Final Report
Bell/Williamson Regional Water Supply Facility Plan

Prepared for:

JARRELL CHWERTNER WATER SUPPLY CORP.

and the

TEXAS WATER DEVELOPMENT BOARD

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
05/31/2011

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Engineers, Inc.
TBPE Registered Firm No.: F-400

NEI
Naismith
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May 31, 2011

NEI Project No. 8248/TWDB Contract No. 0904830943

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1. BACKGROUND INFORMATION

1.1. History & Introduction

Area Description, History & Reason for Planning Effort

Rapid growth and development in Bell and Williamson Counties in recent years especially along the I-35 corridor has brought to light the urgency for each community to secure water for the existing and future users. The plan participants are currently obtaining the bulk of their water from groundwater in the in the Edwards and Trinity Aquifers, both have been decreasing in quality and quantity for the past several years. Many of the participants have an ongoing contractual relationship with either the Brazos River Authority, Central Texas Water Supply Corporation or other water wholesale providers to purchase surface water as a new source of water for the region. However, the plan participants do not have the infrastructure in place to access this water and in many cases they do not have the financial means to construct the necessary infrastructure to access the water. As a consequence of these factors it became apparent to the participants that there was a need for a regional planning study to identify alternatives for accessing this contracted water. The Jarrell Schwertner Water Supply Corporation ("JSWSC") approached Naismith Engineering, Inc. ("NEI") in the fall of 2008 regarding their concerns about existing and future water supplies and demands for their service area and the different communities throughout both Bell and Williamson counties. By December of 2008 JSWSC had eight additional public water supply entities and the Brazos River Authority onboard to provide the matching funds necessary to apply for matching funds via a Research and Planning Grant from the Texas Water Development Board ("TWDB").

1.2. Project Participants / Definition of Planning Area

1.2.1 Project Participants

In addition to planning assistance from the TWDB and the input from the general public the Steering Committee for the project was made up of eight water supply entities whose financial contributions supplied the necessary matching funds for the project. These eight participants were:

- Armstrong Water Supply Corporation
- Brazos River Authority
- Capital Land and Livestock MUD No. 1
- Chisholm Trail Water Supply
- City of Florence
- Jarrell Schwertner Water Supply Corporation
- Jonah Water Special Use District
- Sonterra Municipal Utility District

1.2.2 Project Funding

The proposed planning cost was $160,000.00 of which $80,000.00 would be funded through the TWDB Research and Planning Grant Program and the remaining $80,000.000 to be provide by participant contributions.

1.2.3 Project Boundaries

The boundaries of the project are confined to Bell and Williamson Counties. The boundaries of the Project Area are shown in **Figure 1.** The majority of the proposed improvement projects will be constructed within the service areas of each of the plan participants. The Project Area covers of a total of approximately 790 square miles.

1.2.4 Planning Area Definition, Description, and Characterization

The “Planning Area” generally covers northeastern Williamson County and southeastern Bell County including the incorporated cities of Jarrell, Florence, Holland, as well as the service areas of the eight participants. This creates a large project area footprint and is shown in **Figure 2**.

1.3. Description of Planning Process

1.3.1 Organization

The project organization is divided into two parts, 50 percent of the project was funded through the Texas Water Development Board and the following eight Plan Participants each provided a portion of the remaining 50 percent of the matching funds necessary to fund the project:

- Jarrell Schwertner WSC
- Armstrong WSC
- Brazos River Authority
- Capital Land and Livestock MUD No. 1
- City of Florence
- Chisholm Trail SUD
- Jonah SUD
- Sonterra MUD

1.3.2 Meetings

Meetings were held during the course of the project in an effort to inform the general public on the findings and progress of the planning effort, and to receive feedback from the Project Participants (Steering Committee). Three public meetings were held for the project including the September 16, 2009, October 27, 2010, and November 17, 2010 meetings. Below is a complete list of the meetings that were held over the course of the planning period with the time and location of each meeting noted in parentheses. In addition to the Plan Participants the Planning Progress Meetings were also open to the general public.

MEETING DATES, TIMES and LOCATIONS:

- Kick-off First Public Meeting, **September 16, 2009** (6:30 pm, Jarrell Community Center, Jarrell, Texas)
- Planning Progress Meeting, **March 11, 2010** (1:30 pm, Jarrell Community Center, Jarrell, Texas)
- Planning Progress Meeting, **June 16, 2010** (1:30 pm, Jonah Water SUD, Hutto, Texas).
- Planning Progress Meeting, **September 9, 2010** (1:30 pm, Jonah Water SUD, Hutto, Texas).
- Planning Progress Meeting, **September 30, 2010** (1:30 pm, Jonah Water SUD, Hutto, Texas).
- Planning Progress Meeting, **October 19, 2010** (1:30 pm, Jonah Water SUD, Hutto, Texas).
- Second Public Meeting, **October 27, 2010** (6:30 pm, Jarrell Community Center, Jarrell, Texas)

- Planning Progress Meeting, **November 4, 2010** (1:30 pm, Jonah Water SUD, Hutto, Texas).
- Third Public Meeting, **November 17, 2010** (6:30 pm, Jarrell Community Center, Jarrell, Texas)
- Planning Progress Meeting**, December 16, 2010** (1:30 pm, Jonah Water SUD, Hutto, Texas).
- Draft Report Review Meeting, **March 30, 2011** (1:30 pm, Jonah Water SUD, Hutto, Texas).

2. WATER DEMANDS

Overall water demand for an area includes water used for a variety of purposes. The total water demand for an area is the total consumptive water use for all the purposes identified within that area. The Brazos G Regional Water Plan has identified municipal, industrial, steam-electric, mining, irrigation, and livestock as the major consumptive water use categories within the Brazos G planning region (**Fig. 2.1**). While non-municipal water demands are important, the non-municipal consumptive use categories represent less than 10 percent of the total water demands identified for Bell and Williamson Counties in the Region G 2011 IPP. Since the non-municipal water usage in and around the planning area is small compared to the municipal usage, and because the participant's long-term water needs are for municipal supply, this planning effort has focused on the municipal water demands of the area and the individual project participants.

For this planning effort, water demands within the project area have been calculated based on the projected municipal water demands of the individual project participants. "Municipal water use is defined as water that is used by households (e.g., drinking, bathing, food preparation, dishwashing, laundry, flushing toilets, lawn watering and landscaping, swimming pools), commercial establishments, (e.g., restaurants, car washes, hotels, laundromats, and office buildings) and for fire protection, public recreation and sanitation" (from §2.3.1 of Region G 2011 IPP, pg. 2-14). Municipal water use does not include water used for livestock, agricultural irrigation, mining, steam-electric power generation, and manufacturing.

Municipal demand has been estimated by multiplying the projected population by the per capita water usage.

2.1. Population Estimates

Population within the project area is projected to grow significantly within the coming decades. Proximity to the I-35 and Texas 130 roadway corridors will contribute to the rapid growth expected within the project area. The overall population of the planning area is projected to increase from 41,705 in 2010 to 106,724 in 2030, an increase of 256 percent (annual increase of 4.8 percent).

For individual project participants that have been identified as a separate Water User Group (WUG) in the Region G Water Plan the population estimates directly from the Plan were used (Table 2-1 from Section 2 of Region G 2011 IPP). In cases where a project participant was not identified as an individual WUG in the Region G Water Plan, population estimates were based on:

1. TCEQ Water Utility Database (WUD) population number and growth rate of a neighboring water system (Armstrong WSC);
2. Population estimates and growth rates supplied by the water system (Sonterra MUD, Capital Land & Livestock MUD No. 1).

Population numbers begin in the year 2010 and, similar to the Region G Water Plan, are provided at 10 year intervals for the next 50 years. This study also includes population estimates at 5 year intervals for the first 20 years, therefore population numbers for the years 2015 and 2025 are also included. The population of the individual project participants is summarized in **Table 2.1**.

2.1.1 Existing

The planning area includes the northern portion of Williamson County and the southern portion of Bell County. This planning area can be characterized as a mixture of rural and small, rural town centers. Large population centers are located on the southern end of the planning area and include the cities of Georgetown and Round Rock. The majority of the existing population lies within the city limits and extraterritorial jurisdiction (ETJ) of the urban communities.

The population of the planning area and surrounding communities has increased significantly over the past 20 years particularly in the cities of Round Rock and Georgetown. The population boom has strained existing public infrastructure for all the communities and entities within the planning area.

Table 2.1: Population – Project Participants:

System	2010	2015	2020	2025	2030	2040	2050	2060
Armstrong WSC[1]	2,397	2,550	2,712	2,851	2,997	3,181	3,299	3,385
Capital Land & Livestock[2]	-	750	6,000	9,487	15,000	37,500	48,240	48,240
Chisholm Trail SUD	19,846	24,124	29,323	34,478	40,539	52,672	65,837	79,946
City of Florence	1,364	1,492	1,632	1,784	1,951	2,298	2,675	3,079
JSWSC[3]	5,313	6,005	6,787	7,587	8,482	10,246	12,114	14,091
Jonah Water SUD	10,685	12,194	13,915	15,718	17,755	21,930	26,472	31,344
Sonterra MUD[2]	2,100	4,583	10,000	14,142	20,000	20,000	20,000	20,000
TOTAL	**41,705**	**53,935**	**70,369**	**86,039**	**106,724**	**147,827**	**178,637**	**200,085**
City of Georgetown	49,112	57,357	66,987	76,882	88,239	111,348	136,489	163,453

1 – population estimates for 2010 from TCEQ WUD; growth rates for subsequent years are equal to Salado WSC's.

2 – population and growth rates estimated by project participant.

3 – population estimates combine those for JSWSC & City of Jarrell; in the Region G 2011 IPP the City of Jarrell is split out as a separate WUG.

2.1.2 Future: 5 → 50 years

The planning area is expected to continue to experience significant growth in future years. The larger cities will continue to see increases in their populations. Future years will see a significant shift in land use within the planning area, as land currently used for agricultural and livestock operations is developed into commercial properties and single-family subdivisions. The fast growing population in this area of central Texas area will continue to necessitate that community officials and leaders focus significant efforts on long-term planning for their communities.

2.1.3 Project Area

The existing Project Area (**Figure 1**), comprised of the paid project participants, is a mostly rural area with rural town centers and traditional, suburban single-family subdivisions. In the coming years the Project Area is projected to experience a dramatic increase in population. Within 15 years the overall population of the Project Area is expected to double, with the population of the Project Area expected to surpass the City of Georgetown's population within the next 10 years.

Population estimates for the Project Area show that the population will surpass 100,000 within the Project's 20 year planning time-frame and that the 50 year population for the Project Area will surpass 200,000 (**Table 2.1**). It should be emphasized that population estimates for time periods this far in advance are uncertain and it possible that, should a large employer locate within the Project Area, the population estimates could be greatly affected by such activity.

2.2. Per Capita Usage

Similar to the population estimates, the municipal per capita water use for the individual water systems were taken from the individual WUG identified in the Region G Water Plan (Table 2-4 from Section 2 of the Region G 2011 IPP). In the case of systems not identified as an individual WUG in the Region G Water Plan the municipal per capita water use of a nearby WUG was used.

Armstrong WSC	=	Jarrell Schwertner WSC
Capital Land & Livestock MUD #1	=	Jarrell Schwertner WSC (@ year 2060 levels)
Sonterra MUD	=	Jonah Water SUD

The per capita water use is based on the expected average annual water usage of the individual user. A summary of the per capita water use estimates for the project participants is included in **Table 2.2**.

Table 2.2: Per Capita Water Usage – Project Participants (gallons / person / day)

System	2010	2015	2020	2025	2030	2040	2050	2060
Armstrong WSC	181	180	179	178	178	177	175	175
Capital Land & Livestock	175	175	175	175	175	175	175	175
Chisholm Trail SUD	142	144	145	146	146	147	150	152
City of Florence	158	157	155	154	154	152	150	149
JSWSC	181	180	179	178	178	177	175	175
Jonah Water SUD	140	142	143	142	142	141	139	138
Sonterra MUD	140	142	143	142	142	141	139	138
TOTAL - Average	**157**	**156**	**156**	**155**	**155**	**154**	**156**	**157**
City of Georgetown	188	187	186	185	184	183	183	183

2.3. Water Demands

As stated previously, the projected water usage calculations included in this report focus on municipal water demands. "Municipal water demand projections are computed by multiplying the projected population of an entity by the entity's projected per capita water use, adjusted downward for expected conservation savings due primarily to continued implementation of the 1991 State Water-Efficient Plumbing Act. Full implementation of the Act – retrofit of all existing fixtures with water-efficient fixtures and water-efficient fixtures installed in all new construction – was assumed to occur by Year 2045" (from pg. 2-17 of §2.3.1 of the Region G 2011 IPP).

Water demand numbers as calculated above represent the "average day" water demand for a system. The yearly or annual water demand for a system can be calculated by multiplying the system's "average day" demand by 365 days, and represents the volume of water used by the water system in a "typical" year.

Other water demand numbers identified in the report include Maximum Day and Peak Hour demands. These demands are defined by TCEQ Chapter 290 rules in the following manner:

Average Day Demand	=	Population x Per Capita Water Usage
Annual Water Demand	=	Avg. Day Demand x 365 days
Maximum Day Demand*	=	2.4 x Avg. Day Demand
Peak Hourly Demand*	=	1.25 x Maximum Day Demand (3.0 x Avg. Day Demand)

* - from TCEQ Chapter 290 Subchapter D – Rules and Regulations for Public Water Systems (§290.38 – Definitions).

2.3.1 Existing

The existing municipal water demands represented in this report reflect water volumes estimated for the year 2010. Existing municipal water demands range from no demand for Capital Land & Livestock MUD No. 1 (currently no municipal demand) to a high of 3,157 acre-feet for Chisholm Trail SUD. Existing municipal water demands for Project Participants are summarized in Table 3.

2.3.2 Future: 5 → 50 years

Municipal water demand in the planning area will increase by approximately 161 percent in the next 20 years and will increase by approximately 402 percent by the year 2060. Project Participants, along with neighboring cities and political subdivisions will continue to experience pressure to deliver an adequate supply of drinking water to their growing population.

2.3.3 Project Area

Paralleling the significant population growth expected for the Project Area in the coming years, the increase in municipal water demand with be significant. Most of the Project Participants are projected to experience increased water demands of well over 100 percent including Chisholm Trail SUD (331 percent increase) and Sonterra MUD (840 percent) increase. Capital Land and Livestock MUD No. 1's annual municipal water demand is projected to increase from 0 acre-feet to 9,457 acre-feet by the year 2050.

During the project planning effort's 20 year planning time-frame Sonterra MUD will experience an increase annual municipal water demand of over 860 percent. The total municipal water demand of all the Project Participants will more than double during this same 20 year planning time-frame (**Table 2.3**).

Table 2.3: Annual Water Demand – Project Participants (acre-feet / year)

System	2010	2015	2020	2025	2030	2040	2050	2060
Armstrong WSC	486	514	544	568	594	624	647	664
Capital Land & Livestock[1]	0	147	1,176	2,058	2,941	7,351	9,457	9,457
Chisholm Trail SUD	3,157	3,878	4,763	5,639	6,676	8,851	11,210	13,613
City of Florence	241	262	283	307	332	386	446	514
JSWSC	1,077	1,211	1,361	1,513	1,682	2,009	2,375	2,762
Jonah Water SUD	1,676	1,933	2,229	2,500	2,804	3,415	4,092	4,845
Sonterra MUD	329	726	1,602	2,250	3,159	3,114	3,092	3,092
TOTAL	**6,966**	**8,671**	**11,958**	**14,835**	**18,188**	**25,750**	**31,319**	**34,947**
City of Georgetown	10,343	12,000	13,957	16,000	18,188	22,826	27,980	33,508

1 – Capital Land & Livestock's Annual Water Demand is based solely on municipal water demand.

2 – Sonterra MUD is projected to be near full build-out by the year 2030

3 – Sonterra MUD's expected Annual Water Demand decreases for the years 2040 – 2060 due to anticipated conservation efforts that will reduce the per capita water consumption

3. WATER SUPPLY

3.1. Water Sources for Project Participants

The Project Participants obtain water through surface water or groundwater sources. Some of the project participants utilize either surface water or groundwater, while a some of the project participants utilize both surface water and groundwater (**Fig. 2, 3, and 3-1**). Water supply volumes are represented in this study as surface water rights, water treatment plant capacity, groundwater well capacity, and "managed" available groundwater. Each of these water volumes represents a volume of water available to the water system based on certain constraints.

3.1.1 Surface Water

The Project Area lies wholly within the boundaries of the Brazos River Basin. All surface water currently available and utilized by the Project Participants is from the Brazos River Basin.

3.1.2 Groundwater

The Edwards – Balcones Fault Zone (BFZ) Aquifer and the Trinity Aquifer are the major aquifers underlying the Project Area (**Fig. 4**). Historically, the aquifers have combined to provide an adequate, good quality supply of water to the central and western portions of Williamson and Bell Counties. The increase in water demand and the susceptibility to depletion during prolonged periods of drought conditions (particularly the Edwards – BFZ Aquifer) have made reliance on groundwater as the sole source of municipal water supply less desirable.

3.2. Surface Water Sources

The Brazos River and its tributaries serve as the source of surface water for the project area. Much of the surface water usage and other activity related to or involving surface water resources in the Brazos River Basin is governed by the Brazos River Authority (BRA) headquartered in Waco, Texas.

3.2.1 Introduction

Surface water used for municipal supply in the Project Area is mostly supplied from one of four reservoirs owned by the U.S. Army Corps of Engineers (USACE) Lake Belton, Lake Georgetown, Lake Granger and Lake Stillhouse Hollow. The water rights permit for each of these reservoirs is owned by the BRA. For the four reservoirs the BRA is authorized to store a combined 795,000 acre-feet and is authorized to divert up to a combined 201,475 acre-feet per year (**Table 3.1**).

Table 3.1: Planning Area Reservoirs-Storage, Diversion & Yield Volumes (acre-feet / year)

Reservoir[1]	Authorized Storage (acre-feet)	Authorized Diversion[2] (acre-feet)	Yield Volume[3] (acre-feet/yr)	
			2000	2060
Lake Belton	457,600	100,257	100,257	100,257
Lake Georgetown	37,100	13,610	11,803	12,403
Lake Granger	65,500	19,840	18,007	15,987
Lake Stillhouse Hollow	235,700	67,768	66,205	67,768
TOTAL	**795,900**	**201,475**	**196,272**	**196,415**

1 – reservoirs owned by the U.S. Army Corps of Engineers;
2 – water rights permit owned by Brazos River Authority, from Table 3.1-1 of the Region G 2011 IPP;
3 – firm yield based on Brazos G WAM (Water Availability Model), from Table 3.2-2 of the Region G 2011 IPP

The Brazos G Regional Water Planning Group (BGRWPG) has, using the Brazos G Water Availability Model (WAM), during the Region G Planning effort calculated the firm yield of each reservoir. The firm yield was calculated for current conditions, represented in Table 3.1 as the year 2000, and for future conditions, represented in the table as the year 2060. The firm yield for the four reservoirs combined was established by the Brazos G WAM at 196,415 acre-feet per year for the year 2060 (**Table 3.1**).

3.2.2 Surface Water Rights

The amount of surface water that an entity is allowed to withdraw based on a permit from the TCEQ. This amount is often measured in acre-feet/year. No Project Participant within the Project Area holds or owns an individual water rights permit with the TCEQ. For the individual water systems within the planning area their surface water rights have been obtained by contracting directly with the BRA, who actually own the water rights by virtue of a water rights permit from the TCEQ, or by contracting within another entity that has contracted water rights with the BRA. A summary of these arrangements are included in **Table 3.2**.

Table 3.2: Existing TCEQ Surface Water Rights – Project Participants (acre-feet / year)

System	Permit Amt. ac-ft/year	Source	Comments
Armstrong WSC	--	--	No TCEQ water right permit. No surface water contract.
Capital Land & Livestock	--	--	No TCEQ water right permit. No surface water contract.
Chisholm Trail SUD	--	--	No TCEQ water right permit. Surface water contract w/ BRA.
City of Florence	--	--	No TCEQ water right permit. Surface water contract w Chisholm Trail SUD.
JSWSC	--	--	No TCEQ water right permit. Surface water contract w/ BRA.
Jonah Water SUD	--	--	No TCEQ water right permit. Surface water contract w/ BRA.
Sonterra MUD	--	--	No TCEQ water right permit. No surface water contract.
TOTAL			
BRA	**265,275**	Lakes Georgetown, Granger, Belton, Stillhouse Hollow, Travis/Buchanan	Includes water rights held in and around the project area.

3.2.3 Surface WTP Capacity – Project Participants/Project Area

The ability to provide water from surface water sources depends not only on the ability of an entity to legally obtain water through a water rights permit or contract, but also depends on the treatment capacity of the water treatment plant that will treat the water prior to use by the a systems customers.

For consistency in establishing a water treatment plant's capacity this planning effort adopted the methodology employed in the Region G 2011 IPP. The Region G 2011 IPP establishes the Normal Rated Design (NRD) as the water treatment facility's treatment capacity with all units operational. The Average Annual Capacity (AAC) of the treatment facility is calculated as 50 percent of the NRD to account for peaking. The relationship between AAC and NRD can be summarized as follows:

Average Annual Capacity (AAC)* = ½ x Normal Rated Design

Normal Rated Design (NRD) = WTP Peak Capacity (with all units operational)

= Maximum Day Demand

At the present time, Chisholm Trail SUD and the BRA are the only Project Participants that own and operate municipal surface water treatment facilities within the Project Area. Chisholm Trail SUD's source of treatment capacity is based on a contract with the City of Georgetown which gave the District ownership of a portion of the treatment capacity in the City of Georgetown's water treatment facility located on the north side of Lake Georgetown. This water treatment facility is currently undergoing an 8.8 MGD upgrade in treatment capacity (based on the NRD). Chisholm Trail SUD will own 50 percent of this additional treatment capacity bringing its total capacity to 9.59 MGD. The BRA operates the Lake Granger Water Treatment Plant which is located on the south side of Lake Granger in eastern Williamson County and currently treats the surface water from Lake Granger. The current capacity of the BRA's Lake Granger WTP is 13.0 MGD (based on NRD). A summary of the capacities of the surface water treatment plants in the Project Area is included in **Table 3.3**.

Table 3.3: Capacity of Existing Surface Water Treatment Plants

System	Normal Rated Design (MGD)	Normal Rated Design (ac-ft/yr)	Average Annual Capacity (MGD)	Average Annual Capacity (ac-ft/yr)	Region G Annual Capacity (ac-ft/yr)
Armstrong WSC	--	--	--	--	--[3]
Capital Land & Livestock	--	--	--	--	--[3]
Chisholm Trail SUD	9.59[1]	10,743	4.80	5,372	9,390
City of Florence	--	--	--	--	0
JSWSC	--	--	--	--	848
Jonah Water SUD	--	--	--	--	2,068
Sonterra MUD	--	--	--	--	--[3]
TOTAL	**9.59**	**10,743**	**4.80**	**5,372**	**5,372**
City of Georgetown[2]	28.46	31,881	14.23	15,441	17,379[2]
BRA – Lake Granger	13.00	14,563	6.50	7,281	7,281

1 – The Normal Rated Design capacity shown for Chisholm Trail SUD is based on their ownership, by Contract, of a portion of the City of Georgetown's Lake Georgetown water treatment plant; Chisholm Trail SUD has 5.19 MGD capacity of the City of Georgetown's WTP and will soon have an additional 4.4 MGD of capacity from the 8.8 MGD upgrade to the existing facility (Chisholm Trail SUD has 50 percent of this expanded capacity and the City has the remaining 50 percent capacity).

2 – The Region G 2011 IPP listed the Average Annual Capacity of the City of Georgetown Surface Water Treatment Plants at 24.3 MGD (27,271 ac-ft/yr); however, due to limitations of infrastructure, the "constrained" capacity is listed in the Plan as 15.5 MGD (17,379 ac-ft/yr); the **15.5 MGD (17,379** ac-ft/yr) figure is used to compare supply vs. demand in the Region G Water Plan; the **City of Georgetown** lists its existing WTP capacities as totaling **24.06 MGD (26,952 ac-ft/yr)** (Lake Georgetown = 17.60 MGD; San Gabriel Park = 6.31 MGD; Southside = 3.14 MGD) – note that the San Gabriel Park and Southside WTPs are Groundwater Under the Influence of Surface Water; because the water from the groundwater wells requires treatment, these "plants" will be considered surface water treatment plants; also note that the City of Georgetown is constructing an upgrade to the Lake Georgetown WTP – a total increase of 8.8 MGD of which 4.4 MGD will be the City of Georgetown's and 4.4 MGD will be Chisholm Trail SUD's.

3 – not a separate Water User Group (WUG) in the Region G 2011 I.P.P.

3.2.4 Surface Water Contracts (raw & treated water)

Project Participants currently holds a variety of contracts related to the purchase and sale of surface in the planning area. The contacts include agreements for the purchase of raw, untreated surface water, the purchase of treated surface water, as well as the sale of treated surface water.

Currently, Chisholm Trail SUD, the City of Florence, Jarrell Schwertner WSC, and Jonah Water SUD have contracts to purchase untreated surface water. A summary of these existing contracts is shown in **Table 3.4**.

