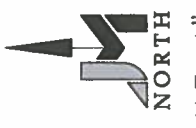


X:\WS\_SANDBRANCH\_DEVELOPMENT\_&\_WATER\_WASTEWATER\_SYSTEMS\DRAWING\PRELIMINARY\16483\_SB\_SYSTEM\_PROJECT\_MAP.DWG



GENERAL LOCATION  
N.T.S.

EGG CREEK



SCALE: 1" = 700'

LEGEND

SERVICE AREA

PROPOSED SEWER LINE



PROPOSED LIFT STATION  
SITES. ONLY ONE WILL BE  
USED FOR LIFT STATION

**SANDBRANCH DEVELOPMENT & W.S.C.**  
DALLAS COUNTY, TEXAS

**SEWER SYSTEM PROJECT MAP**

OCTOBER 2016

3465 CURRY LANE  
ABILENE, TX 79606  
325-686-1070  
1508 SANTA FE DR, STE 203  
WEATHERFORD, TX 76086  
817-584-9880

**JACOB  
MARTIN**

FIRM# F-2448

**APPENDIX C – PLANNING AREA PHOTOGRAPHS**





Intersection of South Belt Line Road and Pin Oak Street



Empty lot across Mt. Zion Baptist Church for proposed pump station or lift station site





Abandoned Sandbranch Community Center for proposed pump station or lift station site

**APPENDIX D – PROPOSED RATE SCHEDULE**

**RATE ANALYSIS - 100% LOAN  
SANDBRANCH DEVELOPMENT AND WSC  
RD PROJECT  
NOVEMBER 2016**

% cust.	# OF CONN.	WATER USAGE	MIN. INCOME	OVERAGE INCOME	TOTAL MONTH	WATER USE
0.025	2	0	\$437.50	\$0.00	\$437.50	0
0.025	2	1.0	\$437.50	\$0.00	\$437.50	1.75
0.200	14	3.0	\$3,500.00	\$560.00	\$4,060.00	42.00
0.100	7	5.0	\$1,750.00	\$560.00	\$2,310.00	35.00
0.200	14	7.0	\$3,500.00	\$1,680.00	\$5,180.00	98.00
0.330	23	9.0	\$5,775.00	\$3,696.00	\$9,471.00	207.90
0.100	7	15.0	\$1,750.00	\$1,960.00	\$3,710.00	105.00
0.025	2	25.0	\$437.50	\$840.00	\$1,277.50	43.75
<b>TOTALS</b>	<b>70</b>		<b>\$17,587.50</b>	<b>\$9,296.00</b>	<b>\$26,883.50</b>	<b>533.4</b>

MIN. BILL	MIN. AMT. GALS	PER THOU.	AVE. USE*	ANNUAL INCOME
\$250.00	1,000	\$20.00	7.5821	\$322,602.00

TOTAL NO. OF METERS  
70

\*Average water use is based on 246 gallons per residential connection per day from TWDB *Water Use of Texas Water Utilities Report, January 2015*