Table 3.4: Existing Contracts to Purchase Raw Surface Water – Project Participants (acre-feet / year)

System	Contract Amt. ac-ft/yr	Delivery Capacity ac-ft/yr	Source	Comments
Armstrong WSC	--	--		
Capital Land & Livestock	--	--	--	--
Chisholm Trail SUD	11,100	9.9 MGD	L. Stillhouse Hollow = 4,760 ac-ft; L. Georgetown = 6,340 ac-ft	Contract with BRA -- 11,100 ac-ft from Little River Basin.
City of Florence	500	--	L. Stillhouse Hollow	Contract with Chisholm Trail SUD. No existing infrastructure to access contracted water.
JSWSC	1,000	--	L. Belton	Contract with BRA. No existing infrastructure to access reserved water.
Jonah Water SUD	2,439	--	L. Stillhouse Hollow	Contracted with BRA. No existing infrastructure to access reserved water.
Sonterra MUD	--	--	--	--
TOTAL	**16,621**	--	--	--
City of Georgetown	32,168	--	L. Georgetown & L. Stillhouse Hollow	Contract(s) with BRA.
BRA			L. Georgetown, Granger, Stillhouse Hollow, Belton	Supplies surface water within project area.

Currently, Chisholm Trail SUD, the City of Florence, Jarrell Schwertner WSC, and Jonah Water SUD have contracts to purchase treated surface water. A summary of these existing contracts is shown in **Table 3.5**.

Table 3.5: Treated Surface Water Contracts - Purchase

System	Surface Water (ac-ft/yr)	Comments
Armstrong WSC	626	Take or Pay contract w/ CTWSC.
Capital Land & Livestock	--	--
Chisholm Trail SUD	10,743	Contract w/ City of Georgetown – 5.19 MGD (5,814 ac-ft/yr) + 4.40 MGD (4,929 ac-ft/yr) = 10,743 ac-ft/yr
City of Florence	--	--
JSWSC	2	Contract w/ CTWSC.
Jonah Water SUD	1,150	This is a "needs met" contract for a peak delivery rate of approx. 1,500 gpm or an annual average flow of 1,150 ac-ft/yr (based on 50 percent of 1,500 gpm pumping rate x 95 percent). Existing contract w/ BRA for 2,439 ac-ft/yr, however no existing infrastructure to access reserved water.
Sonterra MUD	--	--
TOTAL	**7,578**	--
City of Georgetown	**--**	--
BRA – Lake Granger	**--**	--

Currently, Chisholm Trail SUD, the City of Florence, Jarrell Schwertner WSC, and Jonah Water SUD have contracts to purchase treated surface water. A summary of these existing contracts is shown in **Table 3.6**.

Table 3.6: Treated Water Contracts – Sell

System	Surface Water (ac-ft/yr)	Comments
Armstrong WSC	--	
Capital Land & Livestock	--	
Chisholm Trail SUD	112	Contract w/ City of Liberty Hill; GW/SW not specified.
City of Florence	--	
JSWSC	--	
Jonah Water SUD	--	
Sonterra MUD	--	
TOTAL	112	
City of Georgetown	10,743	C. of Georgetown has contracts w/ Chisholm Trail SUD to treat 10,743 ac-ft/yr (9.59 MGD) at the L. Georgetown WTP.
BRA – Lake Granger	--	Contracts with C. of Taylor, Jonah Water SUD,

3.2.5 Surface Water Supply Constraints

Surface water supplies can be constrained in a number of different ways. The most common constraints effecting surface water supplies include the firm yield of the supplying reservoir, a lack of or inadequate water rights, a lack of or inadequate water supply contracts, an undersized or nonexistent delivery infrastructure, or a lack of adequate treatment capacity. Each possible constraint was evaluated for the Project Participants individual water systems.

A constraint common to the City of Florence, Jonah Water SUD, and JSWSC is the inability to access currently contracted surface water. In the case of the City of Florence the lack of a connecting pipeline with Chisholm Trail SUD prevents the City from accessing 500 acre-feet of treated surface water. For Jonah Water SUD and Jarrell Schwertner WSC, the lack of a delivery pipeline prevents them from accessing 2,439 acre-feet and 1,000 acre-feet, respectively, of surface water contracted through the BRA.

3.2.6 Surface Water Quality Issues

As documented in the Region G 2011 IPP the overall water quality in the tributaries of the Brazos River is generally good, although the main stem of the Brazos River is subject to high concentrations of chloride. The IPP attributed three factors to this increase in chloride levels are wastewater disposal, high-density agricultural activities, and naturally-occurring salinity. The first two factors can be attributed to the growth of both population and the economy which can be expected to continue into the future, particularly within the Project Area.

Specific to the Project Area, the following surface water quality issues were identified in the Region G 2011 IPP:

1. Lake Granger has been experiencing aquatic plant growth that has been attributed to increased nutrient loading.
2. The water quality of Lake Georgetown and Lake Granger has begun to show increasing trends in chloride, sulfate, and/or TDS. Some entities that divert water directly from these reservoirs are finding it necessary to utilize advance treatment systems in order to meet drinking water standards.

3. The San Gabriel River, TCEQ Stream Segment No. 1214, is currently listed on the TCEQ's 2008 303(d) list for impaired water quality attributed to chlorides, sulfate, and bacteria.
4. The Lampasas River above Lake Stillhouse Hollow, TCEQ Stream Segment No. 1217, is currently listed on the TCEQ's 2008 303(d) for impaired water quality attributed to bacteria.

3.3. Groundwater Sources

As previously stated, the Project Participants obtain water through surface water or groundwater sources. Some of the project participants utilize either surface water or groundwater, while some of the project participants utilize both surface water and groundwater (**Fig. 2, 3, and 3-1**). Water supply volumes are represented in this study as surface water rights, water treatment plant capacity, groundwater well capacity, and "managed" available groundwater. Each of these water volumes represents a volume of water available to the water system based on certain constraints.

3.3.1 Introduction

Groundwater used for municipal supply by the Project Participants is generally supplied by the two major aquifers in the Project Area, the Trinity Aquifer and the northern segment of the Edwards – Balcones Fault Zone (BFZ) Aquifer (**Fig. 4**). These two aquifers produce water that is of generally of good quality. Population growth and the increased pumping of groundwater to meet the increased water demand have strained, in some cases, the abilities of these aquifers to provide water in the necessary qualities.

3.3.2 Area Aquifers

Edwards – Balcones Fault Zone (BFZ) Aquifer

The Edwards – BFZ Aquifer in characterized by porous limestone that possesses significant water bearing zones within the Project Area (**Fig. 5**). During times of adequate or above-normal rainfalls the aquifer is recharged from rainfall infiltration and from seepage in stream beds, and during this time can produce relatively large quantities of water. However, the aquifer is very susceptible to droughts of extended periods of below average rainfall which can severely reduce to production of municipal groundwater wells.

In the recent past, wells of the Edwards – BFZ Aquifer within the Project Area have experienced large declines in water levels, necessitating the lowering of the well pump or temporarily discontinuing pumping operations. These incidents have reinforced the idea of the need for public water systems to shift to surface water to supply some or all of their increased water needs.

The water in the Edwards – BFZ aquifer is usually hard, but of good quality. Total dissolved solids of above 1,000 mg/l are found in wells drilled to the east of I-35. The dividing line between water with a TDS of less than or greater than 1,000 mg/l has been referred to as the "bad water line". Some wells on the eastside of I-35 also have a high fluoride content.

Trinity Aquifer

The Trinity Aquifer in Bell and Williamson Counties is a confined aquifer that produces drinking water of good quality for some, but not all, of its users (**Fig. 6**). Well yields are generally good, however some existing wells have experienced a decline in pumping rates in areas that have seen a significant decrease in water levels. Some municipal water systems supplied by the Trinity Aquifer must treat using sequestering agents due to high iron or manganese levels. Hydrogen sulfide is also an issue for some municipal water systems. The portion of the aquifer under the east side of Williamson County is often characterized by increased solids concentration and may require treatment or blending with groundwater to meet drinking water standards.

3.3.3 Groundwater Well Capacity

Groundwater well capacities were generally obtained from the individual Project Participant, or if necessary, from the TCEQ's Water Utility Database. The well capacities represent "tested" or measured, instantaneous well capacities and were therefore divided by two in order to account for peaking conditions of the water distribution system. The well capacities were further reduced by 5 percent to account of well downtime due to routine maintenance or repairs. In summary:

Tested or "Listed" Well Capacity = Well Capacity as listed in the TCEQ's WUD or as provided by Well Owner (system capacity was obtained by simply adding together individual well capacities)

Annual Well Capacity = (Tested or "Listed" Well Capacity ÷ 2) x 95 percent

The capacity of existing groundwater wells for the Project Participants is shown in **Table 3.7**.

Table 3.7: Capacity of Existing Wells

System	Tested or "Listed" Well Capacity (gpm)	Tested or "Listed" Well Capacity (ac-ft/yr)	Annual Well Capacity (gpm)	Annual Well Capacity (ac-ft/yr)	Region G Well Capacity[1] (ac-ft/yr)
Armstrong WSC	250	403	119	191	--[2]
Capital Land & Livestock	--	--	--	0[3]	--[2]
Chisholm Trail SUD	3,050	4,920	1,449	2,337*	399
City of Florence	298	481	142	229	171
JSWSC	1,141	1,841	542	874*	135
Jonah Water SUD	3,071	4,954	1,459	2,354*	431
Sonterra MUD	1,225	1,976	582	939	--[2]
TOTAL	**9,172**	**14,796**	**4,357**	**7,028**	**7,214**
City of Georgetown	--[4]	--	--	--	45[3]
BRA – Lake Granger	--	--	--	--	--

1 - Region G Well Capacity #'s are from the Region G 2011 I.P.P.

2 – not defined as a separate Water User Group (WUG) in the Region G 2011 I.P.P.

3 – at the present time Capital Land & Livestock MUD No. 1 has not permitted municipal drinking water wells, therefore the existing groundwater well capacity is assumed to be 0 acre-feet / year. CL&L MUD No. 1 does have a well, permitted through Schwertner Farms as a Non-Exempt Wells with the Clearwater UWCD. This existing well had a total pumpage for 2009 of approximately 186 ac-ft. The total permit from Clearwater UWCD allows 402.95 ac-ft/yr. It is assumed that this existing well does not meet the TCEQ's requirements for public water systems (Chapter 290 rules), but can be used to supply water needed for livestock operations.

4 – the City of Georgetown's existing water wells have been classified by the TCEQ as "groundwater under the influence of surface water" (GUI); as a result, the water must be treated prior to entering

the system; because of this treatment requirement, the groundwater well/treatment system capacity of 9.4 MGD has been added to the Normal Rated Design of the City's Lake Georgetown WTP.

* - annual well capacity shown for these systems is much higher than listed in the Region G Water Plan.

3.3.4 Groundwater Supply Constraints

Similar to surface water supplies, groundwater supplies can be constrained in a number of different ways. Common constraints effecting groundwater supplies include the aquifer yield, the managed available groundwater for the aquifer, groundwater supply allocations, substantial drawdown of aquifer levels, well pump capacity, and groundwater permits. Each supply constraint was considered during the evaluation of the Project Participants individual water systems.

3.3.4.a Groundwater Conservation Districts

Details of the existing groundwater conservation districts, their rules and permitting procedures are detailed in Appendix E.

3.3.4.b "Managed Available Groundwater"

Groundwater availability for each water system was based on the concept of "managed available groundwater" (MAG) which represents the volume of groundwater that can be expected to be withdrawn on a continuous basis during the drought of record. This withdrawal would be considered "sustainable". For this planning effort the MAG for the Trinity and Edwards – BFZ Aquifers in Burnet, Bell and Williamson Counties were obtained from the Groundwater Management Area 8's summary, the Region G 2011 IPP, and the Region K 2011 IPP. The MAG number for a particular aquifer is established by modeling the aquifer based on a set of Desired Future Conditions (DFC) as established by the Groundwater Management Area. The MAG was divided by the footprint area of the aquifer to provide an estimate of the acre-feet per acre of groundwater available. The volume of groundwater actually available to an individual Project Participant was then calculated by multiplying the water systems footprint by the groundwater available per acre. The groundwater available was calculated by individual aquifer for each Project Participant for both the Trinity Aquifer and the Edwards – Balcones Fault Zone Aquifer. Based on these calculations as shown on Table 3.9, for the Project Area 41 percent of the MAG is from the Edwards – BFZ Aquifer and 59 percent of the MAG is from the Trinity Aquifer (**Fig. 3-2**).

In summary, the calculation is as follows:

MAG # (ac-ft/ac) = Managed Available Groundwater for an Aquifer ÷ Footprint of Aquifer

Groundwater Available = Water System Footprint x MAG #

Tables 3.8, 3.9 and 3.10 summarize the MAG calculation for the two aquifers and the individual water systems (Project Participants).

Table 3.8: Groundwater Available by Area (based on County MAGS per GMA 8 Summary)

County	Trinity Aquifer (ac-ft/yr)	Trinity Aquifer (total acres)	Trinity Aquifer (ac-ft/yr/acre)	Edwards-BFZ Aquifer (ac-ft/yr)	Edwards-BFZ Aquifer (total acres)	Edwards Aquifer (ac-ft/yr/acre)
Bell*	7,068	695,404	0.01016388	6,469	81,978	0.07891142
Burnet+	2,723	422,683	0.00644218	--	--	--
Williamson*+	1,968	697,305	0.00282229	3,472	264,707	0.01311639
TOTAL	**11,759**	**1,815,392**		**9,941**	**346,685**	

* - from Region G 2011 IPP (Initially Prepared Plan)
\+ - from Region K 2011 IPP

Table 3.9: Groundwater Availability – "MAG" for Project Participants (acre-feet / year)

System	County[1]	Trinity Aquifer Footprint (acres)	Trinity Aquifer Available GW (ac-ft/yr)	Edwards-BFZ Aquifer Footprint (acres)	Edwards-BFZ Aquifer Available GW (ac-ft/yr)	Total Available Groundwater (ac-ft / yr)
Armstrong WSC	B	39,524	402	--	--	**402**
Capital Land & Livestock[2]	B, W	12,000	122	--	--	**122**
Chisholm Trail SUD[3]	B, W, Bu	257,702	4,205	131,399	3,479	**7,684**
City of Florence	W	520	1	520	3	**5**
JSWSC[4]	B, W	79,997	322	14,833	458	**780**
Jonah Water SUD	W	114,132	226	546	567	**793**
Sonterra MUD	W	1,460	4	1,460	19	**23**
TOTAL			**5,282**		**4,527**	**9,809**
City of Georgetown	W	45,168	200	17,264	443	**643**

1 – B = Bell County, Bu = Burnet County, W = Williamson County;
2 – assumed to be all in Bell County within Trinity Aquifer footprint;
3 – based on Trinity Aquifer footprints of: Bell Co.= 66,171 acres, Burnet Co.= 179,143 acres, Williamson Co.=12,388 acres; based on Edwards – Balcones Fault Zone Aquifer of: Bell Co.= 49,645 acres, Williamson Co.= 81,754 acres.
4 – located almost entirely within Williamson County, therefore only used Williamson Co. footprint.

Table 3.10: Groundwater Availability – Project Participants (acre-feet / year)

System	Total Available Groundwater[1] (from MAG) (ac-ft / yr)	Groundwater Pumped in 2009 (ac-ft)	Comments
Armstrong WSC	402	--[2]	
Capital Land & Livestock	122	186.03[3]	
Chisholm Trail SUD	7,684		
City of Florence	5	126.6	
JSWSC[3]	780	285.06[4]	
Jonah Water SUD	793	1,575	
Sonterra MUD	23	196[5]	
TOTAL	**9,809**		
City of Georgetown	643		

1 – Total Available Groundwater from Table 7 and is based on system's footprint area over the aquifer(s) and the Managed Available Groundwater (MAG) amount for that aquifer, calculated in ac-ft/yr/acre; the number assumes that a drilled well will find water; MAG #'s are from …

2 – Armstrong WSC's existing well is used for irrigation only; the existing well is permitted with Clearwater UWCD for a total of 154.90 ac-ft/yr; Armstrong WSC will soon drill a new well and has applied for a new permit for 480 ac-ft/yr; new well will be constructed to meet the TCEQ's Chapter 290 Public Water System rules.

3 – at the present time Capital Land & Livestock MUD No. 1 has not permitted municipal drinking water wells, therefore the existing groundwater well capacity is assumed to be 0 acre-feet / year. CL&L MUD No. 1 does have a well, permitted through Schwertner Farms as a Non-Exempt Wells with the Clearwater UWCD. This existing well had a total pumpage for 2009 of approximately 186 ac-ft. The total permit from Clearwater UWCD allows 402.95 ac-ft/yr. It is assumed that this existing well does not meet the TCEQ's requirements for public water systems (Chapter 290 rules), but can be used to supply water needed for livestock operations.

4 – JSWSC has three wells permitted with the Clearwater UWCD; Total of 285.06 ac-ft pumped in 2009 (from Prairie Dell #2, Prairie Dell #5, Prairie Dell #8); Total Permit allows 454 ac-ft/yr; Transport Permit allows 15 ac-ft/yr to leave County.

5 - Information provided by Sonterra MUD.

Table 3.11 provides a comparison of the theoretical "Total Groundwater Available" based on the MAG # calculations versus the actual volume pumped by the Project Participants existing groundwater wells. For many of the Project Participants their actual pumping volume far exceeded the "Total Groundwater Available" from the MAG.

Table 3.11: Comparison of Theoretical Available Groundwater vs. Well Capacity

System	Total Available Groundwater[1] (from MAG) (ac-ft / yr)	Groundwater Pumped in 2009 (ac-ft)	Annual Well Capacity (Current Yield) (ac-ft/yr)	Region G Well Capacity[1] (ac-ft/yr)
Armstrong WSC	402	--[2]	191	--[2]
Capital Land & Livestock	122	186.03[3]	0[3]	--[2]
Chisholm Trail SUD	7,684		2,337*	399
City of Florence	5	126.6	229*	171
JSWSC	780	285.06[4]	874*	135
Jonah Water SUD	793	1,575	2,354*	431
Sonterra MUD	23		939	--[2]
TOTAL	**9,809**		**7,028**	**7,214**
City of Georgetown	643		--	45[3]
BRA – Lake Granger			--	--

1 - Region G Well Capacity #'s are from the Region G 2011 I.P.P.

2 – not defined as a separate Water User Group (WUG) in the Region G 2011 I.P.P.

3 - at the present time Capital Land & Livestock MUD No. 1 has not permitted municipal drinking water wells, therefore the existing groundwater well capacity is assumed to be 0 acre-feet / year. CL&L MUD No. 1 does have a well, permitted through Schwertner Farms as a Non-Exempt Wells with the Clearwater UWCD. This existing well had a total pumpage for 2009 of approximately 186 ac-ft. The total permit from Clearwater UWCD allows 402.95 ac-ft/yr. It is assumed that this existing well does not meet the TCEQ's requirements for public water systems (Chapter 290 rules), but can be used to supply water needed for livestock operations.

4 – the City of Georgetown's existing water wells have been classified by the TCEQ as "groundwater under the influence of surface water" (GUI); as a result, the water must be treated prior to entering the system; because of this treatment requirement, the groundwater well/treatment system capacity of 9.4 MGD has been added to the Normal Rated Design of the City's Lake Georgetown WTP.

* - annual well capacity shown for these systems is much higher than listed in the Region G Water Plan.

3.3.5 Existing Groundwater Quality Issues

Existing groundwater quality issues for the Trinity and Edwards – BFZ Aquifers in the Project Area include increased levels of manganese, fluoride, radionuclides and inorganics including arsenic and total dissolved solids (TDS).

3.4. Project Participant's Existing Facilities

Summaries of the individual Project Participant's existing facilities, infrastructure and administrative information is included in Appendix C.

3.5. Available Water Supply

The available municipal water supply was calculated for individual Project Participants using both the "Managed Available Groundwater" calculation and the Current Yield of the water systems existing groundwater wells. Also included in the calculation are any existing water supply contracts and surface water treatment capacity.

The "Managed Available Groundwater" and the Current Yield calculations are summarized in **Table 3.13**, below. Due to the large footprint of the project area the "Managed Available Groundwater" option, which is affected by the area served, actually produces more water on an annual basis than the Current Yield option which is based on existing groundwater well pumping capacity. The "Managed Available Groundwater" analysis is more clearly detailed in **Table 3.14**. The Current Yield calculations are detailed in **Table 3.15**.

Table 3.13: Water Surplus / Deficit – Summary of "Current Yield" and "Managed Available Groundwater" Available Supply (information from Tables 3.14 and 3.15).

System	Available Supply Current Yield (ac-ft/yr)	Available Supply "Managed Available Groundwater" [DOR[1]] (ac-ft/yr)	Region G 2011 IPP Available Supply (ac-ft/yr)
Armstrong WSC	817	1,028	--[3]
Capital Land & Livestock	0[4]	122	--[3]
Chisholm Trail SUD	7,597	12,944	9,789*
City of Florence	229	5	171
JSWSC	890	796	983*
Jonah Water SUD	3,504	1,943	2,499*
Sonterra MUD	939	23	--[3]
TOTAL	**13,976**	**16,861**	**13,442**
City of Georgetown	15,441	10,819	17,424*
BRA – Lake Granger			

1 – DOR = Drought of Record. "Managed Available Groundwater" is a withdrawal rate that should be able to be sustained during the DOR.

2 – Region G 2011 IPP available supply volumes provided for comparison purposes only.

3 – not identified as a separate Water User Group (WUG) in the Region G 2011 I.P.P.

4 – CL&L MUD No. 1 estimates that new water wells will produce 500 gpm (500 gpm ÷ 2 x 0.95 = 383 acre-feet / year) and will most likely be drilled by 2015.

* - 2010 Supply volumes from the Region G 2011 Initially Prepared Plan

Table 3.14: Water Surplus / Deficit based on Current Yield of Groundwater Wells
(Available Supply = Current GW Well Capacity + WTP Capacity ± Contracts)

System	GW Capacity[1] [Current Yield] (ac-ft/yr)	WTP Capacity (ac-ft/yr)	Purchase Contracts (ac-ft/yr)	Sell Contracts (ac-ft/yr)	Available Supply (ac-ft/yr)	Region G 2011 IPP Supply (ac-ft/yr)
Armstrong WSC	191	--	626	--	817	--[2]
Capital Land & Livestock	0[3]	--	--	--	0[3]	--[2]
Chisholm Trail SUD	2,337	5,372	--	- 112	7,597	9,789*
City of Florence	229	--	--	--	229	171
JSWSC	874	--	16	--	890	983*
Jonah Water SUD	2,354	--	1,150[4]	--	3,504	2,499*
Sonterra MUD	939	--	--	--	939	--[2]
TOTAL	**6,924**	**5,372**	**1,792**	**- 112**	**13,976**	**13,442**
City of Georgetown	--[5]	15,441[6]	--	--[7]	15,441	17,424*
BRA – Lake Granger		7,281	--			

1 – from Table 3.11, represents water system's current groundwater well capacity [Annual Available Capacity = (Well Capacity ÷ 2) x 95 percent].

2 – not identified as a separate Water User Group (WUG) in the Region G 2011 I.P.P.

3 – at the present time Capital Land & Livestock MUD No. 1 has not permitted municipal drinking water wells, therefore the existing groundwater well capacity is assumed to be 0 acre-feet / year. CL&L MUD No. 1 does have a well, permitted through Schwertner Farms as a Non-Exempt Wells with the Clearwater UWCD. This existing well had a total pumpage for 2009 of approximately 186 ac-ft. The total permit from Clearwater UWCD allows 402.95 ac-ft/yr. It is assumed that this existing well does not meet the TCEQ's requirements for public water systems (Chapter 290 rules), but can be used to supply water needed for livestock operations.

4 – Jonah Water SUD is contracted with BRA under a "needs met" contract for an annual average firm pumping capacity of 1,500 gallons per minute. This is equal to a very conservative annual average flow of 1,150 acre-feet per year. This annual average is equal to half of the firm pumping capacity (1,500 gpm ÷ 2) x 95 percent (assumes a 5 percent downtime for pumps). Source of water is BRA's Lake Granger WTP. Jonah Water SUD has an additional 2,439 acre-feet per year of raw surface water contracted with the BRA, but at the present time no means exists to access this supply.

5 – the City's groundwater wells are considered groundwater under the influence of surface water and therefore require treatment; the treatment capacity of the groundwater system is approximately 9.4 MGD (10,530 ac-ft/yr), however, all of this capacity is included in the WTP Capacity column; note that Region G's 2011 I.P.P. has the City of Georgetown's GW Supply = 45 ac-ft/yr.

6 – Region G's 2011 I.P.P. shows the City of Georgetown's WTP capacity being "constrained" at 15.5 MGD (17,379 ac-ft/yr); based on information from the City of Georgetown their Annual WTP capacity is listed as 14.23 MGD (15,441 ac-ft/yr).

7 – City of Georgetown has a contract with Chisholm Trail SUD for a Normal Rated Design capacity of 10,743 ac-ft/yr (9.59 MGD) which equates to an annual average of 5,372 ac-ft/yr (4.80 MGD) from their Lake Georgetown WTP; however, this amount is shown as zero and instead is listed under CTSUD WTP Capacity (since CTSUD is a co-owner of the treatment facility); note that this Normal Rated Design of 9.59 MGD will be realized once the upgrade to the existing WTP is completed (currently under construction).

* - 2010 Supply volumes from the Region G 2011 Initially Prepared Plan

Table 3.15: Water Surplus / Deficit based on "Managed Available Groundwater" [DOR[1]]
(Available Supply = "MAG" GW Available + WTP Capacity ± Contracts)

System	GW Available[3] (MAG) (ac-ft/yr)	WTP Capacity (ac-ft/yr)	Purchase Contracts (ac-ft/yr)	Sell Contracts (ac-ft/yr)	Available Supply (ac-ft/yr)	Region G 2011 IPP Supply (ac-ft/yr)
Armstrong WSC	402	--	626	--	1,028	--[4]
Capital Land & Livestock	122	--	--	--	122	--[4]
Chisholm Trail SUD	7,684	5,372[9]	--	- 112	12,944	9,789*
City of Florence	5	--	--	--	5	171
JSWSC	780	--	16	--	796	983*
Jonah Water SUD	793	--	1,150[6]	--	1,943	2,499*
Sonterra MUD	18	--	--	--	23	--[4]
TOTAL	**9,803**	**5,372**	**1,792**	**- 112**	**16,861**	**13,442**
City of Georgetown	643	10,176[8]	--	--[9]	10,819	17,424*
BRA – Lake Granger		7,281	--			

1 – DOR = Drought of Record. "Managed Available Groundwater" is a withdrawal rate that should be able to be sustained during the DOR.

2 - from Table 3.11, included for information purposes only; compare GW Capacity column w/ GW Available column; note that GW Capacity is based on 50 percent pumping capacity of wells (multiplied by 95 percent to account for well down time).

3 – from Table 3.10, represents the theoretical groundwater available to the water system based on the system's footprint and the Managed Available Groundwater volumes for the different aquifers.

4 – not identified as a separate Water User Group (WUG) in the Region G 2011 I.P.P.

5 – at the present time Capital Land & Livestock MUD No. 1 has not permitted municipal drinking water wells, therefore the existing groundwater well capacity is assumed to be 0 acre-feet / year. CL&L MUD No. 1 does have a well, permitted through Schwertner Farms as a Non-Exempt Wells with the Clearwater UWCD. This existing well had a total pumpage for 2009 of approximately 186 ac-ft. The total permit from Clearwater UWCD allows 402.95 ac-ft/yr. It is assumed that this existing well does not meet the TCEQ's requirements for public water systems (Chapter 290 rules), but can be used to supply water needed for livestock operations. CL&L MUD No. 1 estimates that new water wells will produce 500 gpm (500 gpm ÷ 2 x 0.95 = 383 acre-feet / year) and will be drilled by the year 2015.

6 – Jonah Water SUD is contracted with BRA under a "needs met" contract for an annual average firm pumping capacity of 1,500 gallons per minute. This is equal to a very conservative annual average flow of 1,150 acre-feet per year. This annual average is equal to half of the firm pumping capacity (1,500 gpm ÷ 2) x 95 percent (assumes a 5 percent downtime for pumps). Source of water is BRA's Lake Granger WTP. Jonah Water SUD has an additional 2,439 acre-feet per year of raw surface water contracted with the BRA, but at the present time no means exists to access this supply.

7 – the City's groundwater wells are considered groundwater under the influence of surface water and therefore require treatment; the treatment capacity of the groundwater system is approximately 9.4 MGD (10,530 ac-ft/yr), however, all of this capacity is included in the WTP Capacity column; note that Region G's 2011 I.P.P. has the City of Georgetown's GW Supply = 45 ac-ft/yr.

8 – Region G's 2011 I.P.P. shows the City of Georgetown's WTP capacity being "constrained" at 15.5 MGD (17,379 ac-ft/yr); based on information from the City of Georgetown their Annual WTP capacity is listed as 14.23 MGD (15,441 ac-ft/yr); however, the 15,441 ac-ft/yr figure includes 5,265 ac-ft/yr of groundwater supply – in this case, this portion is subtracted from the Annual WTP capacity and the GW Available (643 ac-ft/yr) is added to obtain the Available Supply.

9 – City of Georgetown has a contract with Chisholm Trail SUD for a Normal Rated Design capacity of 10,743 ac-ft/yr (9.59 MGD) which equates to an annual average of 5,372 ac-ft/yr (4.80 MGD) from their Lake Georgetown WTP; however, this amount is shown as zero and instead is listed under CTSUD WTP Capacity (since CTSUD is a co-owner of the treatment facility); note that this Normal Rated Design of 9.59 MGD will be realized once the upgrade to the existing WTP is completed (currently under construction).

* - 2010 Supply volumes from the Region G 2011 Initially Prepared Plan

Table 3.15: Water Surplus / Deficit – Summary of "Current Yield" and "Managed Available Groundwater" Available Supply (information from Tables 3.13 and 3.14).

System	Available Supply Current Yield (ac-ft/yr)	Available Supply "Managed Available Groundwater" [DOR[1]] (ac-ft/yr)	Region G 2011 IPP Available Supply (ac-ft/yr)
Armstrong WSC	817	1,028	--[3]
Capital Land & Livestock	0[4]	122	--[3]
Chisholm Trail SUD	7,597	12,944	9,789*
City of Florence	229	5	171
JSWSC	890	796	983*
Jonah Water SUD	3,504	1,943	2,499*
Sonterra MUD	939	23	--[3]
TOTAL	**13,976**	**16,861**	**13,442**
City of Georgetown	15,441	10,819	17,424*
BRA – Lake Granger			

1 – DOR = Drought of Record. "Managed Available Groundwater" is a withdrawal rate that should be able to be sustained during the DOR.

2 – Region G 2011 IPP available supply volumes provided for comparison purposes only.

3 – not identified as a separate Water User Group (WUG) in the Region G 2011 I.P.P.

4 – CL&L MUD No. 1 estimates that new water wells will produce 500 gpm (500 gpm ÷ 2 x 0.95 = 383 acre-feet / year) and will most likely be drilled by 2015.

* - 2010 Supply volumes from the Region G 2011 Initially Prepared Plan

3.6. Water Demand vs. Water Supply

To determine the need for additional water supply the calculated water demand, based on population growth and per capita water usage, can be compared to the water supply available to a water system. When the water demand exceed the water supply additional water supply must be made available or the water system may be forced into voluntary conservation efforts or may limit or prohibit additional customers tying into the system until additional water supply is obtained.

Table 3.16 on the following page is a summary of the water demands and water supply calculations for all Project Participants. The table has been shaded a light red to indicate when the water demand exceeds the calculated water supply.

3.6.1 Individual Systems

Of the individual systems, only Armstrong WSC has adequate water supply to service its customers over the next 50 years. Chisholm Trail SUD has adequate water supply to provide water over the 20 year planning period of this study. However, Sonterra MUD, CL&L MUD No. 1, the City of Florence, Jarrell Schwertner WSC, and Jonah Water SUD all need to immediately address water supply issues in order to ensure that an adequate supply is available to their customers.

3.6.2 Project Area

When looking at the Project Area as a whole the Project Participants, by combining their water supply and water demands, would be able to provide an adequate water supply for approximately the next ten years.

Table 3.16: Water Surplus / Deficit (all figures in acre-feet/year)

System / YEAR	2010	2015	2020	2025	2030	2040	2050	2060
Armstrong WSC								
Demand (ac-ft/yr)	486	514	544	568	594	624	647	664
Full Development/DOR Yield (ac-ft/yr)	1,028	1,028	1,028	1,028	1,028	1,028	1,028	1,028
Current Yield (ac-ft/yr)	817	817	817	817	817	817	817	817
Region G 2011 Supply (ac-ft/yr)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Capital Land & Livestock								
Demand (ac-ft/yr)	0	147	1,176	2,058	2,941	7,351	9,457	9,457
Full Development/DOR Yield (ac-ft/yr)	122	122	122	122	122	122	122	122
Current Yield (ac-ft/yr)	0	383	383	383	383	383	383	383
Region G 2011 Supply (ac-ft/yr)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Chisholm Trail SUD								
Demand (ac-ft/yr)	3,157	3,878	4,763	5,639	6,676	8,851	11,210	13,613
Full Development/DOR Yield (ac-ft/yr)	12,944	12,944	12,944	12,944	12,944	12,944	12,944	12,944
Current Yield (ac-ft/yr)	7,597	7,597	7,597	7,597	7,597	7,597	7,597	7,597
Region G 2011 Supply (ac-ft/yr)	9,789	9,779	9,768	9,765	9,763	9,752	9,738	9,724
City of Florence[1]								
Demand (ac-ft/yr)	241	262	283	307	332	386	446	514
Full Development/DOR Yield (ac-ft/yr)	5	505	505	505	505	505	505	505
Current Yield (ac-ft/yr)	229	729	729	729	729	729	729	729
Region G 2011 Supply (ac-ft/yr)	171	171	171	171	171	171	171	171
JSWSC[2]								
Demand (ac-ft/yr)	1,077	1,211	1,361	1,513	1,682	2,009	2,375	2,762
Full Development/DOR Yield (ac-ft/yr)	796	1,796	1,796	1,796	1,796	1,796	1,796	1,796
Current Yield (ac-ft/yr)	876	1,876	1,876	1,876	1,876	1,876	1,876	1,876
Region G 2011 Supply (ac-ft/yr)	983	983	983	983	983	983	983	983
Jonah Water SUD[3]								
Demand (ac-ft/yr)	1,676	1,933	2,229	2,500	2,804	3,415	4,092	4,845
Full Development/DOR Yield (ac-ft/yr)	1,973	4,463	4,463	4,463	4,463	4,463	4,463	4,463
Current Yield (ac-ft/yr)	3,504	5,943	5,943	5,943	5,943	5,943	5,943	5,943
Region G 2011 Supply (ac-ft/yr)	2,499	2,499	2,499	2,499	2,499	2,499	2,499	2,499
Sonterra MUD								
Demand (ac-ft/yr)	329	726	1,602	2,250	3,159	3,114	3,092	3,092
Full Development/DOR Yield (ac-ft/yr)	23	23	23	23	23	23	23	23
Current Yield (ac-ft/yr)	766	766	766	766	766	766	766	766
Region G 2011 Supply (ac-ft/yr)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Regional Planning Participants w/o City of Georgetown								
Demand (ac-ft/yr)	6,966	8,671	11,958	14,835	18,188	25,750	31,319	34,947
Full Development/DOR Yield (ac-ft/yr)	16,891	20,881	20,881	20,881	20,881	20,881	20,881	20,881
Current Yield (ac-ft/yr)	13,789	18,111	18,111	18,111	18,111	18,111	18,111	18,111
Region G 2011 Supply (ac-ft/yr)	13,442	13,432	13,421	13,418	13,416	13,405	13,391	13,377
Current Yield - Demand (ac-ft/yr)	6,823	9,440	6,153	3,276	(77)	(7,639)	(13,208)	(16,836)

- indicates System Demand > System Supply

Demand - Demand based on population and per capita usage

DOR - Drought of Record Yield (based on system footprint)

Yield at Current - current yield based on recent groundwater pumping records

Region G 2011 Supply - from Region G Draft Plan (March 2010)

1 - City of Florence includes 500 ac-ft/yr (beginning in 2015)

2 - JSWSC includes 1,000 ac-ft/yr (beginning 2015)

3 - Jonah Water SUD includes 1,150 acre-ft/yr from their BRA needs met contract (beginning in 2010) and 2,439 from L. SHH water rights (beginning in 2015)

4 - Capital Land and Livestock MUD No. 1 .estimates that their proposed wells will produce an average of 500 gpm beginning in 2015 (500 gpm ÷ 2 x 0.95 = 383 ac-ft/yr).

3.7. Potential Additional Water Supply Sources

3.7.1 Within Project Area

Additional water supply sources within the Project Area are limited. Surface water rights are not readily available in and around the project area. Groundwater resources within the project area have shown to be unreliable during prolonged periods of little or no rainfall.

3.7.1.a Surface Water

The potential for using additional surface water in the project area is limited. At the present time there is not a large, sustainable amount of unpermitted surface water available for purchase or acquisition by individual water systems. Very few systems are interested in selling or leasing their existing water rights permits, making it difficult for systems in need to acquire long-term water rights that can provide a reliable source of water to their customers. However, there may be opportunities for individual water systems to partner with individual water systems that currently have excess water supply or treatment capacity to provide, at the very least, a short-term or intermediate solution to a water supply problem.

3.7.1.b Groundwater

Groundwater resources within the Project Area could be utilized to provide water supply to some of the Project Participants. While not ideal for large, sustainable quantities of water for certain situations the low cost and convenience of drilling and constructing a public water supply well makes it a useful option to consider. For Project Participants with large service areas, wells can be located away from any neighboring wells in order to limit the negative impacts such wells can have on drawdown and well yields. However, for many project participants, the long-term reliance on wells to satisfy their future water demands is not considered a sustainable option.

3.7.1.c Other

The use of advance treatment systems or innovative technologies has the potential to provide a source of water for systems inside the project area. One option would be the withdrawal and treatment of poor quality groundwater that currently is unutilized within the project area. This water is often high in total dissolve solids, manganese, or other constituents that makes its use difficult for public water systems. Another option is the use of innovative technologies such as an aquifer storage and recovery system (ASR). While this concept and technology may not

be suitable for use in the project area, it may be one option that a system or systems could investigate to determine its viability.

3.7.2 Outside Project Area

The availability and use of water from sources outside the Project Area is a definite option. Neighboring water systems, groundwater resources, and surface water systems appear to be viable options for supplying or supplementing the water demands of Project Participants.

3.7.2.a Neighboring Systems

Neighboring public water systems could prove to be a good source of supply for drinking water. Central Texas Water Supply Corporation is one neighboring utility that has the capability to treating and delivering surface water to the project area. A limitation on the use of neighboring systems is the fact that these water systems do not always have water rights or excess water to sell to interested parties and often times require a potential customer to obtain their own source of surface supply.

3.7.2.b Groundwater

Of the groundwater resources outside the Project Area the most promising appears to the Carrizo-Wilcox Aquifer. This aquifer is characterized by a large quantity of high quality water. The aquifer is capable of sustaining groundwater wells at a high level of withdrawal. The concept of pumping groundwater from the Carrizo-Wilcox and transporting it into the Project Area is already included as a water strategy in the Region G Water Plan. Institutional constraints placed on such an operation by the existing groundwater conservation districts with jurisdiction over the potential well field area may prove to be one of the biggest obstacles

3.7.2.c Surface Water

Surface water from outside the Project Area may be a source of long-term water supply for some of the Project Participants. However, seeking and obtaining a long-term commitment from an existing water rights holder may prove difficult.

3.7.2.d GW Purveyors (privates)

Private companies have recently constructed the necessary infrastructure to collect, pump and transport Carrizo-Wilcox Aquifer groundwater from areas east of the planning area to locations in close proximity to some of the planning participants. Such a ready source of available water makes the contracting with such companies a possibility for water systems in and around the project area. While the final terms of the possible water supply contracts would dictate whether this arrangement is a viable option of individual water systems, it may remain a potential solution for some localities within the planning area.

4. PROJECT NEED & IDENTIFICATION

4.1. Need for New and/or Expanded Water Supply Facilities

4.1.1 Individual Project Participants

The recommended, individual water supply projects are detailed in the Figures section of the report and Appendix D (Cost Estimates).

The projects are grouped according to Immediate, Short-Term, and Long-Term projects. Individual projects within each of these categories include proposed water distribution and water supply projects. Projects are not prioritized within the individual categories, since each water system may have its own perception as to the priority of the planned individual projects. However, it could be anticipated that the projects would be undertaken with the Immediate category started first, followed by the Short-Term, then the Long-Term Projects.

Cost estimates developed for each of the proposed improvements and included in **Appendix D** were calculated as a total of the construction costs, non-construction costs and annual costs. Construction costs are the capital costs associated with the construction of each of the proposed facilities, these include materials, equipment and labor costs.

The non-construction costs assigned to each project are the costs that do not involve the construction phase such as the engineering, environmental clearance, permitting, financial advisor, bond and legal counsel, and land acquisition.

Annual costs for each of the proposed projects were calculated considering the annual operations and maintenance, energy costs and the annual debt service payment on the loan. Operations and maintenance (O&M) were calculated as a percentage of the construction costs for each of the major components. Pipelines were calculated at 1 percent, pump stations were calculated at 2.5 percent and water treatment plants were calculated at 8 percent of total construction costs. The energy costs were calculated at $0.09 per kilowatt-hour (kWH) times the power load (HP). Debt service for the long term projects such as the large reservoir or

pipeline projects was calculated at 6 percent interest with a 40 year loan term. All the other projects were calculated at 6 percent with a 20 year loan term.

Aside from the O&M, energy costs and the debt service calculations each of these three costs were calculated utilizing bid documents and other project cost documentation of similar projects NEI, Duff Engineering have worked on in recent years. Costs associated with O&M, energy and debt service were developed utilizing the TWDB's General Guidelines for Regional Water Plan Development (2007-2011) and the assumed rate of 6 percent interest to accommodate anticipated interest rate increases in the coming years.

5. RETAIL RATE EVALUATION

5.1. Existing Rates

Existing rates were obtained from the individual water systems. The rates for the individual water systems are included in the system summaries presented in Appendix C.

5.2. Rate Impacts

Rate impacts that can be attributed to the individual projects have been outlined in Appendix H. The proposed projects anticipated costs will increase water rates for the individual systems. During evaluation of the individual water projects, the ability to maximize the number or project participants will help to reduce the impacts the projects may have on the water rates charged to individual customers.

6. INSTITUTIONAL ISSUES, PERMITTING/REGULATORY/ LEGAL ISSUES, PROJECT FINANCING OPTIONS, POTENTIAL FUNDING SOURCES & ADMINISTRATION

6.1. Potential Funding Sources

Funding of proposed water supply projects will be necessary to allow for the construction of water supply projects throughout the planning region. Federal and State funding sources are available to the project participants. The various programs offer entities a variety of repayment options and terms. A summary of the most common and, for the project participants, the most likely source of possible funds are outlined below.

6.4.1 Federal Sources

United States Department of Agriculture (USDA) – Rural Development

The USDA – Rural Development offers funding to political subdivisions and Water Supply Corporations for water and wastewater projects. The maximum repayment term is 40 years, which is a longer term than most other programs offer. The interest rate charged is set by the USDA based on the applicant's income.

6.4.2 State Sources

The State of Texas, through various agencies and programs, offers several options for the financing of water supply and water supply related projects. Summaries of the most common and beneficial programs for the project participants are outlined below. All of the funding programs outlined below are administered by the TWDB.

State Participation Program

The State Participation Program is intended to allow for the optimization of regional projects and is open to political subdivisions of the state, Water Supply Corporations, and Special Utility Districts. The program allows the TWDB to assume temporary ownership interest in a regional project through water rights, property, treatment system, or distribution system ownership. For new water supply projects the TWDB will fund up to 80 percent of the cost of

the project, provided that at least 20 percent of the total capacity of the proposed project will serve existing needs. Other regional projects can be financed through this program for up to 50 percent of the project costs, provided that at least 50 percent of the total capacity of the proposed project will serve existing needs. The maximum repayment term is 34 years with the interest rate charged based on the cost of funds to the TWDB. The TWDB will accept a pledge of tax and/or revenue pledge or a contract revenue pledge.

Development Fund (D-Fund)

The Development Fund, commonly known as the D-Fund, is a funding source available to political subdivisions of the state, water supply corporations, and special utility districts. The D-Fund program will fund local or regional water projects involving the planning, design, acquisition, or construction of water supply or system improvement, including the acquisition of water rights. The programs offers a maximum repayment term of 30 years, with the interest rates set at 35 basis points above the TWDB's borrowing costs. The TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation, and contract revenue pledges.

Water Infrastructure Fund (WIF)

The Water Infrastructure Fund is available to political subdivisions of the state, water supply corporations, and special utility districts, with the funding availability subject to Texas Legislature approval. Project available for funding through this program are only those projects identified in the Texas Water Plan. The programs offers a maximum repayment term of 20 years, with the interest rates set at 2 percent below the TWDB's cost of funds. For projects that have a long lead time, the interest and principle payments related to planning, design, permitting and other upfront costs incurred by the applicant may be deferred for up to ten years or until the end of construction, whichever is sooner. The TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation, and contract revenue pledges.

Drinking Water State Revolving Fund (DWSRF)

The Drinking Water State Revolving Fund (DWSRF) is available to political subdivisions of the state, water supply corporations, and special utility districts, privately owned utilities, non-community public water systems, and state agencies. All projects must go through an initial ranking process, with the applicants of the highest ranked projects being invited to submit an application for funding. Project available for funding through this program are planning, design, and construction project to upgrade or replace water supply infrastructure, correct deficiencies that violate the Safe Drinking Water Act standards, to consolidate water supplies, and to purchase capacity in water system. The programs offers a maximum repayment term of 20 years for "mainstream" applicants and 30 years for "disadvantaged communities". , with the interest rates set at 2 percent below the TWDB's cost of funds. For projects that have a long lead time, the interest and principle payments related to planning, design, permitting and other upfront costs incurred by the applicant may be deferred for up to ten years or until the end of construction, whichever is sooner. Mainstream funds offer a fixed interest rate of 1.25 percent below market rate, while disadvantaged communities offer a fixed interest rate of 1.25 percent below market rate and 70 percent loan forgiveness if median household income (MHI) is less than or equal to 75 percent of the State MHI. Disadvantage communities may be offered up to 100 percent loan forgiveness if the MHI is less than or equal to 60 percent of the State MHI.

6.2. Procedures to Apply for Funding

The application process for both federal and State funding sources is relatively simple. Both the United States Department of Agriculture – Rural Development (USDA-RD) and the Texas Water Development Board (TWDB) have staff available to offer assistance and guidance during the application process. A brief description of each of the different funding sources is included in the following sections.

6.5.1 Applying for Federal Funding

United States Department of Agriculture (USDA) – Rural Development

Through the USDA's Rural Utilities Service (RUS) applicants can apply for water and waste disposal loans and grants. The initial application process is relatively simple requiring applicants to submit the following:

- Form SF 424, "Application for Federal Assistance (For Construction)"
- State intergovernmental review comments and recommendations must be included with the initial application. In Texas this is referred to as the Texas *Review* and Comment System or (TRACS) review and is done through the appropriate Council of Governments for the Project Area.
- Supporting documentation needed to determine eligibility, such as financial statements, audits organizational documents, existing debt instruments, and engineering reports. Typically a phone call to the regional USDA-RD office will clarify which of these documents the applicant will need to submit.

The RUS application for financial assistance can be used for planning, design and construction; however, the applicant will not receive any funds until the project has been bid via a competitive bid process. This means that the applicant will be required to float the cost of planning and design or an agreement with the consult will be reached in the understanding that payment for planning and design will not be issued until the project has been bid. The USDA-RD requires design plans, specs and environmental clearance to be completed and approved prior to the start of the construction phase. Plans and specs are submitted to the USDA-RD for review and approval during the planning and design phase of the project.

6.5.2 Applying for State Funding

The TWDB has recently developed a new application for financial assistance (Form TWDB-0148). This new application is now used for the majority of funding programs exceptions are detailed below. The new application requires that applicants to provide a certain amount of general information relating to the finances of the applicant, the proposed project, preliminary engineering and environmental information among other aspects of the applicant's proposed

project. The application can be downloaded from the TWDB's website. Generally, it is advised that the applicant and consultant contact TWDB staff to set up a pre-application meeting to discuss the proposed project and any aspects that might require additional information or documentation as to complete the application process. Finally, applications to the TWDB for financial assistance are typically due by the first of the month should the applicant wish to be considered in the next month's TWDB Board Meeting. For example submitting an application on June 1 will typically result in a July Board Meeting consideration.

Below the details of each of the TWDB's programs are discussed further.

State Participation Program

The State Participation Program encourages applicants to meet with TWDB staff for assistance in preparing the application and to discuss the terms of the loan, as there is no set format for how each of the proposed projects gets funding assistance or how much the TWDB will agree to accept for temporary ownership. The applicant must submit an engineering feasibility report and environmental information document as well as general fiscal and legal information to the TWDB's Project Finance office. This program as with the Water Infrastructure Fund requires that the proposed project be listed in the State Water Plan.

Water Infrastructure Fund (WIF)

Funding through the WIF provides the necessary finances for planning, design and construction of a project adopted in the State Water Plan. All loans are offered at a subsidized interest rate that is 2 percent below the TWDB's cost of funds with repayment periods of up to 20 years. As with the State Participation Program this program requires that the proposed project be listed in the State Water Plan.

Development Fund (D-Fund)

Loans for planning, designing, and construction water supply, wastewater and flood control projects can be funded through this program. To apply for funding through this program applicants schedule a pre-application meeting with TWDB's staff to discuss the proposed project's eligibility. For tax-exempt applicants the applicant's financial advisor and the applicant's consulting engineer must attend this conference.

The application will consist of the typical information for a TWDB funding program those being an engineering feasibility report and environmental information document as well as general fiscal and legal information. Also required for this fund is a copy of the applicant's water conservation and drought contingency plans should the request for financial assistance be greater than $500,000.

Drinking Water State Revolving Fund (DWSRF)

This fund can be used for planning, acquisition, design and construction of proposed drinking water projects. Unlike the other funding programs offered by the TWDB, the DWSRF program only accepts applications once a year. These applications are then scored against all the applications and ranked according to project priority as determined by the TWDB review staff. This ranking process usually takes into account the urgency of the project, the applicant's financial health, among other ranking requirements. Once all the projects have been scored the TWDB publishes the list and the top ranked projects are then invited to submit a funding application. The number of projects invited depends on the amount of money allotted to the DWSRF for that fiscal year. Should one of the invited applicants choose not to proceed with a funding application the TWDB typically moves down the list of ranked applicants, until all the funding for that fiscal year has been awarded.

Once an applicant has been invited to apply for financial assistance the TWDB staff will set up a pre-application meeting with the applicant their financial advisor and consulting engineer to discuss the project and provide guidance as to how they should proceed with the financial application.

6.3. Administration Alternatives

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6.6.1 Public Water Utilities

Public water utilities in Texas include cities, special purpose districts, and Districts created by the Texas Legislature.

6.6.1.a Cities

In the State of Texas there are two different types of cities, general law and home rule. The type of city created is usually governed by the population of the defined city area at the time of creation.

General law cities can be any size but almost all small cities are general cities. General law cities can do only those things authorized by the State of Texas. General law cities are either Type A, Type B, or Type C.

Many Texas cities began as Type B general law municipalities. Incorporation of a Type B municipality requires the community to be an unincorporated town or village with a population of 201 to 9,999 inhabitants. The area of the incorporated city must conform to the requirements outline in §5.901 of the Texas Municipal Code, which for populations less than 2,000 persons must be not more than two square miles. Type B cities operate under the aldermanic form of government with the governing body known as the "Board of Alderman", including a mayor and five alderman.

A Type A general law municipality contains at least 600 inhabitants. The area of the incorporated city must conform to the requirements outline in §5.901 of the Texas Municipal Code. For communities of less than 2,000 population the incorporated area may not be greater than two square miles. Many Type A general law cities were originally incorporated as Type B general law municipalities and then switched to Type A when the city's population increased to more than 600 persons. Type A cities operate under the aldermanic form of government with the governing body usually known as the "City Council", including a mayor and five alderman.

A Type C general law municipality requires the community to be an unincorporated city, town, or village with a population of 201 to 4,999 inhabitants. The area of the incorporated city must conform to the requirements outline in §5.901 of the Texas Municipal Code, which for populations less than 2,000 persons must be not more than two square miles. Type C cities operate under a governing body known as the "Board of Commissioners" that includes a mayor and two commissioners.

Home rule municipalities are those cities that have a population of at least 5,000 and have, by popular vote, adopted a municipal charter as authorized by Article XI, Section 5 of the Texas Constitution. Unlike general law cities that may only do those things authorized by the State of Texas, home rule municipalities may pass laws or ordinances provided they have not been specifically prevented from doing so by State law.

6.6.1.b Special Purpose Districts

Special Purpose Districts are political subdivisions of the State of Texas that can be created by act of the State Legislature or through procedures outlined in the Texas Water Code. "District" can mean any district or authority created by Article 3, Section 52(b)(1) and (2), or Article 16, Section 59 of the Texas Constitution.

Under provisions of Article 16, Section 59 of the Texas Constitution Conservation and Reclamation Districts are given broad authority to promote the conservation and development of all natural resources in the State, flood control, water development, development of parks and recreational facilities, hydroelectric power, and navigation.

The special purpose districts most common to public water utilities include Water Control and Improvement Districts (WCID), Municipal Utility Districts (MUD), Special Utility Districts (SUD), and Water Supply Corporations (WSC).

6.6.1.b.i Water Control and Improvement Districts (WCID)

A Water Control and Improvement District (WCID) is a special purpose district created under Chapter 51 of the Texas Water Code to address particular issues of local landowners. Creation of districts that include land that lies entirely within one county are normally considered and ordered by the county commissioner's court. A proposed WCID that includes land within two or more counties must be created by consideration and order of the Texas Commission on Environmental Quality (TCEQ). A WCID is typically limited to local projects that serve only one jurisdiction and typically have a limited ability to implement multi-jurisdictional projects. The district is governed by a Board of Directors that are elected by residents of the district. WCID usually have taxing authority provided such authority was outlined in the district's creation documents. Such districts receive oversight by the TCEQ under Chapter 49 of the Texas Water Code, including all bond issues, which must be approved by the TCEQ prior to issuance.

6.6.1.b.ii Municipal Utility Districts (MUD)

A Municipal Utility District (MUD) is a special purpose district created under Chapter 54 of the Texas Water Code to address particular issues of local landowners. A MUD can be created by the Texas Legislature, however creation is commonly accomplished through a county commissioner's court or the TCEQ. If all or part of a proposed MUD will be located outside the extraterritorial jurisdiction of a city, the commissioners court of the county in which the district will be located may review the petition for creation. When it is proposed to create a district, a petition requesting the creation shall be filed with the TCEQ. This petition must be signed by a majority in value of the landowners within the proposed district. Public hearing are held and the Commissioners Court or the TCEQ makes a finding that creation of the MUD is in the public interest and passes an order establishing the District. The district is governed by a Board of Directors that are elected by residents of the district. WCID usually have taxing authority provided such authority was outlined in the district's creation documents. Such districts receive oversight by the TCEQ under Chapter 49 of the Texas Water Code, including all bond issues, which must be approved by the TCEQ prior to issuance.

6.6.1.b.iii Special Utility District (SUD)

A Special Utility District (SUD) is a special purpose district created as a conservation and reclamation district under Article 16, Section 59 of the Texas Constitution in accordance with Chapter 65 of the Texas Water Code. One purpose for the creation of a SUD is to purchase or acquire sources of water supply, to build infrastructure for the distribution of water, and to sell water to political subdivisions, businesses, and individuals. A SUD may include land in one or more counties and within existing city limits and extraterritorial jurisdictions. The boundaries of a district do not have to be contiguous. Historically, many SUDs have been created by converting an existing Water Supply Corporation (WSC) into an SUD. If district creation is proposed by a WSC a certified copy of a resolution proposing its creation must be filed with the TCEQ. The TCEQ, as well as the registered voters within the proposed district must approve the district's creation. A SUD is governed by a Board of Directors elected by customers or property owners of the district. A SUD does not have taxing authority, but does

have the ability to issue tax-exempt bonds to finance debt and may also issue impact fees. The bonds and impact fees are subject to TCEQ approval and the district receives oversight from the TCEQ under Chapter 49 of the Texas Water Code.

6.6.1.b.iv Water Supply Corporations (WSC)

A Water Supply Corporation (WSC) is general law district operating as a nonprofit corporation created under Chapter 67 of the Texas Water Code to provide water supply, sewer service and/or flood control to a municipality, individual, or private corporation. A WSC may be formed by three more individuals who are citizens of this state by making an application to the secretary of state in the same manner as provided by law for an application for a private corporation. The application must include the number and names of all the directors of the WSC, which may not exceed 21 persons. The directors are elected be vote of the members or shareholders of the corporation. The name of the corporation must include the words "Water Supply Corporation". TCEQ approval is not needed to form a WSC and TCEQ oversight is limited, with the WSC not subject to the requirements of Chapter 49 of the Texas Water Code.

6.6.1.c Districts Created by Legislature:

6.6.1.c.i River Authorities

River authorities are special law districts created by the legislature to address conservation and reclamation issues identified in Article 16, Section 59 of the Texas Constitution. River authorities are considered a political subdivision of the State of Texas and usually have authority over part or all of a particular river basin. A river authority's Board of Directors is usually appointed by the Governor with the consent of the Texas Senate. River authorities typically operate major reservoirs and sell untreated water on a wholesale basis. They often times have responsibility for flood control, water quality protection, parks and recreation facilities, and water and wastewater service. River authorities usually do not have taxing authority, but they normally do have the ability to issue bonds based on projected revenues. River authorities can contract with one or more jurisdictions to implement projects. River authorities receive oversight from the TCEQ in accordance with the Commission's Chapter 292 rules entitled "Special Requirements of Certain Districts and Authorities".

6.6.1.c.ii Regional Authorities

Regional authorities are special law districts created under Article 16, Section 59 of the Texas Constitution by the legislature to address particular local issues that involve more than one jurisdiction. Regional authorities are considered a political subdivision of the State of Texas and are governed by a Board of Directors whose selection and structure is established in the enabling legislation. Regional authorities often times have taxing authority which will be outlined in the enabling legislation. Regional authorities can contract with one or more jurisdictions to implement projects. Regional authorities receive oversight from the TCEQ in accordance with Chapter 49 of the Texas Water Code.

Regional Authorities offer several advantages for implementing infrastructure projects including the following:

- Act as a financing agent for projects that can serve individual or multiple entities.
- Own and operate facilities or contract with public or private interests to operate.

- Contract Revenue Bond financing where the Regional Authority issues debt for one or more entities. This debt is secured by a contract between the local entity and Regional Authority and considered an operations and maintenance cost to the system. This allows repayment of the debt by the local entity without having to have debt service coverage built into their rates. The contracts can be developed where the Regional Authority will own and operate or the Regional Authority can authorize the local entity to act as its agent during construction and turn over all ownership and operating responsibility to the local entity once construction is completed.
- Facilitate regional solutions at the local level.
- Assist local entities in optimizing project size in order to achieve economies of scale.

6.6.1.c.iii Municipal Utility Districts (MUD)

Municipal Utility Districts (MUD) are special law districts created under Article 16, Section 59 of the Texas Constitution by the legislature to address particular local issues of local landowners. These districts are created to facilitate development and normally have taxing authority to retire debt and for operation and maintenance of district facilities. A MUD can implement a broad range of projects within its jurisdiction, but has a limited ability to implement multi-jurisdictional projects. A MUD is considered a political subdivision of the State of Texas and is governed by a Board of Directors elected by the residents of the district as development occurs. A MUD receives oversight from the TCEQ in accordance with Chapter 49 of the Texas Water Code.

Administration – by Individual Systems

Project participants currently plan, finance, construct, operate, and maintain water supply and distribution systems throughout the planning area. For some of the project participants the ability to fund needed projects is limited.

As water demands increase throughout the planning region the need for additional water supplies and water distribution infrastructure will continue. Individual water systems will experience pressure to meet the increasing demands and keep pace with the anticipated population boom.

Administration – by Regional Authority

A Regional Authority would offer a convenient way for project participants to organize, manage, and fund proposed projects throughout the planning region. The Regional Authority could be organized as a voluntary entity where members join at their choosing. Such an arrangement would ensure a group of willing participants that could collectively fund water supply projects throughout the area. The Regional Authorities individual members would benefit from reduced financing costs for bond issues related to the proposed projects.

7. CONCLUSIONS & RECOMMENDATIONS

7.1. Conclusions

There are a variety of options that can be employed to meeting the needs of the public water systems in the Project Area and the surrounding communities. The most important aspect of ensuring that long-term water supplies are secured for the Project Area is that of cooperation. There is a need for the local water systems to work closing together, to pool resources and talents, in an effort to maximize the amount of water available to the area from a variety of sources.

7.2. Recommendations

The recommendations for this planning effort are as follows:

1. In the short-term, work together to construct infrastructure projects capable of moving water around the Project Area;

2. In the long-term, work together on water supply projects to ensure that adequate amounts of drinking water are available to existing and future customers;

3. Continued cooperation amongst the Project Participants to maximize the opportunities to construct and finance infrastructure projects throughout the area.

FIGURES

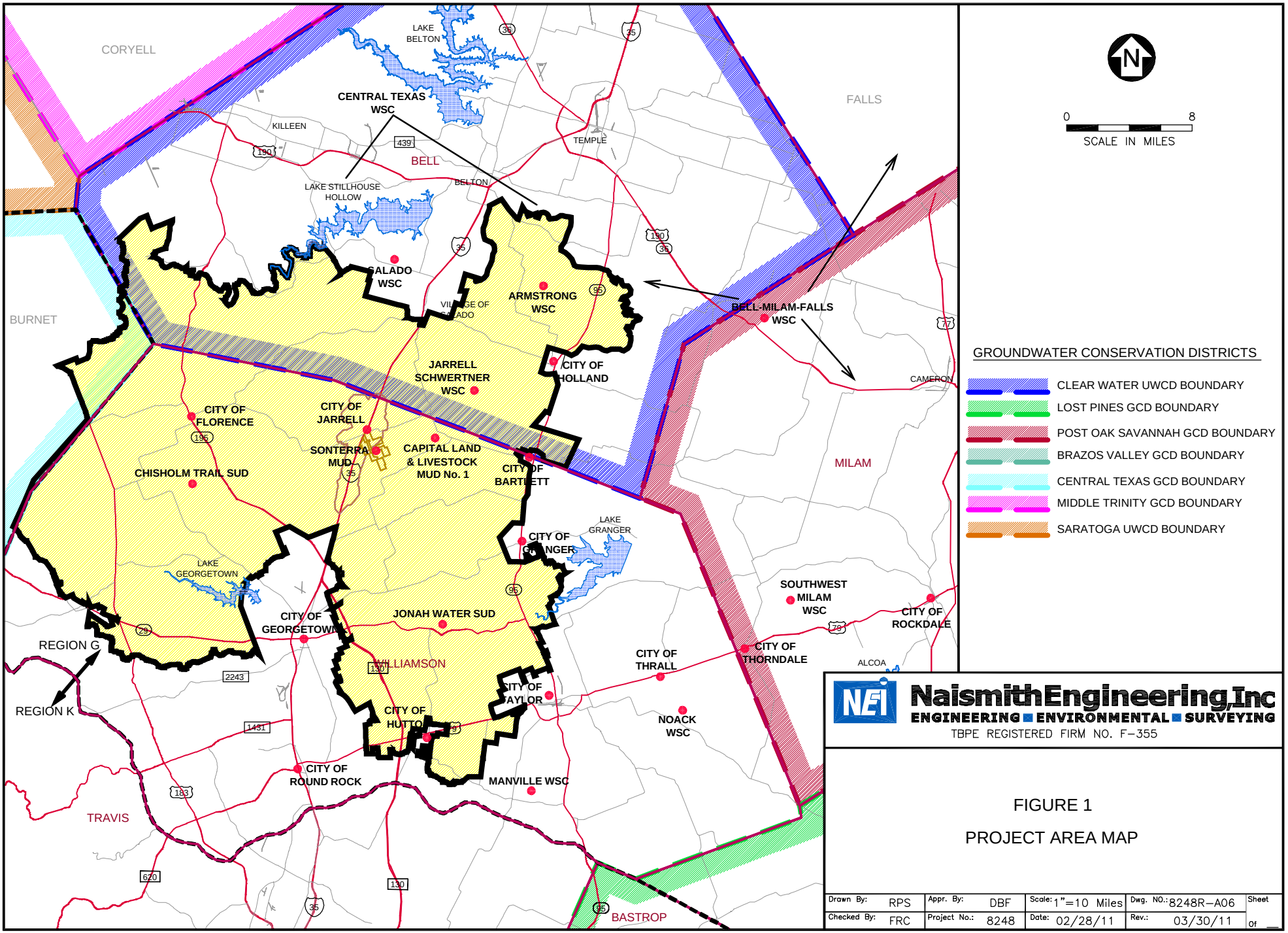

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FIGURE 1

PROJECT AREA MAP

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=10 Miles	Dwg. NO.:	8248R-A06
Checked By:	FRC	Project No.:	8248	Date:	02/28/11	Rev.:	03/30/11

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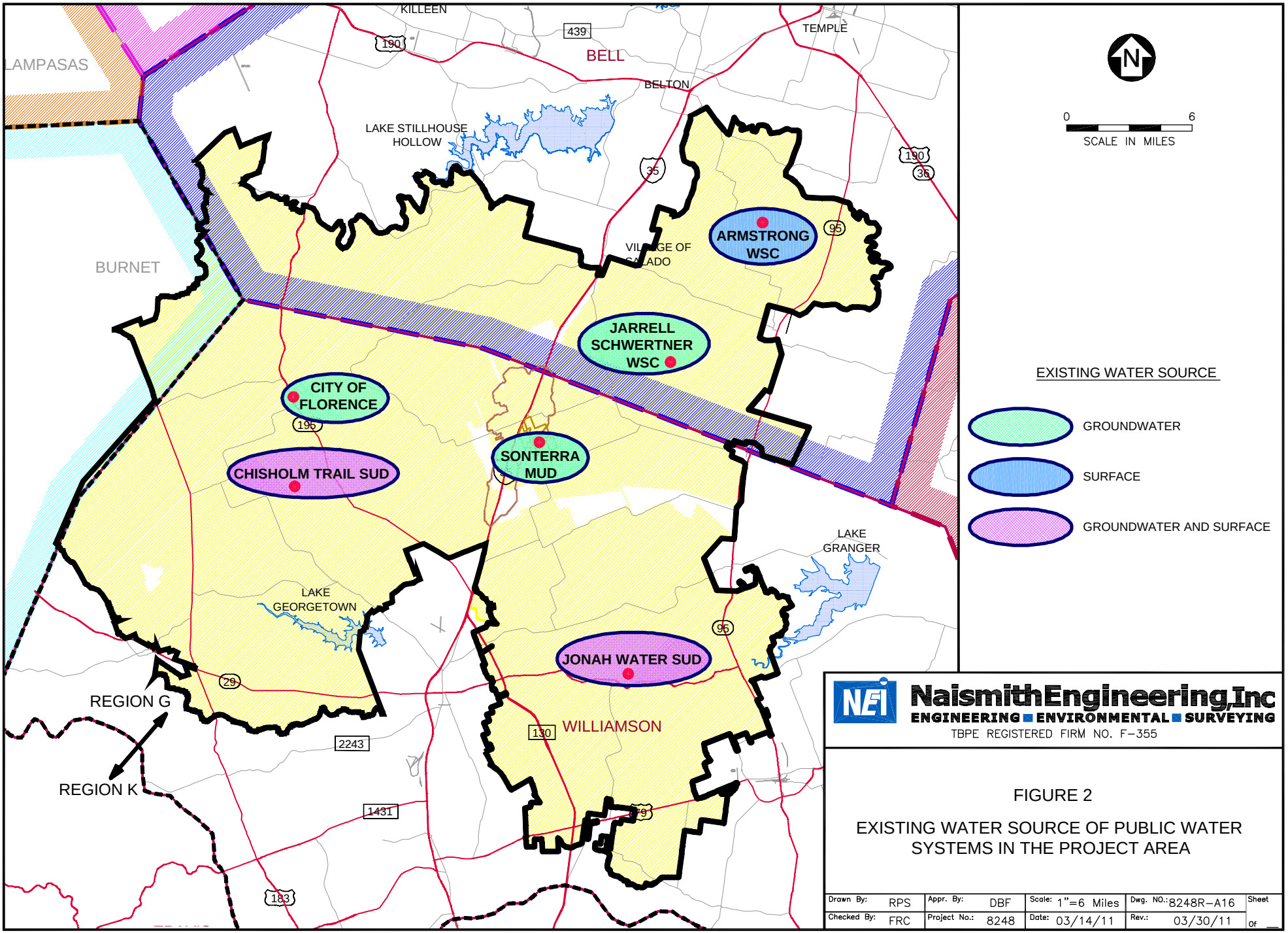

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FIGURE 2

EXISTING WATER SOURCE OF PUBLIC WATER SYSTEMS IN THE PROJECT AREA

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=6 Miles	Dwg. NO.:	8248R-A16
Checked By:	FRC	Project No.:	8248	Date:	03/14/11	Rev.:	03/30/11

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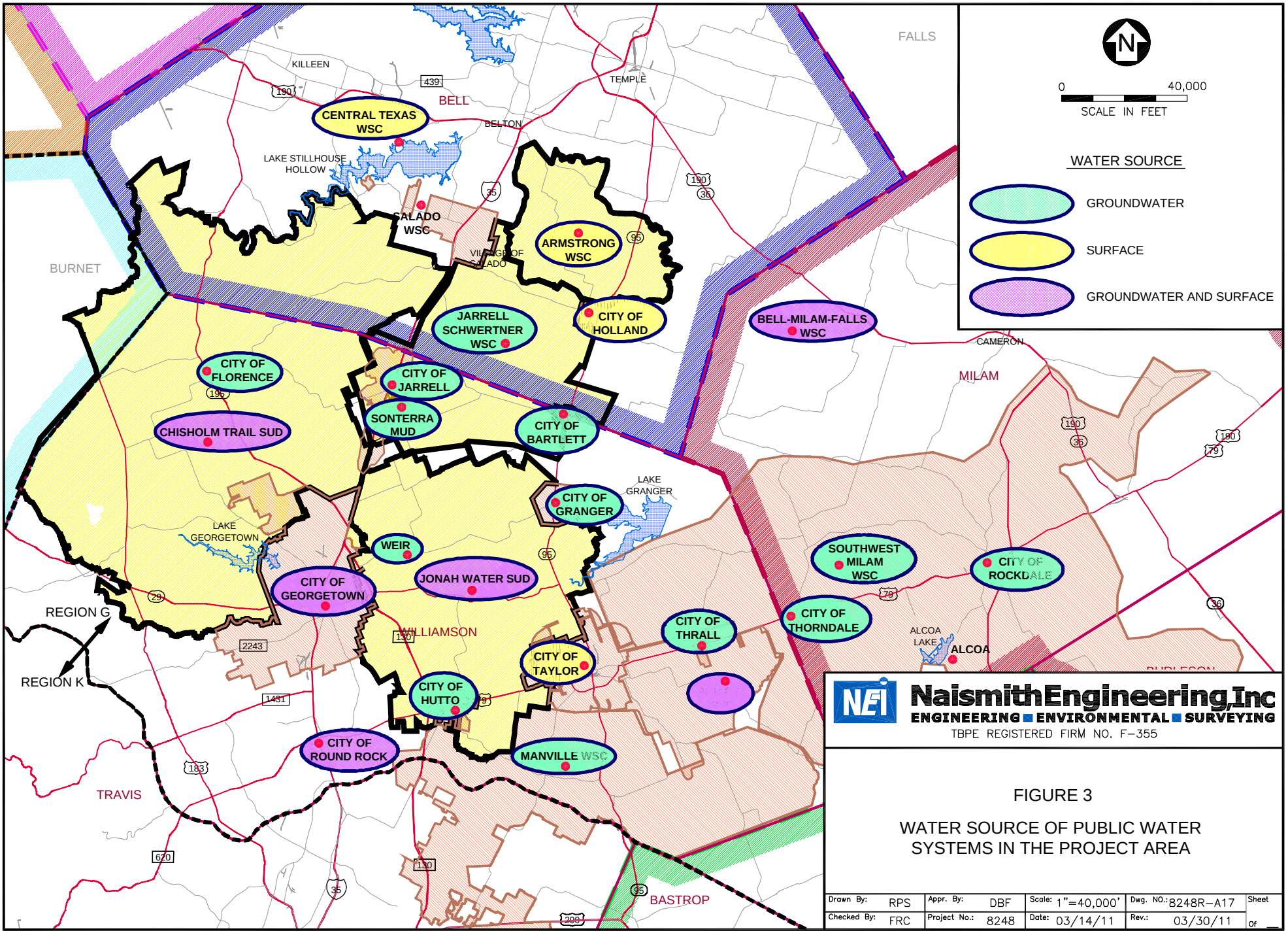

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FIGURE 3

WATER SOURCE OF PUBLIC WATER SYSTEMS IN THE PROJECT AREA

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=40,000'	Dwg. NO.:	8248R-A17
Checked By:	FRC	Project No.:	8248	Date:	03/14/11	Rev.:	03/30/11

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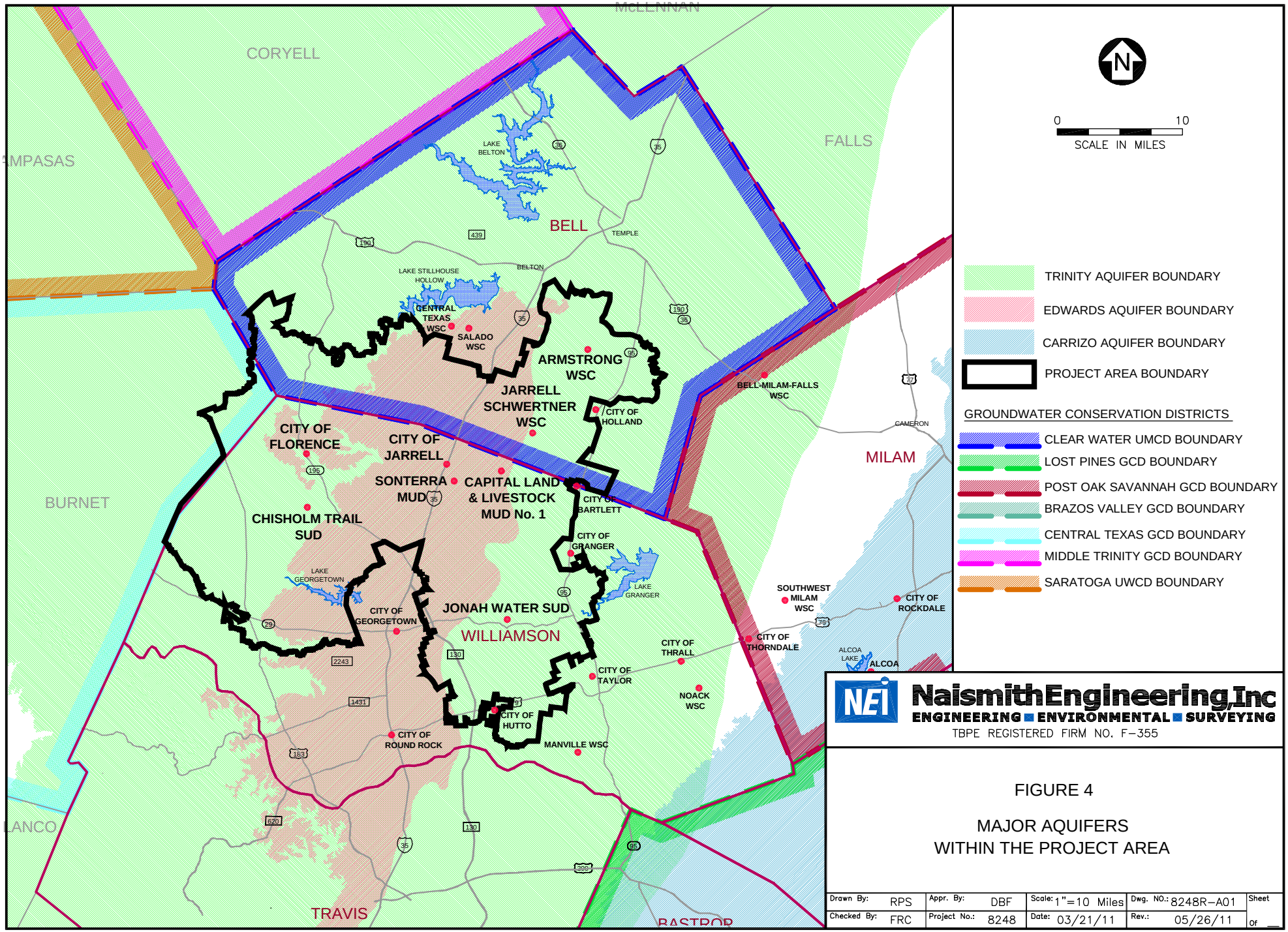

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FIGURE 4

MAJOR AQUIFERS
WITHIN THE PROJECT AREA

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=10 Miles	Dwg. NO.:	8248R-A01
Checked By:	FRC	Project No.:	8248	Date:	03/21/11	Rev.:	05/26/11

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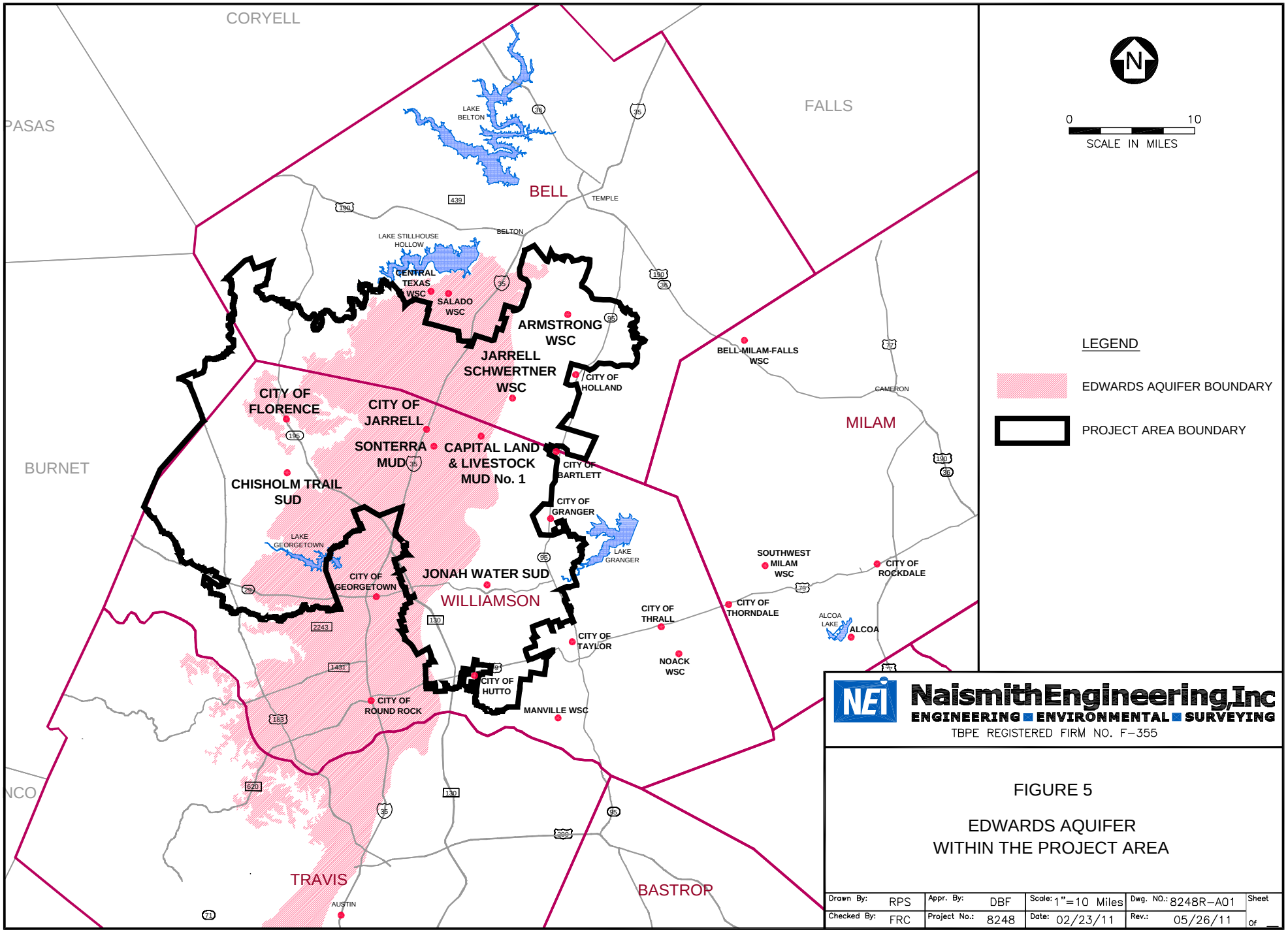

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FIGURE 5

EDWARDS AQUIFER
WITHIN THE PROJECT AREA

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=10 Miles	Dwg. NO.:	8248R-A01
Checked By:	FRC	Project No.:	8248	Date:	02/23/11	Rev.:	05/26/11

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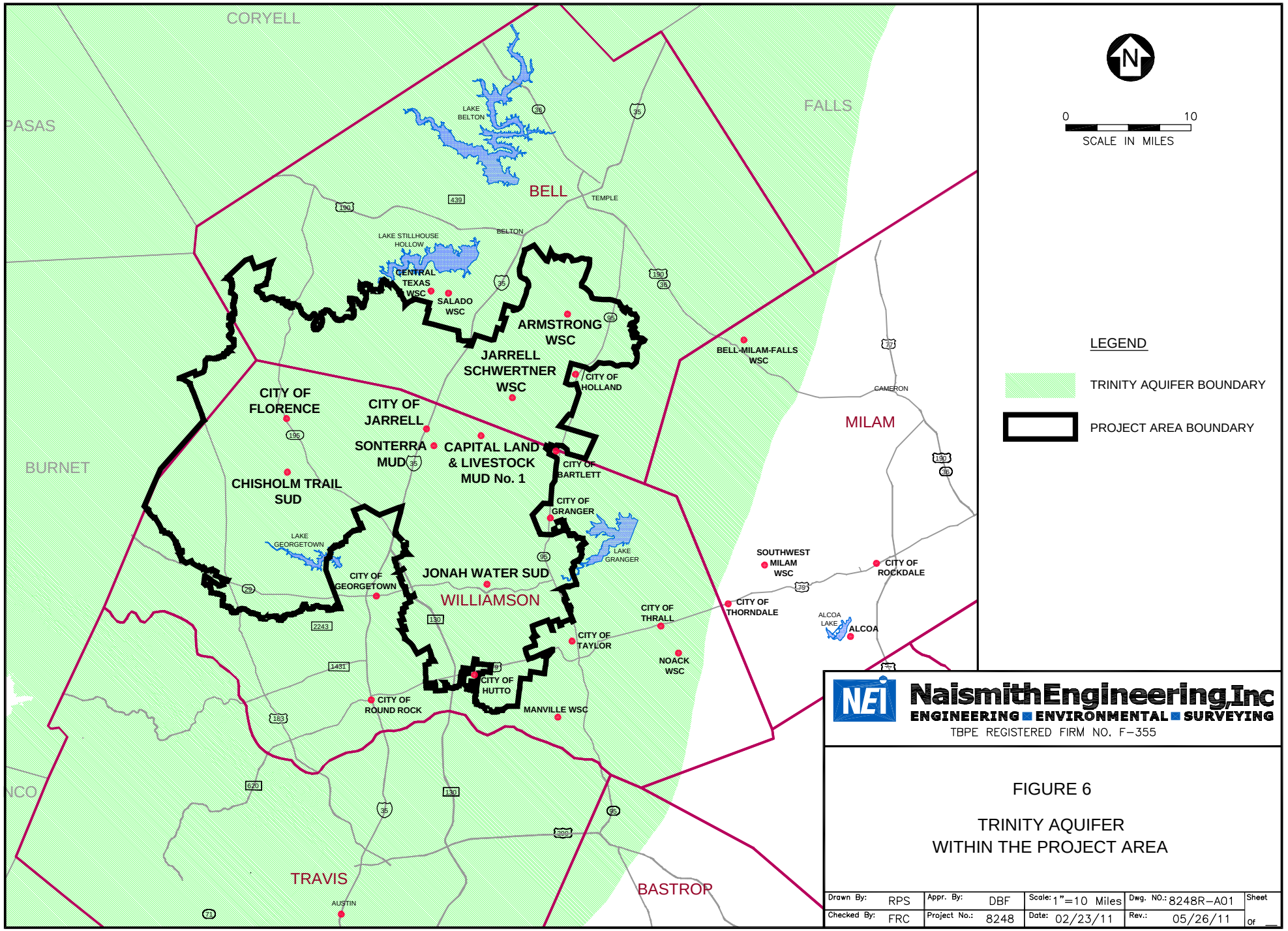

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FIGURE 6

TRINITY AQUIFER
WITHIN THE PROJECT AREA

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=10 Miles	Dwg. NO.:	8248R-A01
Checked By:	FRC	Project No.:	8248	Date:	02/23/11	Rev.:	05/26/11

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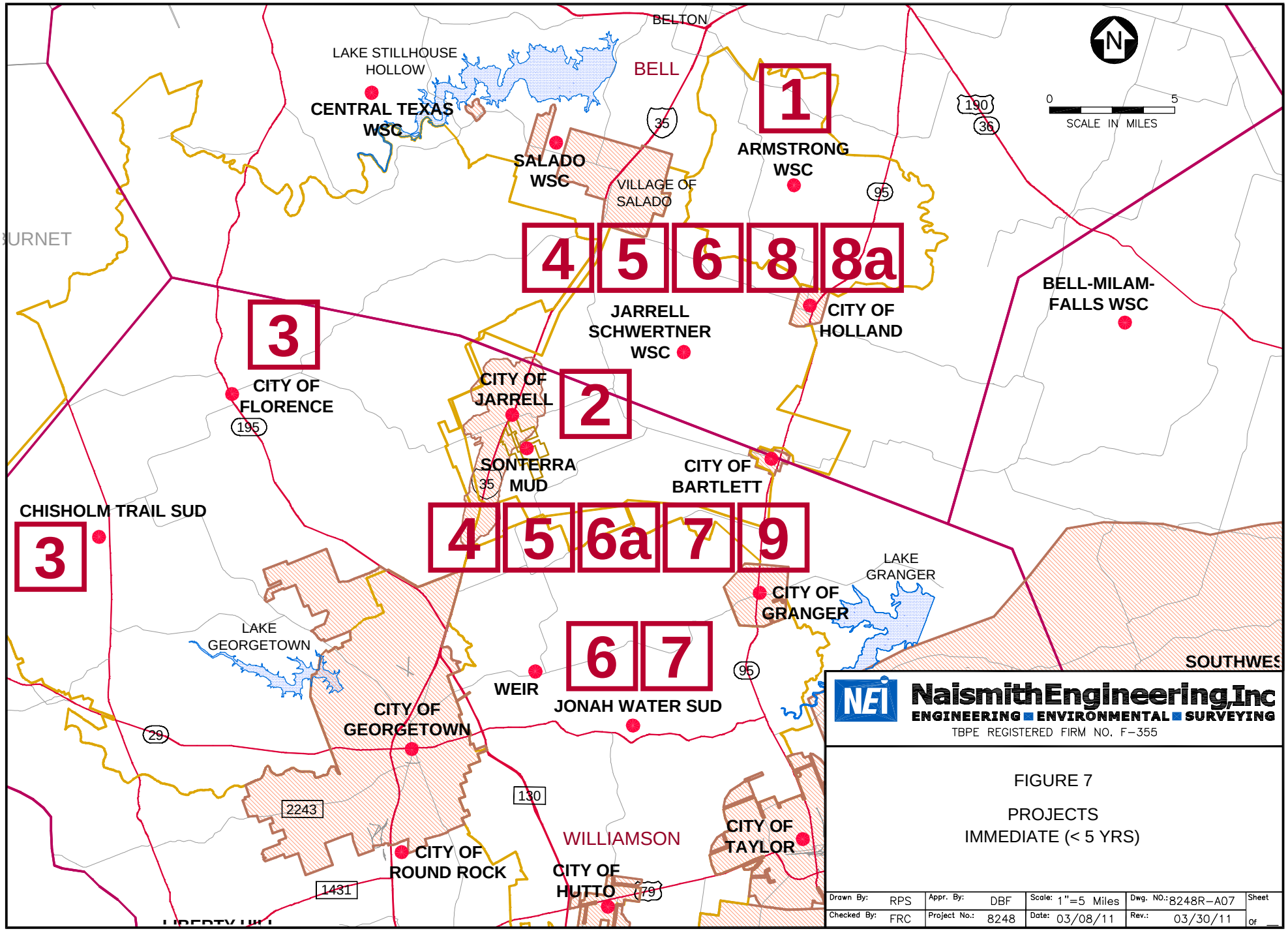

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FIGURE 7

PROJECTS
IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=5 Miles	Dwg. NO.:	8248R-A07
Checked By:	FRC	Project No.:	8248	Date:	03/08/11	Rev.:	03/30/11

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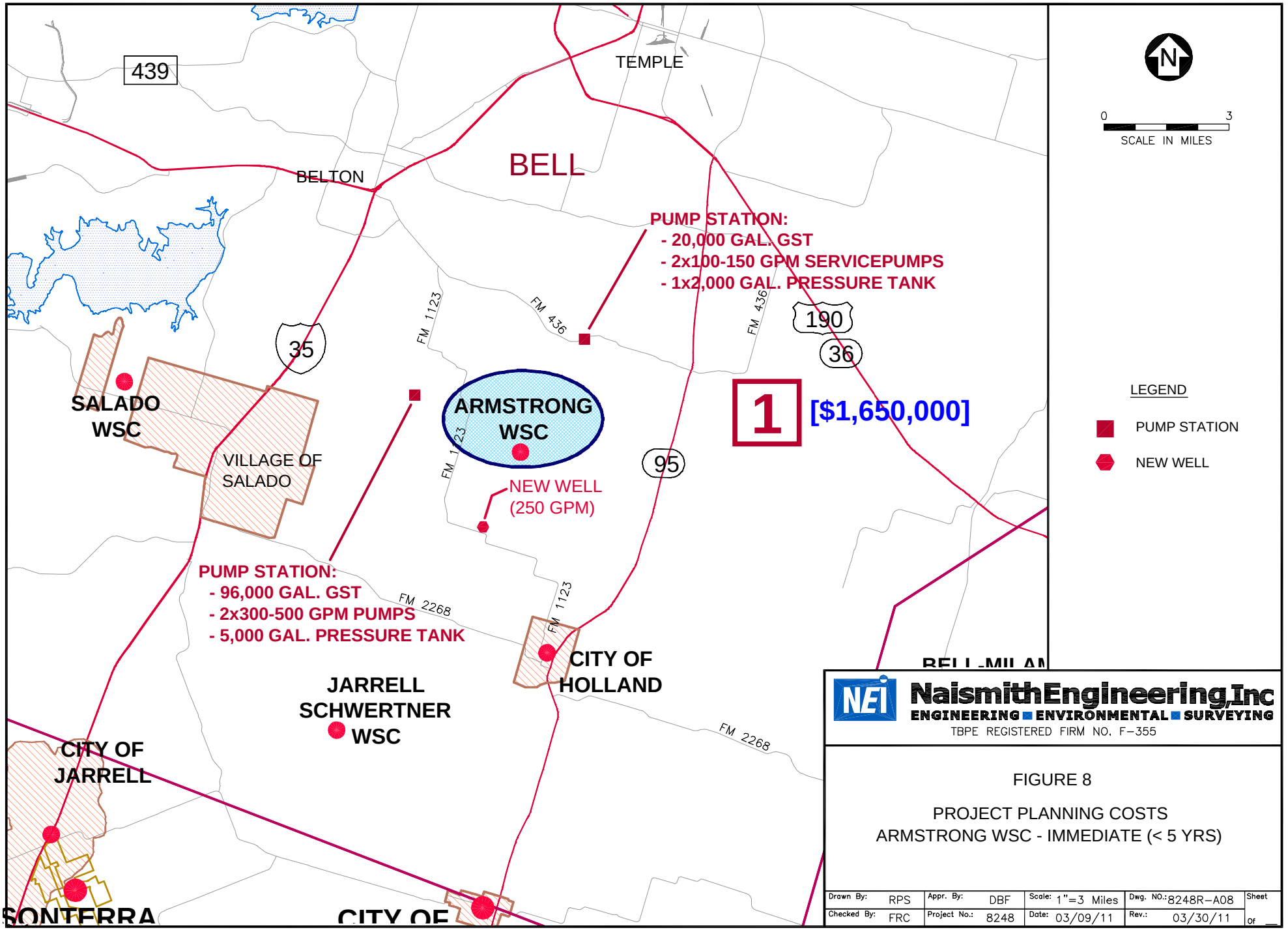

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FIGURE 8

PROJECT PLANNING COSTS
ARMSTRONG WSC - IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=3 Miles	Dwg. NO.:	8248R-A08
Checked By:	FRC	Project No.:	8248	Date:	03/09/11	Rev.:	03/30/11

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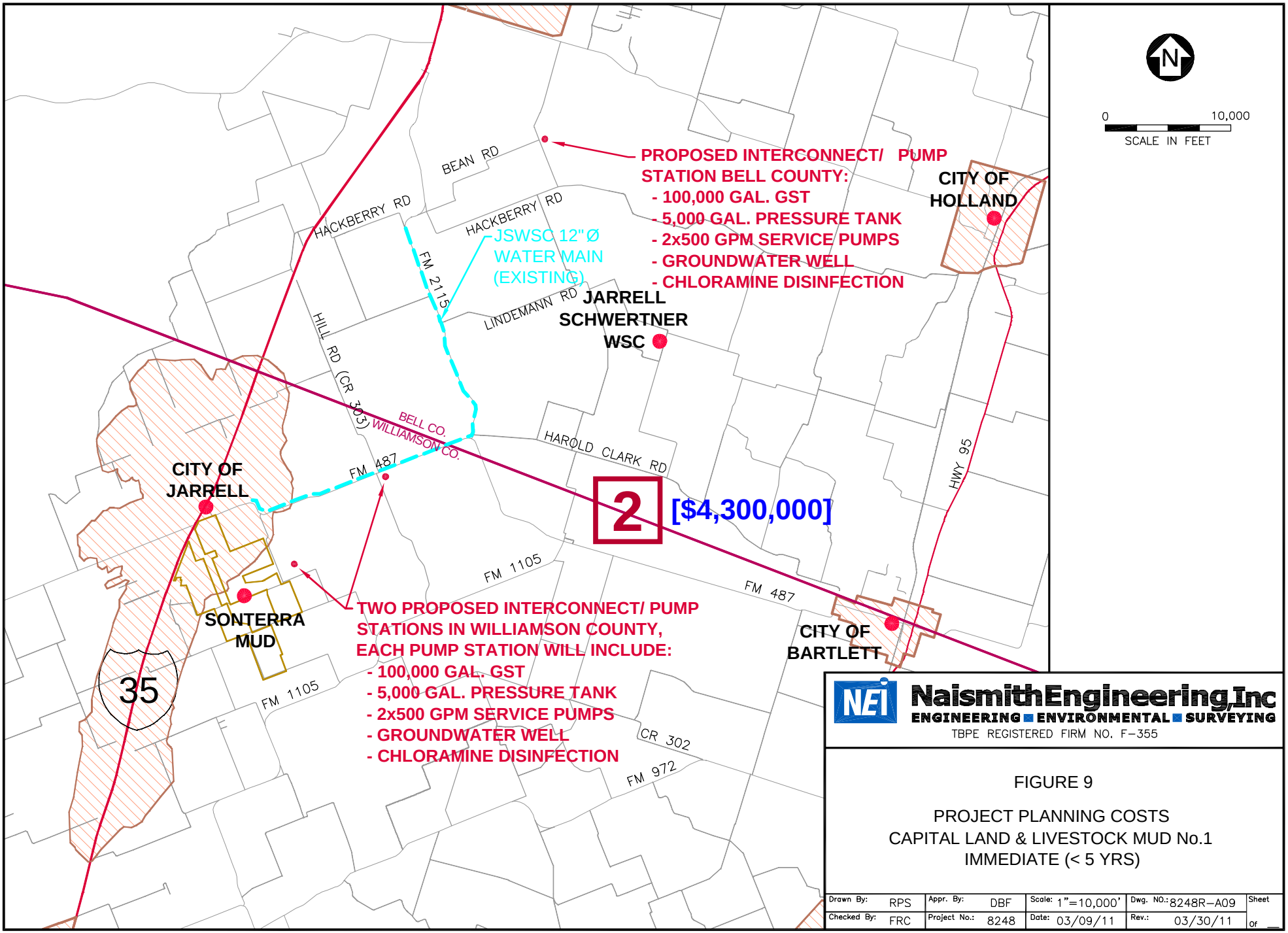

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FIGURE 9

PROJECT PLANNING COSTS
CAPITAL LAND & LIVESTOCK MUD No.1
IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=10,000'	Dwg. NO.:	8248R-A09
Checked By:	FRC	Project No.:	8248	Date:	03/09/11	Rev.:	03/30/11

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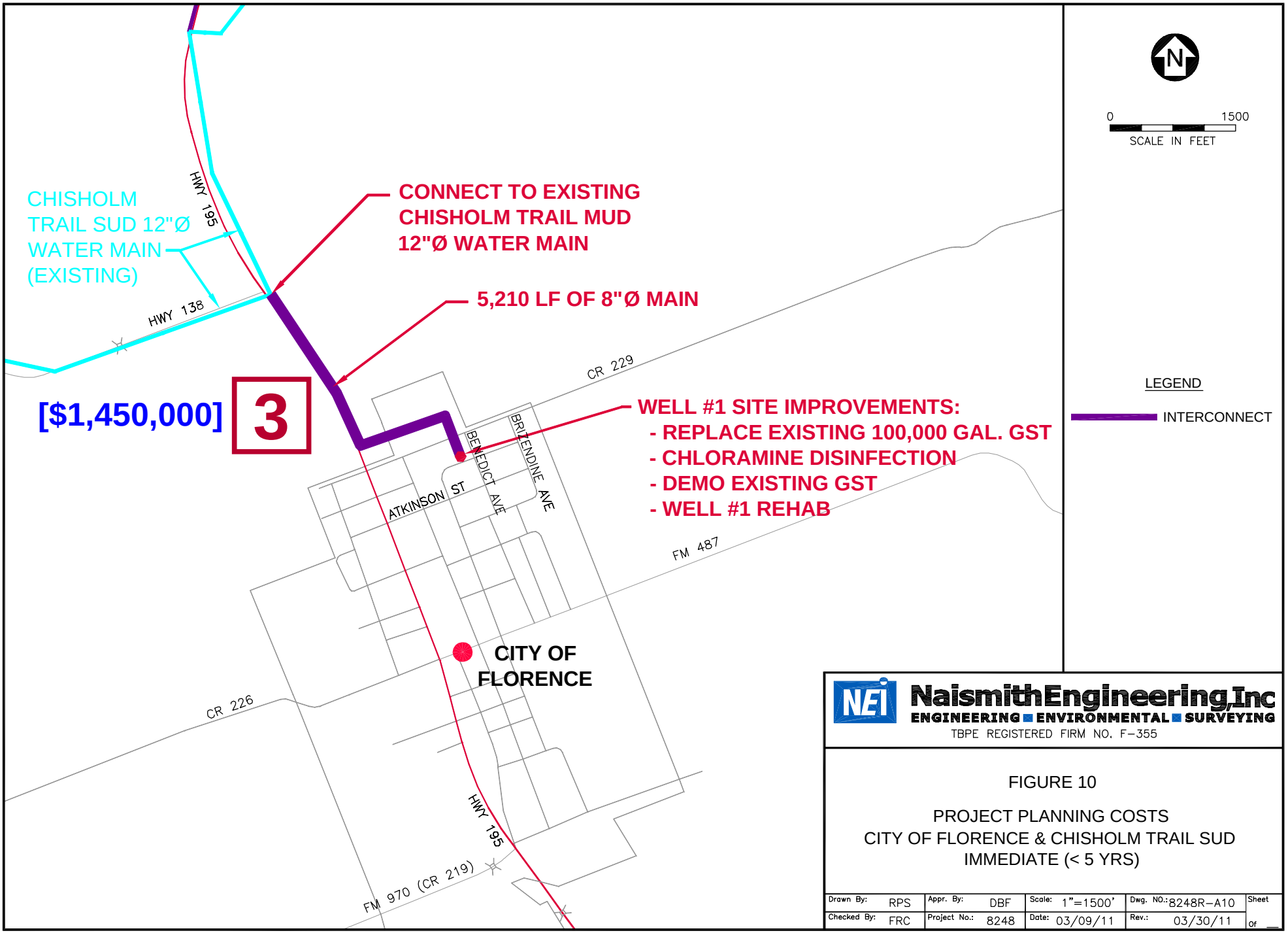

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FIGURE 10

PROJECT PLANNING COSTS
CITY OF FLORENCE & CHISHOLM TRAIL SUD
IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=1500'	Dwg. NO.: 8248R-A10	Sheet
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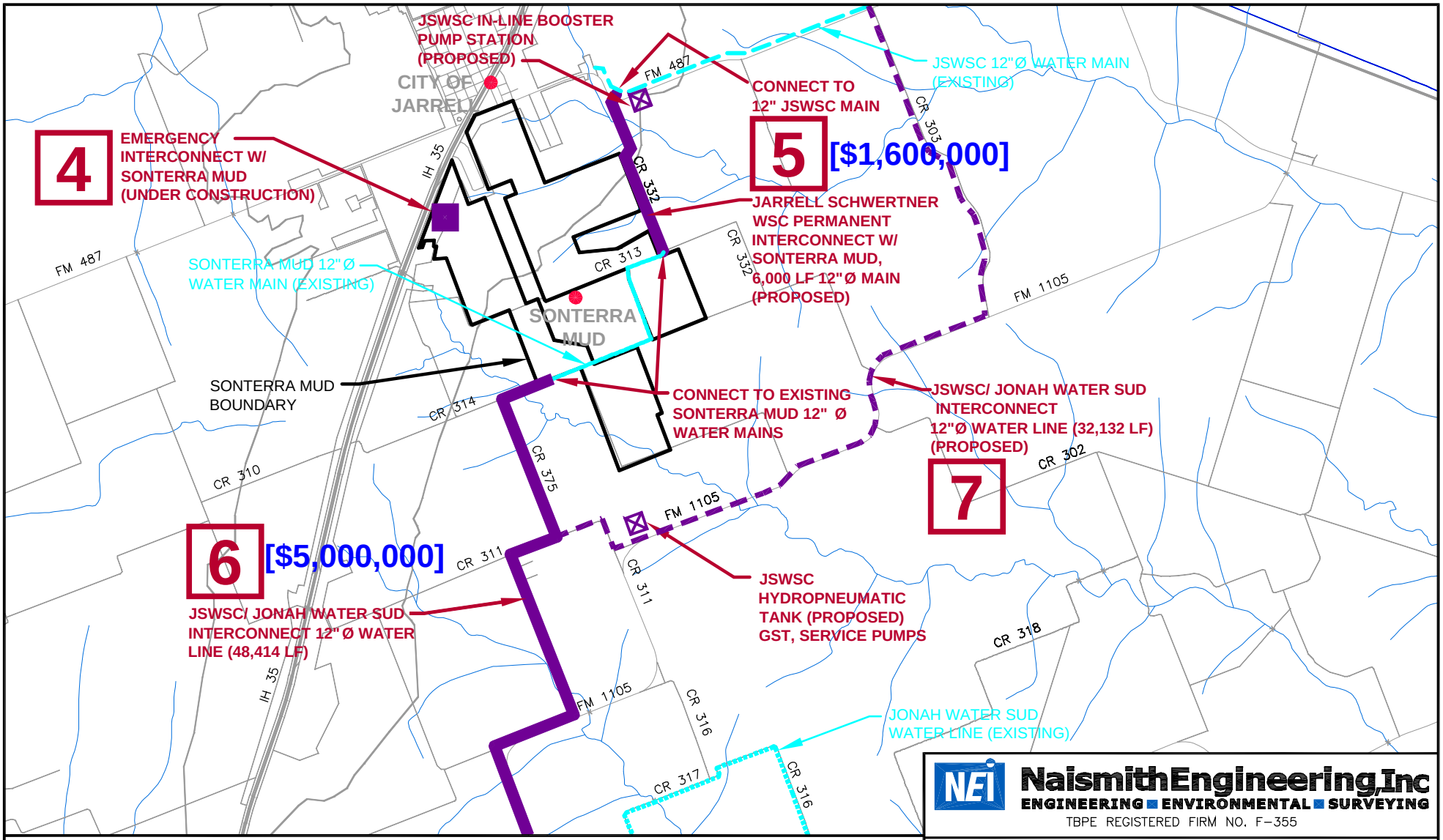

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0 5000
SCALE IN FEET

LEGEND

INTERCONNECT

POSSIBLE FUTURE

FIGURE 11

PROJECT PLANNING COSTS
JSWSC - IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=5000'	Dwg. NO.: 8248R-A11	Sheet
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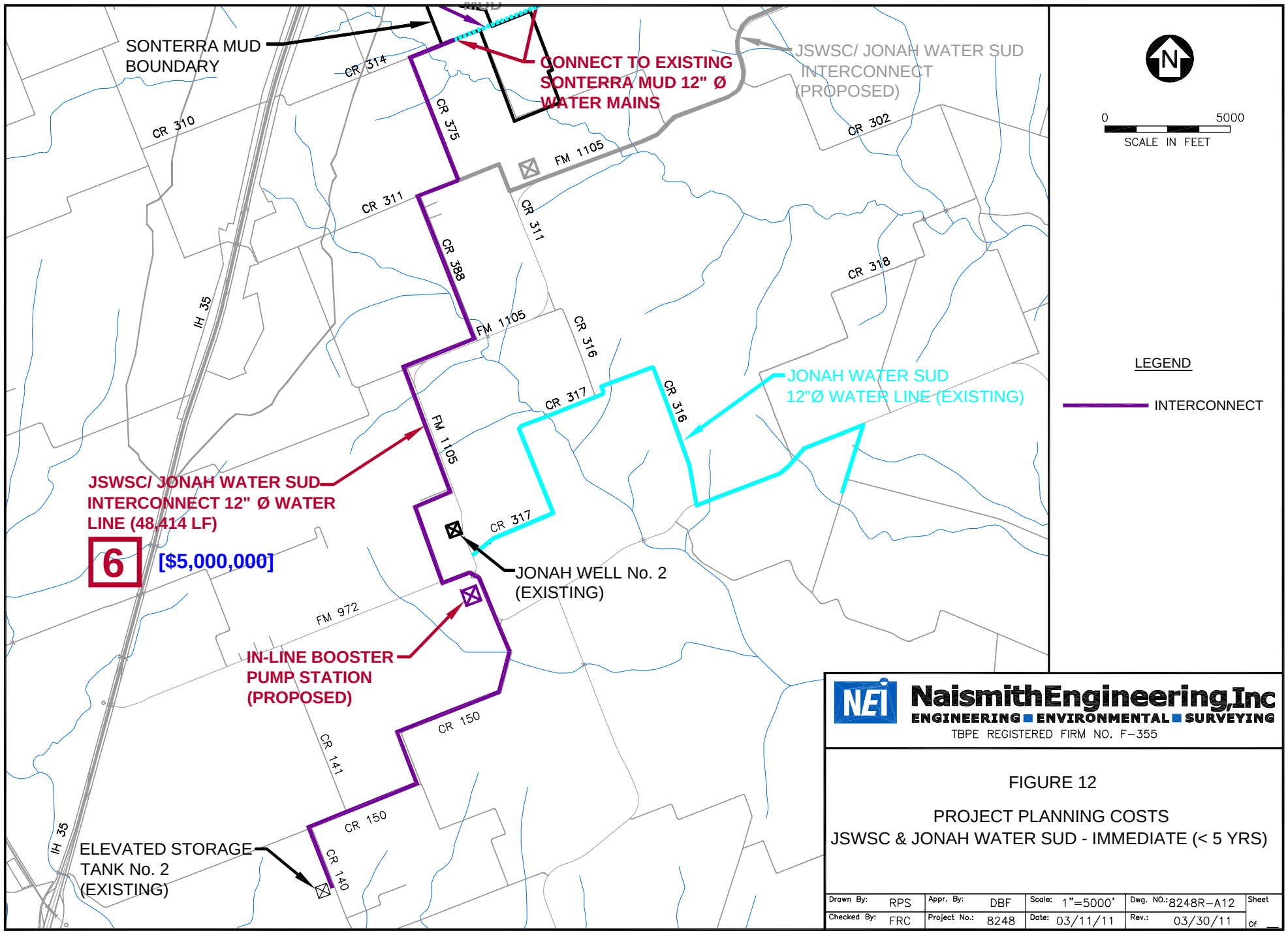

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FIGURE 12

PROJECT PLANNING COSTS
JSWSC & JONAH WATER SUD - IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=5000'	Dwg. NO.: 8248R-A12	Sheet
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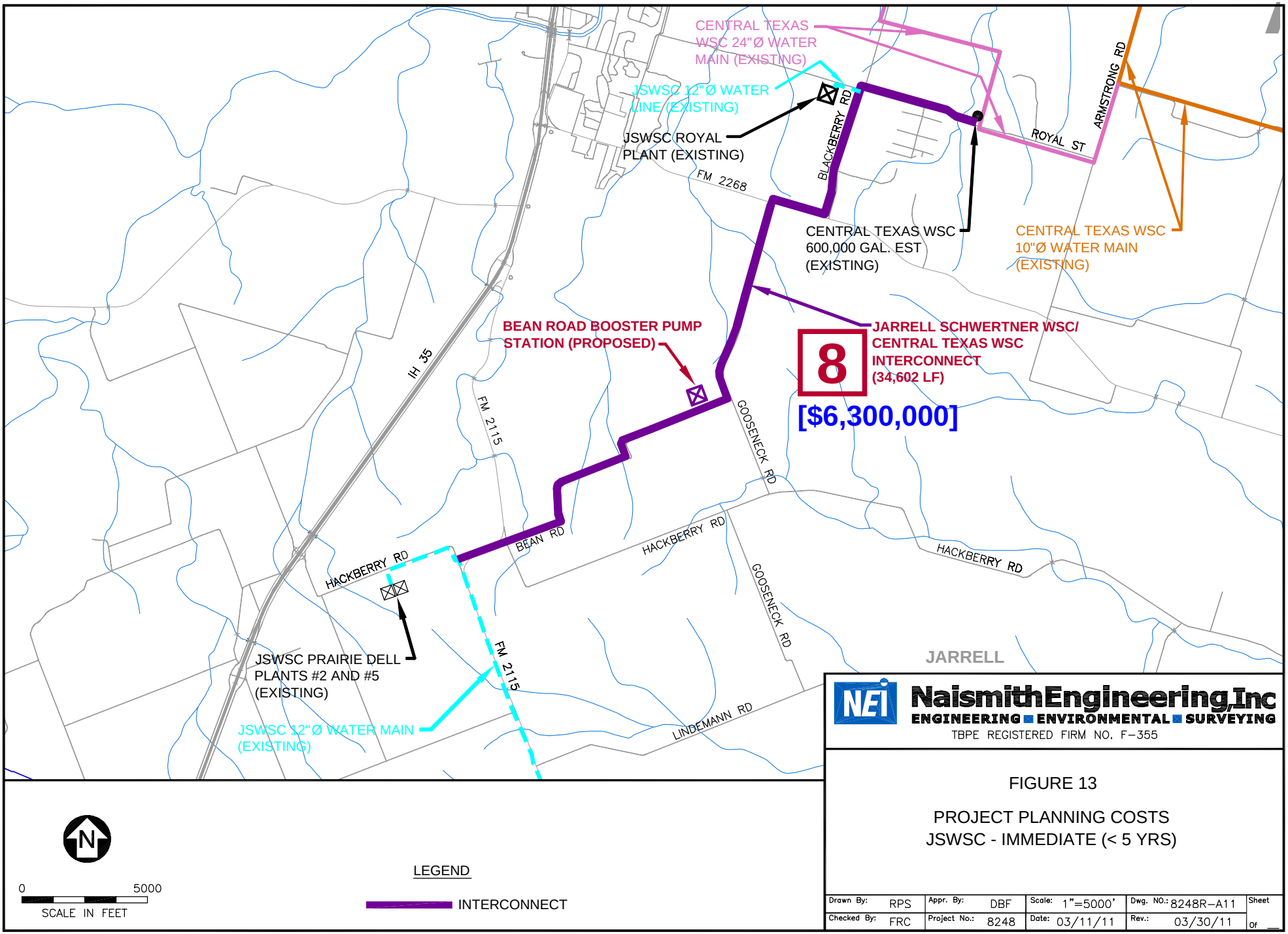

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FIGURE 13

PROJECT PLANNING COSTS
JSWSC - IMMEDIATE (< 5 YRS)

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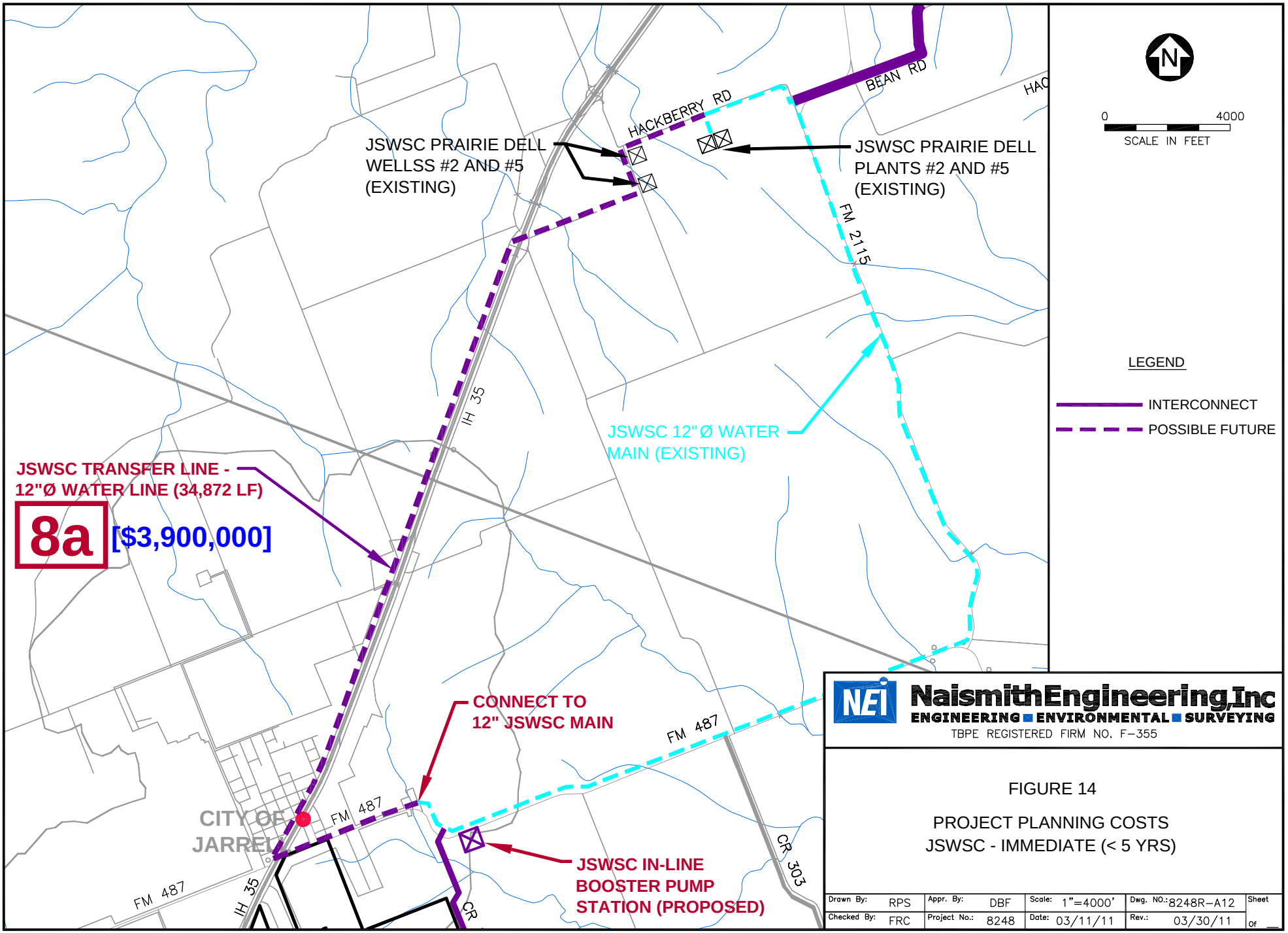

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FIGURE 14

PROJECT PLANNING COSTS
JSWSC - IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=4000'	Dwg. NO.:	8248R-A12
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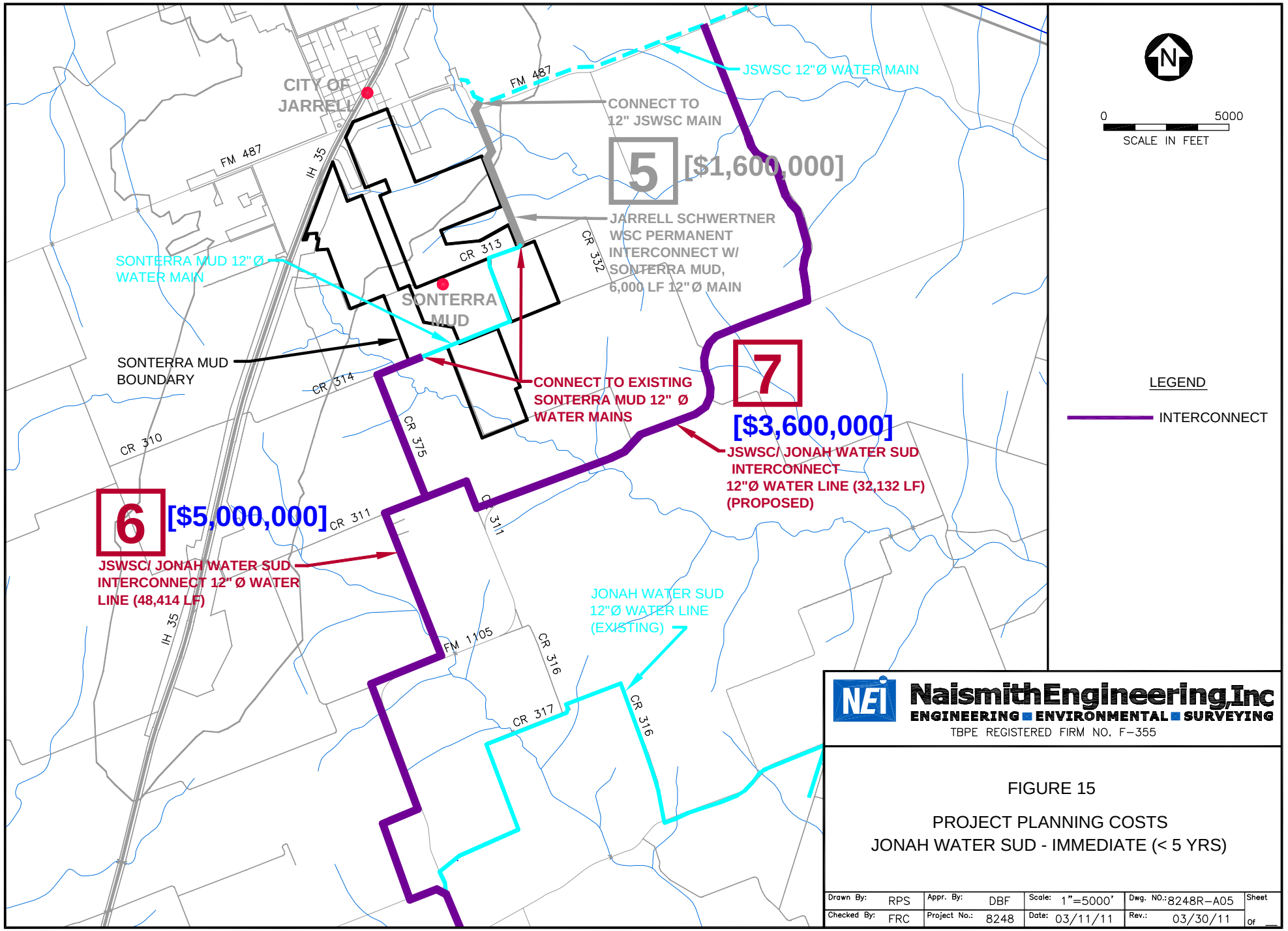

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FIGURE 15

PROJECT PLANNING COSTS
JONAH WATER SUD - IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=5000'	Dwg. NO.:	8248R-A05
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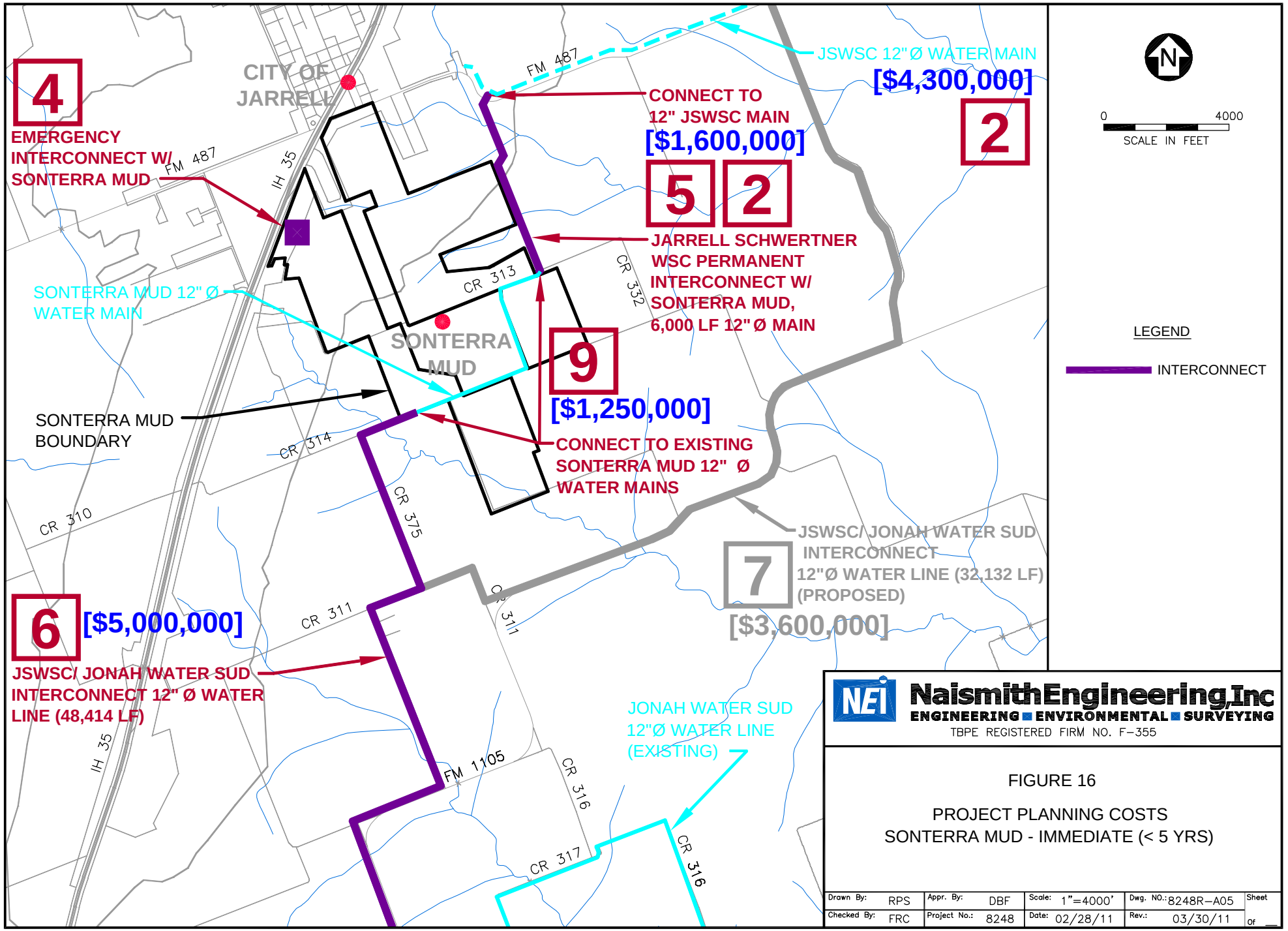

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FIGURE 16

PROJECT PLANNING COSTS
SONTERRA MUD - IMMEDIATE (< 5 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=4000'	Dwg. NO.:	8248R-A05
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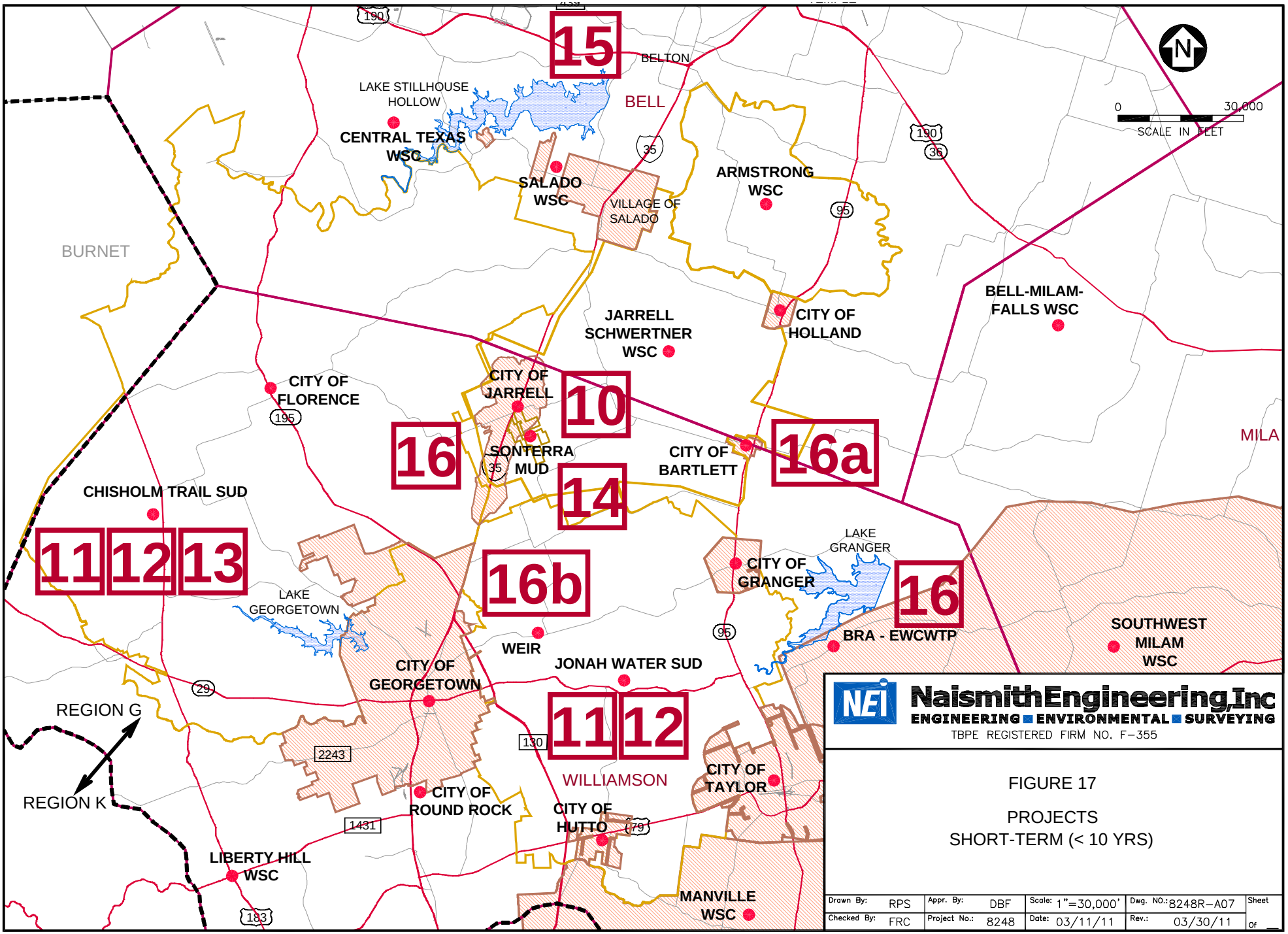

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FIGURE 17

PROJECTS
SHORT-TERM (< 10 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=30,000'	Dwg. NO.:	8248R-A07
Checked By:	FRC	Project No.:	8248	Date:	03/11/11	Rev.:	03/30/11

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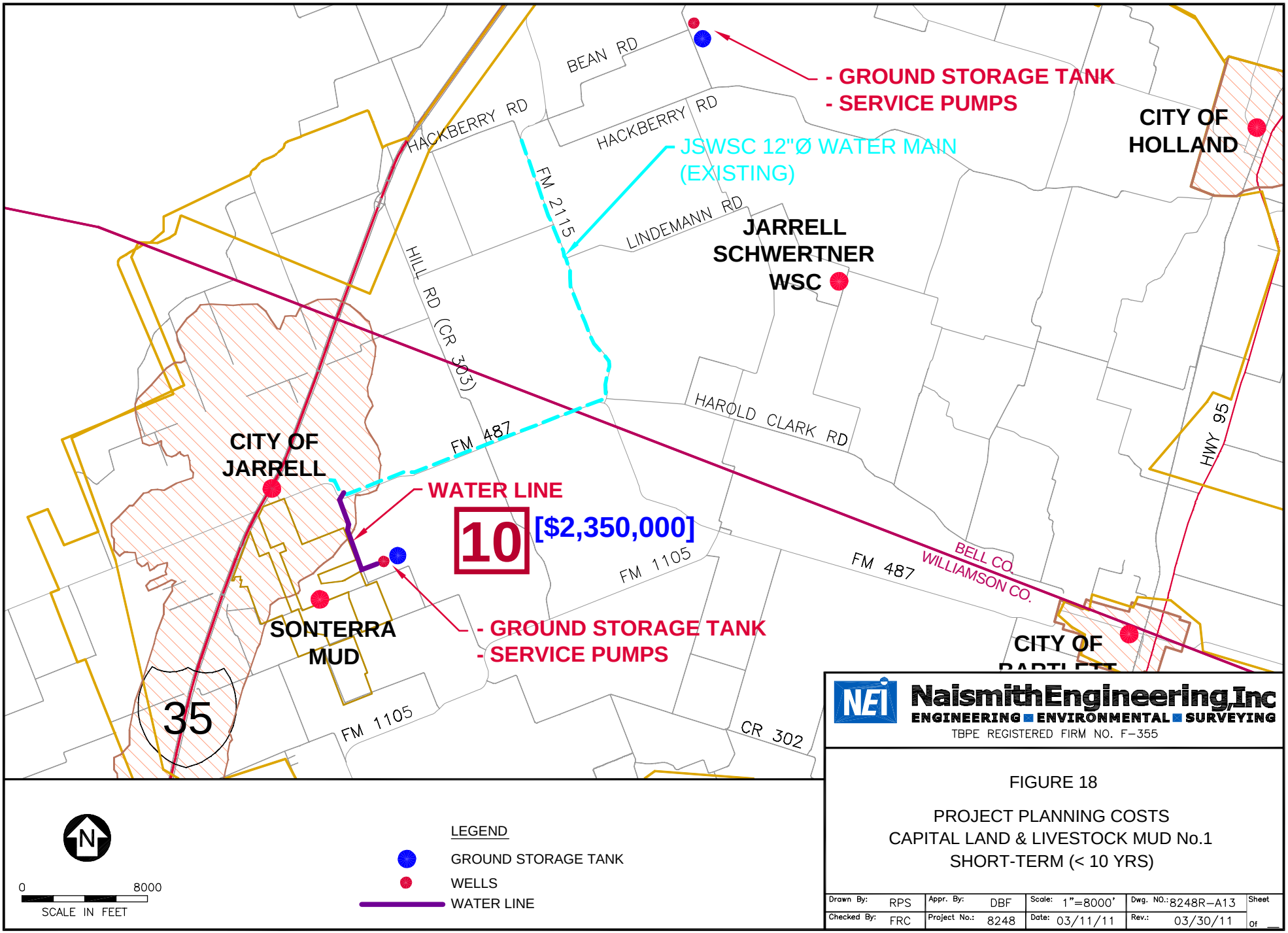

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FIGURE 18

PROJECT PLANNING COSTS
CAPITAL LAND & LIVESTOCK MUD No.1
SHORT-TERM (< 10 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=8000'	Dwg. NO.:	8248R-A13
Checked By:	FRC	Project No.:	8248	Date:	03/11/11	Rev.:	03/30/11

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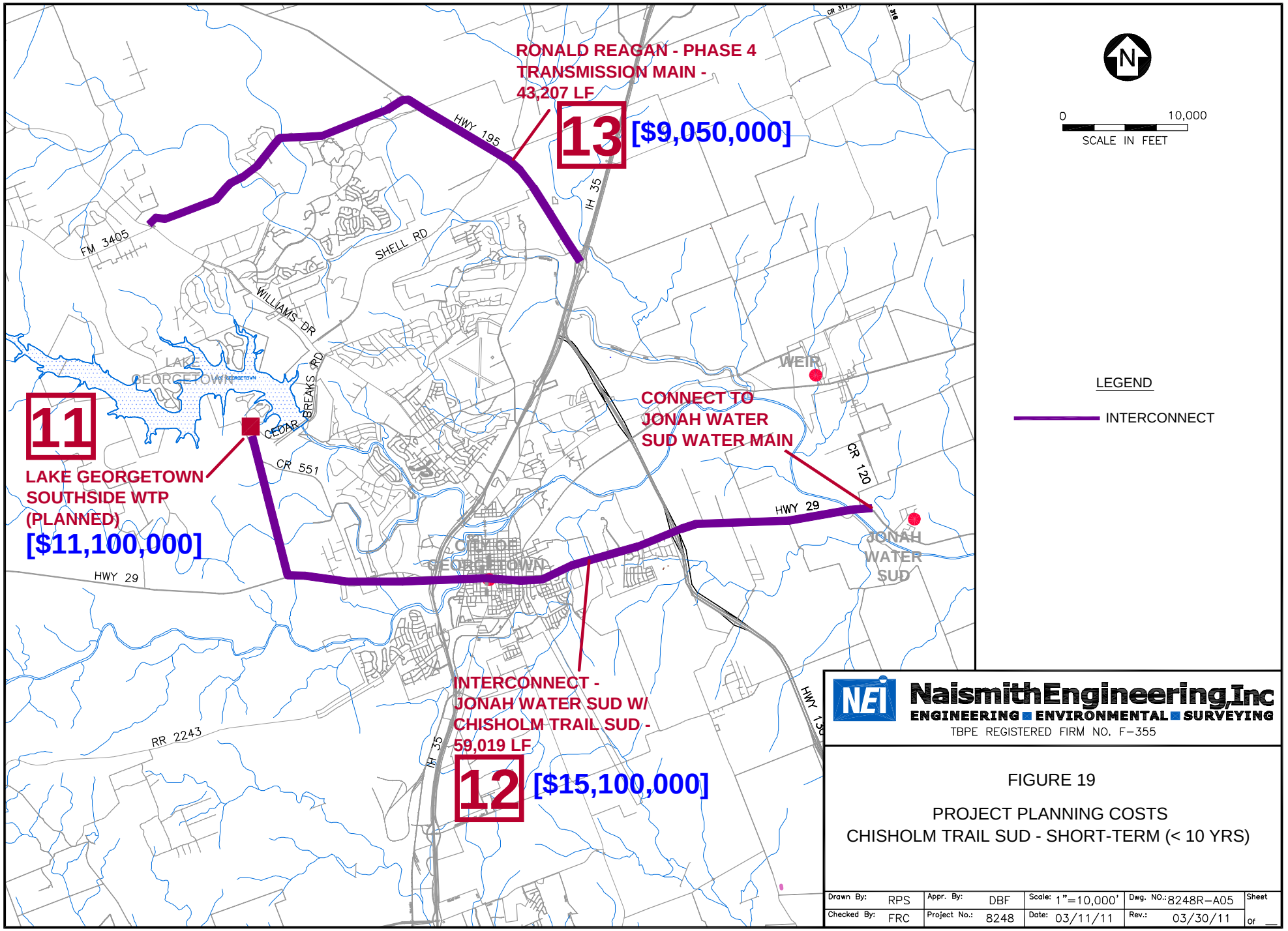

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FIGURE 19

PROJECT PLANNING COSTS
CHISHOLM TRAIL SUD - SHORT-TERM (< 10 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=10,000'	Dwg. NO.:	8248R-A05
Checked By:	FRC	Project No.:	8248	Date:	03/11/11	Rev.:	03/30/11

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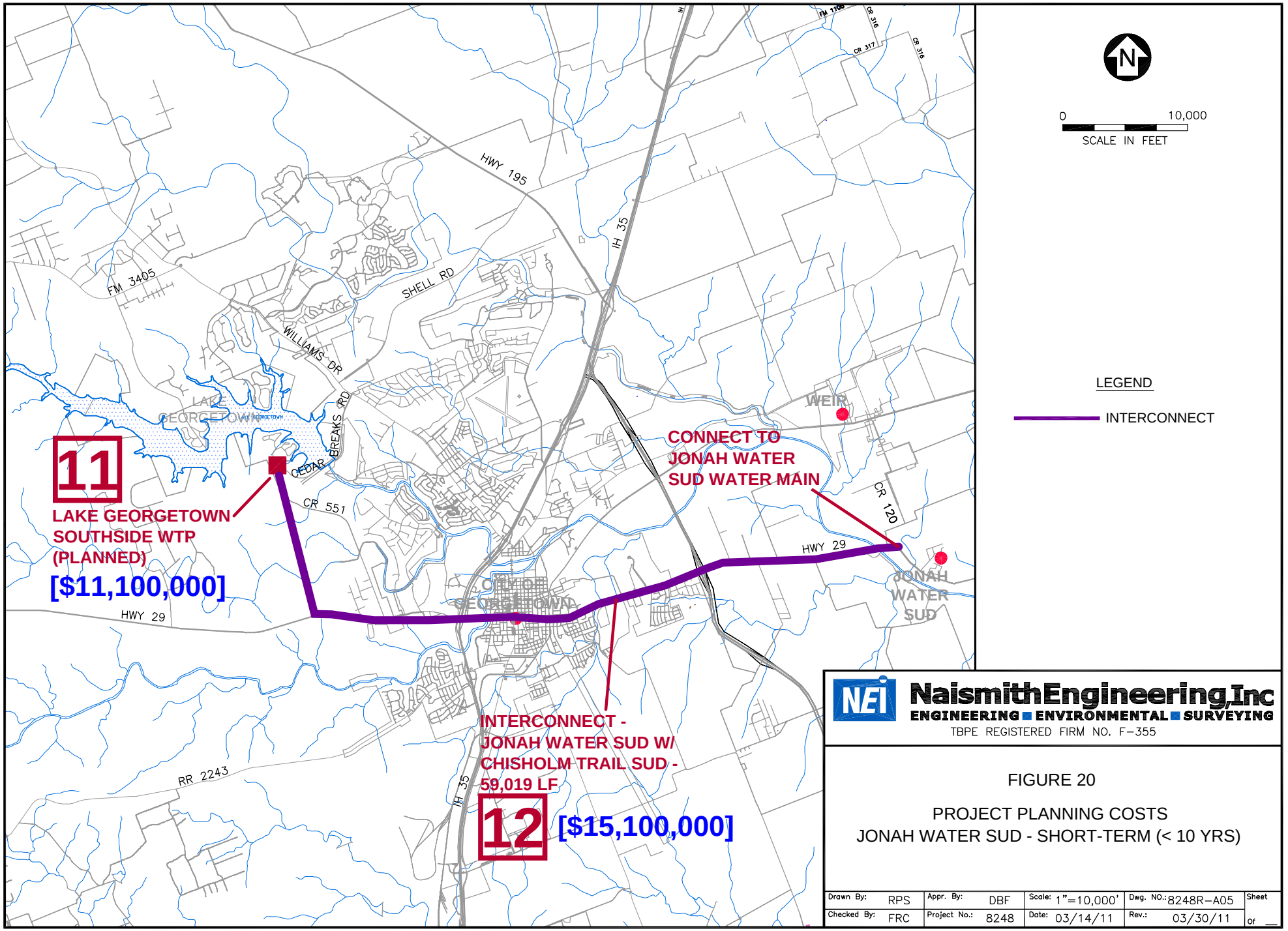

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FIGURE 20

PROJECT PLANNING COSTS
JONAH WATER SUD - SHORT-TERM (< 10 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=10,000'	Dwg. NO.:	8248R-A05
Checked By:	FRC	Project No.:	8248	Date:	03/14/11	Rev.:	03/30/11

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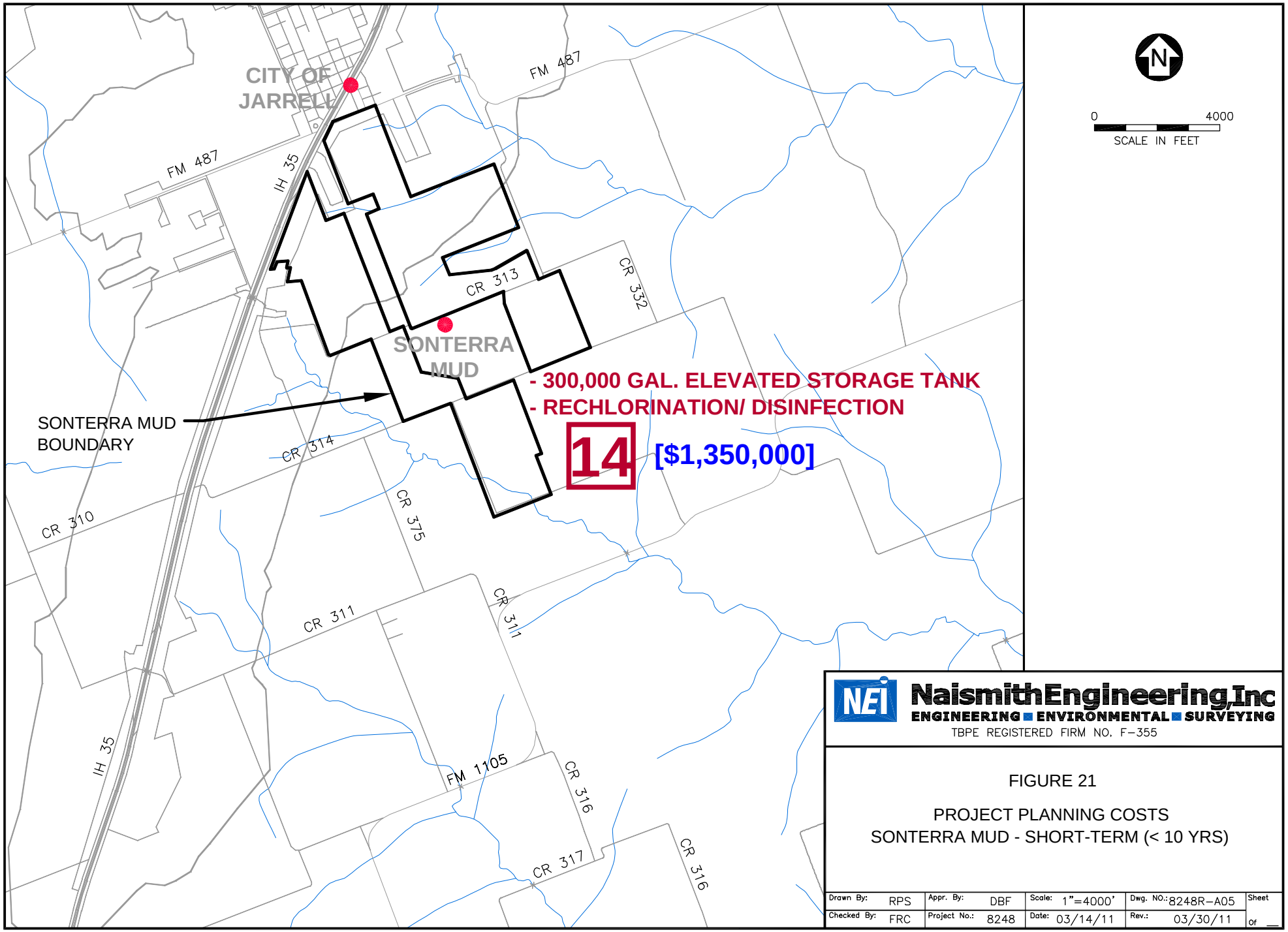

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FIGURE 21

PROJECT PLANNING COSTS
SONTERRA MUD - SHORT-TERM (< 10 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=4000'	Dwg. NO.:	8248R-A05	Sheet	
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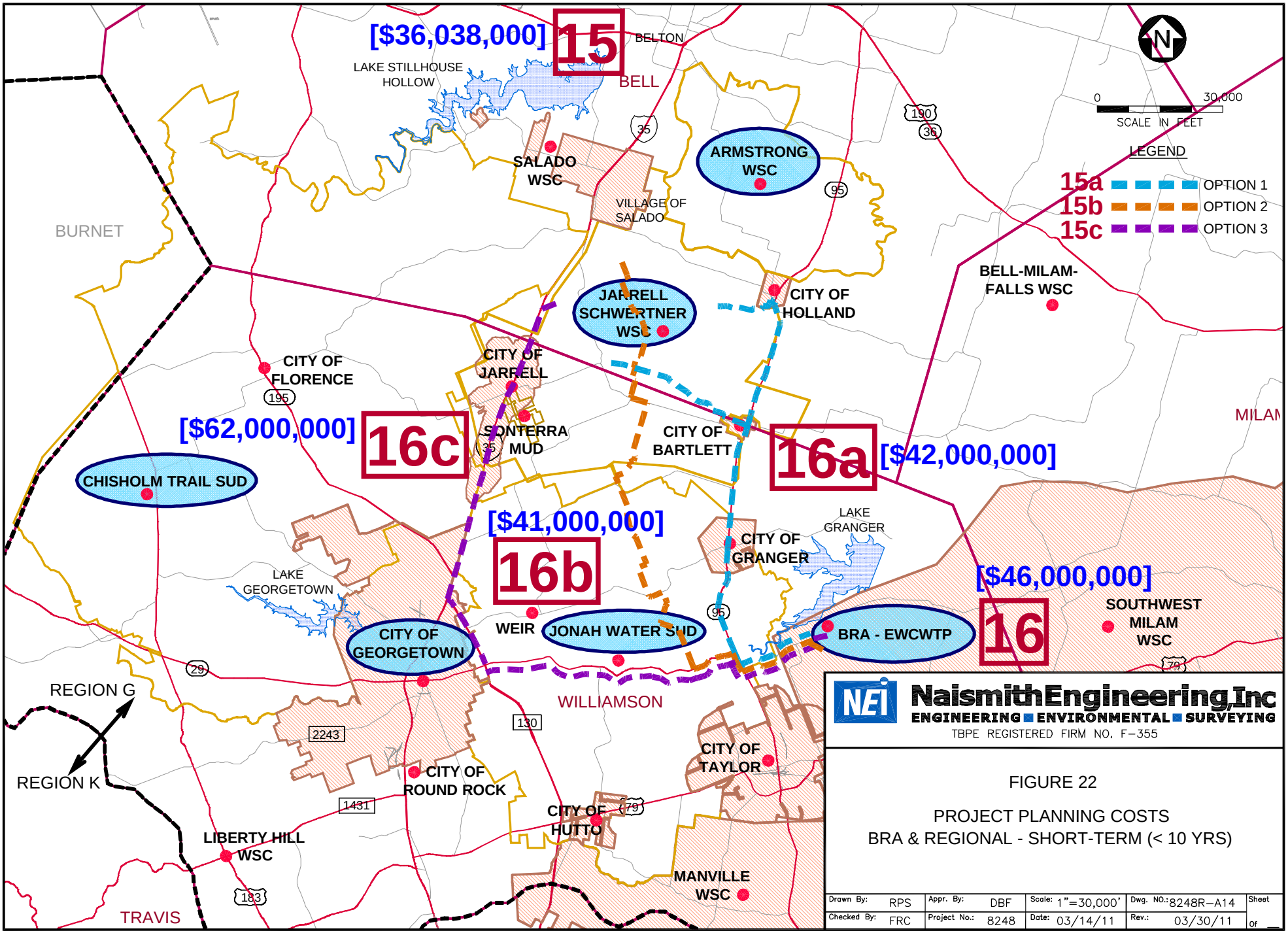

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FIGURE 22

PROJECT PLANNING COSTS
BRA & REGIONAL - SHORT-TERM (< 10 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=30,000'	Dwg. NO.:	8248R-A14
Checked By:	FRC	Project No.:	8248	Date:	03/14/11	Rev.:	03/30/11

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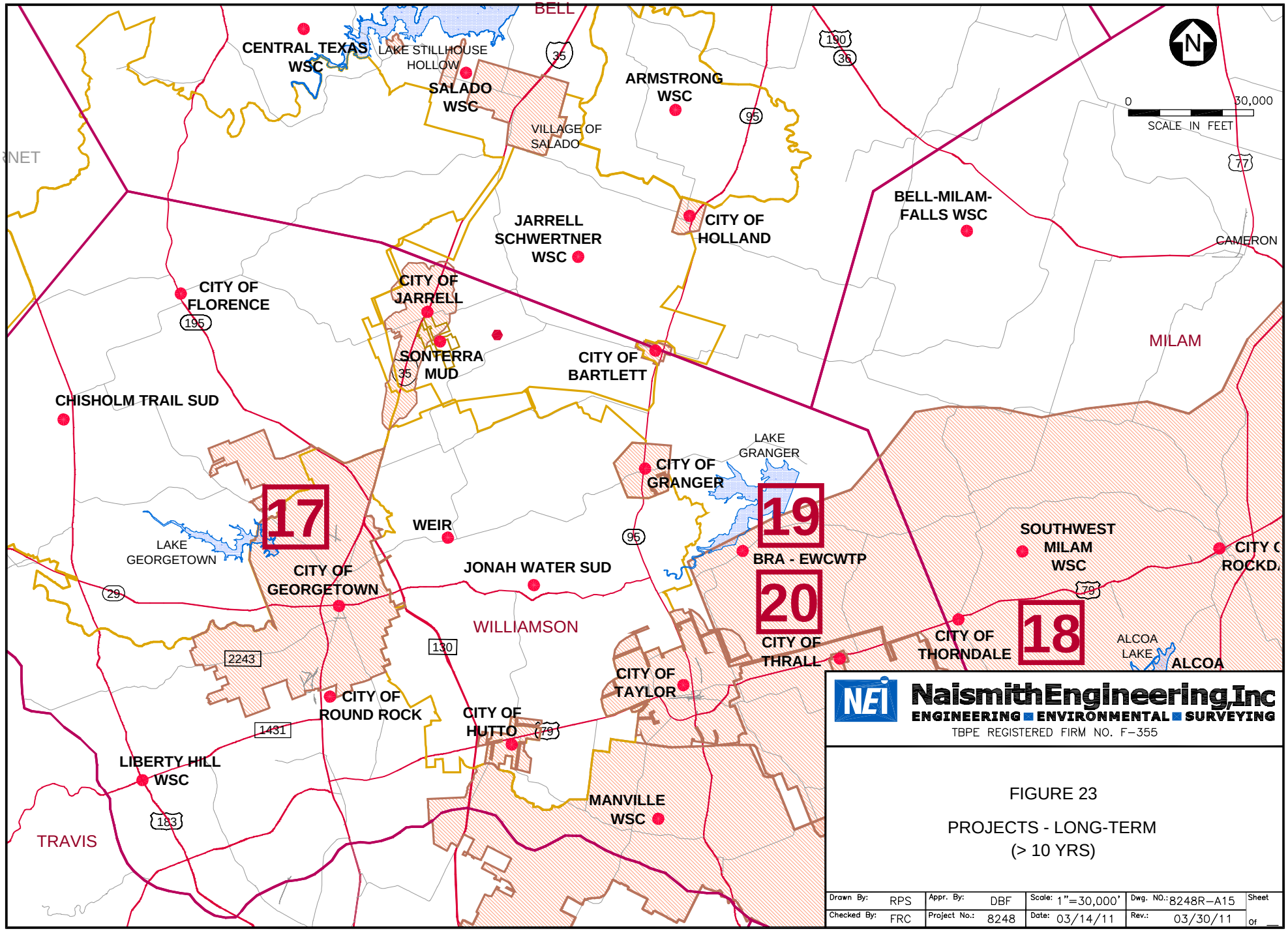

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FIGURE 23

PROJECTS - LONG-TERM
(> 10 YRS)

Drawn By:	RPS	Appr. By:	DBF	Scale:	1"=30,000'	Dwg. NO.:	8248R-A15
Checked By:	FRC	Project No.:	8248	Date:	03/14/11	Rev.:	03/30/11

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Appendix A - Presentations

Meeting Overview

- Introductions
- Review of Planning Group Participants
- Sources of Funding for the Study
- Review of Scope of Work
- Schedule
- Questions

Introductions

- JSWSC (Project Administrator)
  - Sonny Kretzschmar – Board President
  - Sheila Cunningham – General Manager
- Consulting Team: Naismith Engineering, Inc. (NEI) and Duff Consulting Engineers, Inc. (Duff)
  - Tom Brown (NEI)
  - Grant A. Jackson, P.E. (NEI)
  - David B. Fusilier, P.E. (NEI)
  - Adam M. Luke, P.E. (NEI)
  - Rodney Adamek (Duff)
  - Bill Aston, P.E. (Duff)
- Other Participants

Planning Group Participants

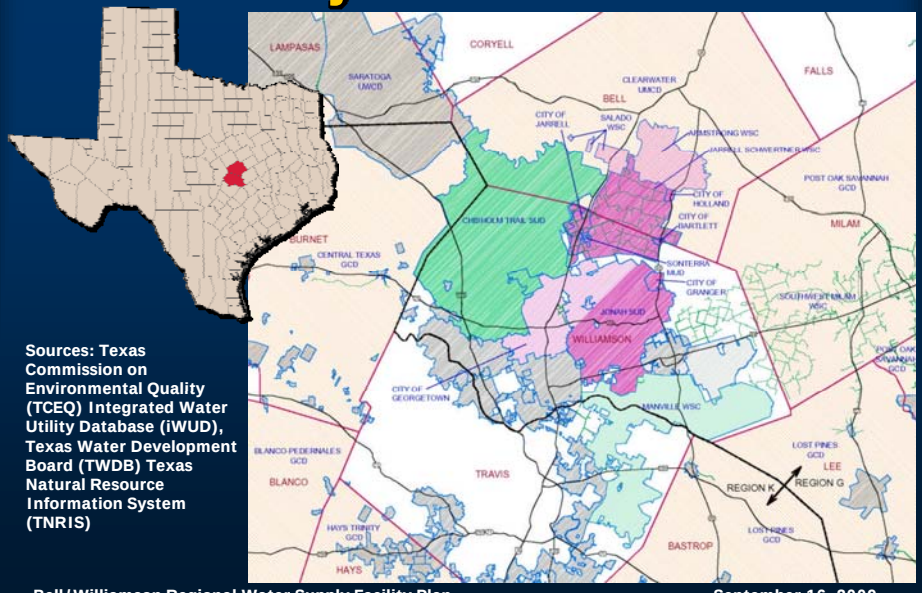
- Texas Water Development Board (TWDB) – Regional Planning Grant
- Participating Regional Water Entities

Armstrong WSC	Clearwater GCD
Capital Land & Livestock MUD No. 1	City of Bartlett
Central Texas WSC	City of Georgetown
Chisholm Trail SUD	City of Granger
Jarrell Schwertner WSC (Admin)	City of Holland
Jonah Water SUD	City of Jarrell
Manville WSC	City of Jonah
Salado WSC	Brazos River Authority
Sonterra MUD	

Planning Group Participants (Cont'd)

- Other Parties
  - Bell County
  - Williamson County
  - Private Water Suppliers
  - Business Interests
  - Water User Representatives
  - Community Representatives
- Other Parties
  - Lost Pines GCD
  - Post Oak Savannah GCD
  - State Water Planning Groups – Regions G & K
  - Consulting Team

Project Location



Sources: Texas Commission on Environmental Quality (TCEQ) Integrated Water Utility Database (iWUD), Texas Water Development Board (TWDB) Texas Natural Resource Information System (TNRIS)

Project Development & Funding

- TWDB Research & Planning Fund Grant – Administered by JSWSC
- Planning Study Costs - $160,000
- TWDB Regional Planning Grant Approved – April 26, 2009 - $80,000
- Balance of Funds to Perform Study – Local Match of $80,000

Identified Issues

- Growth & Increasing Demand
- Diminishing Groundwater Supply
  - Quantity
  - Quality
- Pressure Maintenance/Delivery
- Surface Water for Future Use
  - Optimized Treatment & Transmission
  - Operations & Maintenance Planning
  - Financing
  - Management & Administrative Planning
- Security & Emergency Interconnects

Scope of Work – Task 1

- **Population and Water Demand Projections (10%)**
  [N.T.P. – August 26, 2009; Est. End – October 21, 2009]
  - Hold initial Kick-off Public Hearing to discuss the proposed project and take public input.
    [Estimated Completion – September 16, 2009]
  - Review and update 20 year population and municipal/industrial water demand projections in five year increments for the participants. This review would be based on existing reports, regional planning documents and Texas Water Development Board projections.
    [Estimated Completion – October 7, 2009]
  - Compare existing water rights and sources of potential customers with demand projections.
    [Estimated Completion – October 21, 2009]

Scope of Work – Task 2

- **Preliminary Evaluation of Existing Facilities (20%)**
  [Est. Start – October 22, 2009; Est. End – December 23, 2009]
  - Examine existing water treatment plant capacities and/or contracts for service and estimate the need for additional facilities based on demands and the need to upgrade existing facilities or construct a new plant.
    [Estimated Completion – November 4, 2009]
  - Examine existing storage and pumping capacity and estimate the need for additional facilities based on demand projections.
    [Estimated Completion – November 18, 2009]
  - Compare the treatment plant capacity of the participants and estimate the capacity available for the planning period to provide regional service.
    [Estimated Completion – December 2, 2009]
  - Develop preliminary cost estimates for expanding the water treatment capacity of existing treatment plants or for new construction.
    [Estimated Completion – December 9, 2009]
  - Develop preliminary cost estimates for constructing needed storage and pumping facilities.
    [Estimated Completion – December 16, 2009]
  - Estimate both capital and operating and maintenance costs of these facilities.
    [Estimated Completion - December 23, 2009]

Scope of Work – Task 3

- **Preliminary Evaluation of Alternative Water Treatment Plants (25%)**

  [Est. Start - December 24, 2009; Est. End – March 17, 2010]

  - Examine alternative treatment methods including one or more Regional Water Treatment Plants.
    [Estimated Completion – January 6, 2010, 2009]
  - Estimate capital and operating costs for each alternative.
    [Estimated Completion – January 20, 2010]
  - Examine alternative water treatment plant locations.
    [Estimated Completion – February 3, 2010]
  - Estimate land acquisition costs for the proposed plant locations.
    [Estimated Completion – February 17, 2010]
  - Examine alternatives for storage and pumping facilities to serve regional customers.
    [Estimated Completion – February 24, 2010]
  - Estimate capital and operating costs for the storage and pumping facilities alternatives.
    [Estimated Completion – March 3, 2010]
  - Identify any facilities that could be taken out of service if a regional system were implemented. A cost/benefit analysis would be performed as part of this work item.
    [Estimated Completion – March 17, 2010]

Scope of Work – Task 4

- **Preliminary Transmission, Distribution and Interconnects within the Systems (15%)**

  [Est. Start – March 18, 2010; Est. End – May 26, 2010]

  - Identify potential delivery points and locations of master meters.
    [Estimated Completion – April 2, 2010]
  - Using existing water distribution models, identify potential impacts to the customers' water transmission and distribution systems.
    [Estimated Completion – April 16, 2010]
  - Identify possible system interconnects that would facilitate transportation of raw water and the distribution of potable water throughout the service area.
    [Estimated Completion – April 30, 2010]
  - Develop preliminary cost estimates for constructing the meter stations and interconnecting the systems.
    [Estimated Completion – May 14, 2010]
  - Estimate capital and operating costs associated with these improvements.
    [Estimated Completion – May 26, 2010]

Scope of Work – Task 5

- **Wholesale and Retail Rates (10%)**

  [Est. Start – May 27, 2010; Est. End – June 30, 2010]

  - Examine existing retail water rates of potential customers, including both capital and operating components of the rate. Included in this analysis would be the inclusion of any planned improvements within the next five years.

    [Estimated Completion – June 9, 2010]
  - Estimate the rate impacts of any needed expansion to existing plants, storage or pumping facilities.

    [Estimated Completion – June 23, 2010]
  - Develop an estimated wholesale rate that would be charged to regional customers and then compare the impact on retail rates with the regional system vs. local expansions.

    [Estimated Completion – June 30, 2010]

Scope of Work – Task 6

- **Identify Implementation Alternatives and Sources of Financing (10%)**

  [Est. Start – July 1, 2010; Est. End – August 4, 2010]

  - Identify potential sources of financing.

    [Estimated Completion – July 7, 2010]
  - Outline procedures to apply for funding.

    [Estimated Completion – July 14, 2010]
  - Identify alternatives for contracting among the participants to achieve financing goals.

    [Estimated Completion – July 28, 2010]
  - Hold Second Public Hearing to discuss proposed project progress.

    [Estimated Completion – August 4, 2010]

Scope of Work – Task 7

- **Deliverables (10%)**

  [Est. Start – August 5, 2010; Est. End – October 20, 2010]

  - Finalize Conclusions and recommendations.
    [Estimated Completion - August 11, 2010]
  - Prepare Figures and Maps.
    [Estimated Completion – August 25, 2010]
  - Prepare Draft for Review.
    [Estimated Completion – September 1, 2010]
  - Hold Third Public Hearing to discuss draft conclusion and recommendations.
    [Estimated Completion – September 15, 2010]
  - Incorporate final comments and recommendations.
    [Estimated Completion – September 29, 2010]
  - Prepare Final Report.
    [Estimated Completion – October 13, 2010]
  - Distribute Final Report.
    [Estimated Completion – October 20, 2010]

Participant & Public Participation

- **Steering Committee (project participants)**
  - **Meet approximately 7 times during the planning period**
  - **One meeting at the completion of each Work Task**
- **Public Meetings (open to the general public)**
  - **At the beginning of the planning process**
  - **At approximately 75% completion**
  - **Review draft final report**

Interim Task's Project Deliverables [for Steering Committee review]

- **Task 1** – Population/Water Demand Projections & Public Hearing (Est. End – October 21, 2009)
- **Task 2** – Prelim. Evaluation of Exist. Facilities (Est. End – December 23, 2009)
- **Task 3** – Prelim. Evaluation of Alternative Water Treatment Plans (Est. End – March 17, 2010)
- **Task 4** – Prelim. Trans./Distr. Interconnects (Est. End – May 26, 2010)
- **Task 5** – Wholesale and Retail Rates (Est. End – June 30, 2010)
- **Task 6** – Implementation Alternatives & Sources of Financing w/ Public Hearing (Est. End – August 4, 2010)
- **Task 7** – Final Report & Public Hearing (Est. End – October 20, 2010)

Questions

- **Naismith Engineering**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Adam M. Luke, P.E.

Bell/Williamson Regional Water Supply Facility Plan

For Portions of Bell and Williamson Counties, Texas

Steering Committee Meeting

Jarrell Memorial Park Community Center
1651 CR 305, Jarrell, Texas 76537

March 11, 2010

Meeting Overview

- Introductions
- Review of Project Scope
- Project Area Map
- Population Projections
- Water Demands
- Water Sources
- Water Demands vs. Water Sources
- Location of Infrastructure
- Potential Limitations – GCDs, Water Quality, etc…
- Questions & Comments
- Next meeting(s) – time, date & place

Introductions

- **JSWSC (Project Administrator)**
  - Sonny Kretzschmar – Board President
  - Sheila Cunningham – General Manager
- **Project Participants – STEERING COMMITTEE MEMBERS**
  - Armstrong WSC
  - Brazos River Authority
  - Capital Land & Livestock MUD No. 1
  - Chisholm Trail SUD
  - City of Florence
  - Clearwater UWCD
  - Jonah Water SUD
  - Sonterra MUD
  - Mr. David Meesey, Texas Water Development Board (50% of project funding)
- **Acknowledgement of Guests**
- **Consulting Team: Naismith Engineering, Inc. (NEI) and Duff Consulting Engineers, Inc. (Duff)**
  - NEI - Tom Brown, Grant Jackson, P.E., David Fusilier, P.E., Felise Canterini, E.I.T.
  - Duff – Bill Aston, P.E., Rodney Adamek, Miles Whitney, E.I.T

Planning Group Participants

- **Regional Water Plan - Affiliated & Neighboring PWS**

Bell Co. WCID No. 1
Bell Milam Falls WSC
Central Texas WSC
City of Bartlett
City of Holland
City of Georgetown
City of Granger
City of Jarrell
City of Rockdale
City of Round Rock
City of Taylor
City of Thorndale
City of Thrall
Manville WSC
Noack WSC
Salado WSC
Southwest Milam WSC

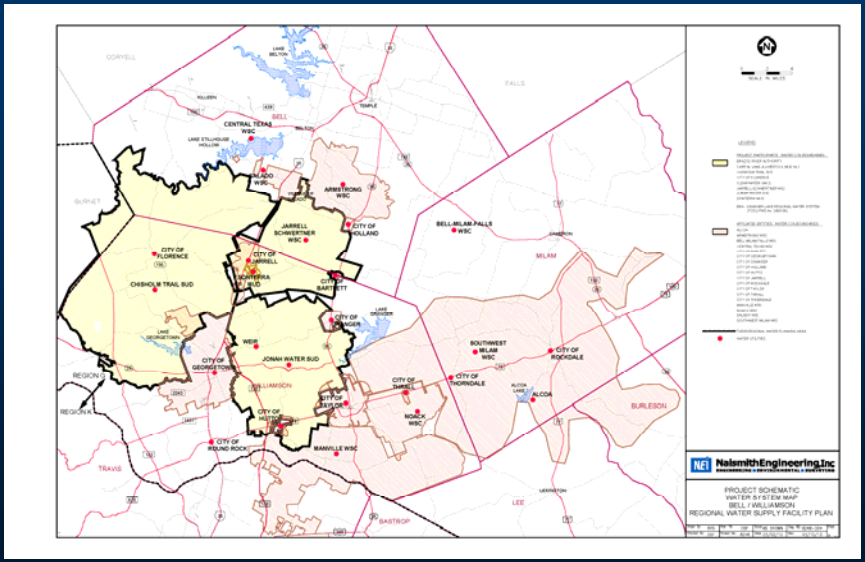
Planning Group Participants (Cont'd)

- Other Parties
  - Bell County
  - Williamson County
  - Private Water Suppliers
  - Business Interests
  - Water User Representatives
  - Community Representatives
- Other Parties
  - Lost Pines GCD
  - Post Oak Savannah GCD
  - State Water Planning Groups – Regions G & K
  - Consulting Team

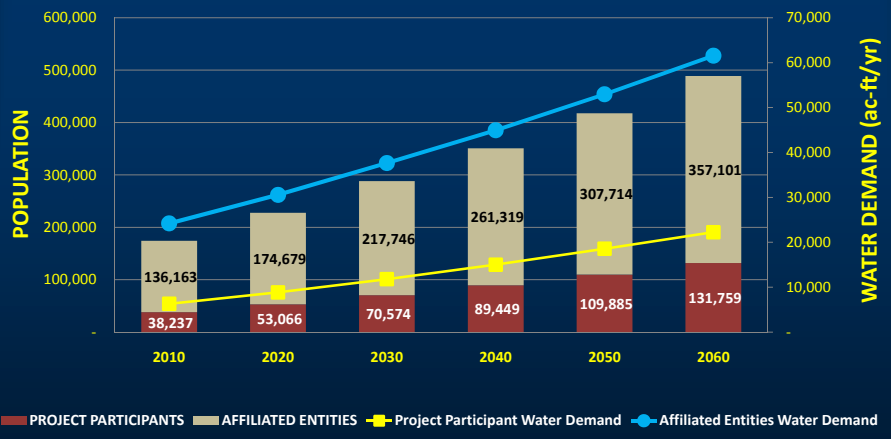
Project Scope - Summary

- Population and Water Demand Projections
- Preliminary Evaluation of Existing Facilities
- Preliminary Evaluation of Alternative Water Treatment Plants
- Preliminary Transmission, Distribution and Interconnects within the Systems
- Wholesale and Retail Rates
- Identify Implementation Alternatives and Sources of Financing
- Deliverables:
  - Public Meeting - @ 75 %
  - Draft Final Report
  - Public Meeting - Presenting Draft Final Report
  - Final Report

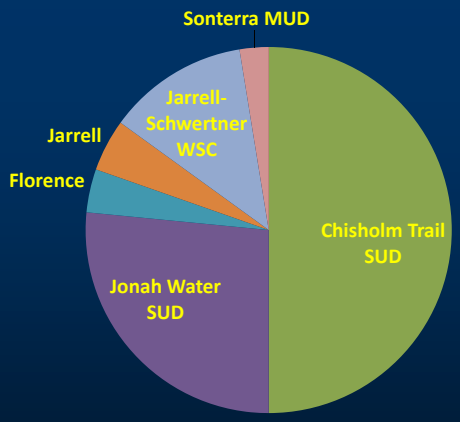
Project Area Map



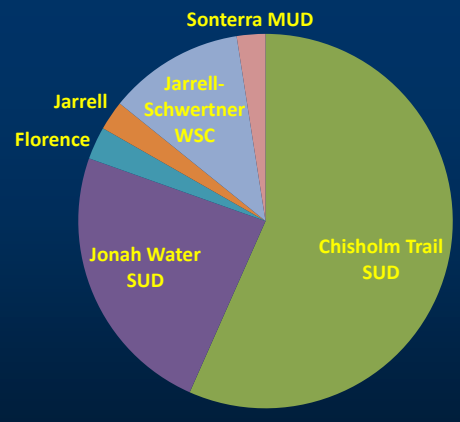
Population Projections and Water Demands for Project Area



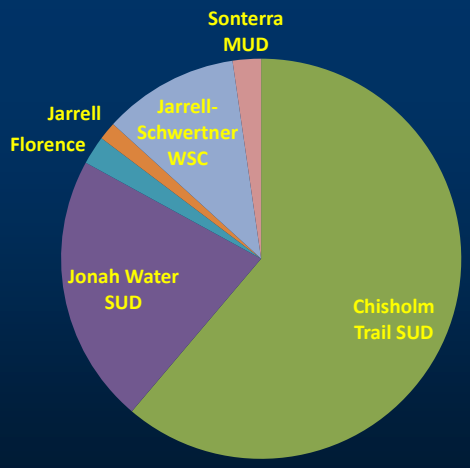
Municipal Water Demands 2010 Project Participants



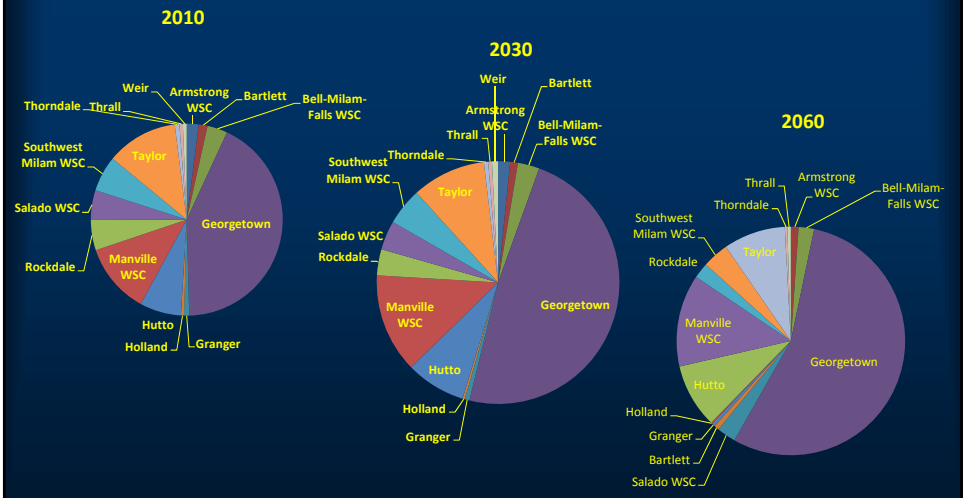
Municipal Water Demands 2030 Project Participants



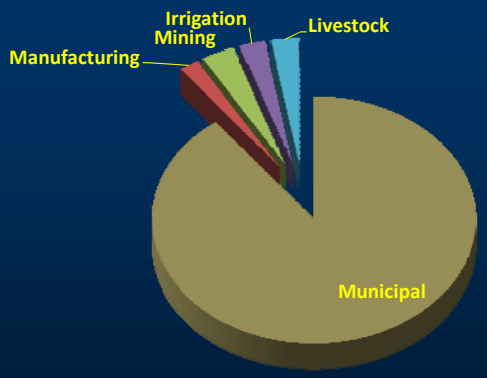
Municipal Water Demands 2060 Project Participants



Municipal Water Demands – Affiliated Entities



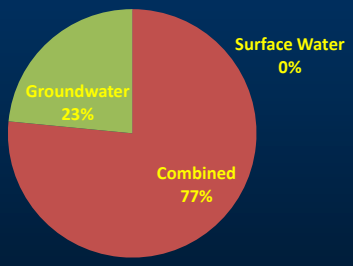
Total Water Demands for Bell and Williamson Counties



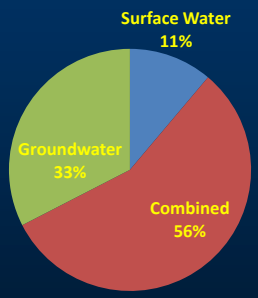
From Region G 2007 Water Use Survey Summary Estimates

Water Supply Sources for Project Area

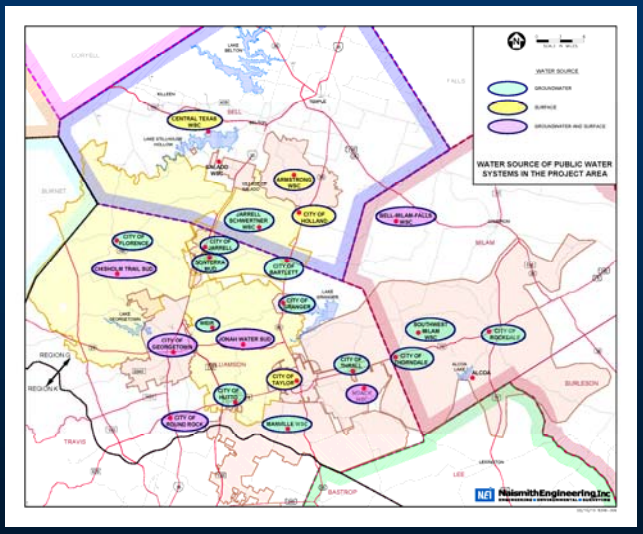
Project Participants



Entire Project Area



Water Supply Sources for Project Area



Water Supply Constraints

- Surface Water (In Order)
  - Reservoir Firm Yield
  - Water Rights
  - Delivery Availability
  - Water Supply Contracts
  - Delivery Infrastructure
- Groundwater (In Order)
  - Aquifer Yield
  - Managed Available Groundwater
  - Groundwater Supply Allocations
  - Accounting for Exempted & Historical Uses
  - Permits

Project Water Supply Estimates

- **Surface Water**
  - Reservoir Yield & Water Rights are known
  - Water Supply Contracts Dates and Timelines
  - Timelines dictate timing of infrastructure construction
- **Groundwater**
  - Aquifer Yield only recently estimated
  - Some still unknown
  - Managed Available Groundwater Allocation Strategies
    - Rule of Capture "If I get it, it's mine!"
    - Correlative Rights "How much land I have tells me how much water I get."
    - Blend-some combination of Rule of Capture and Correlative Rights
  - Timelines dictate timing of infrastructure construction

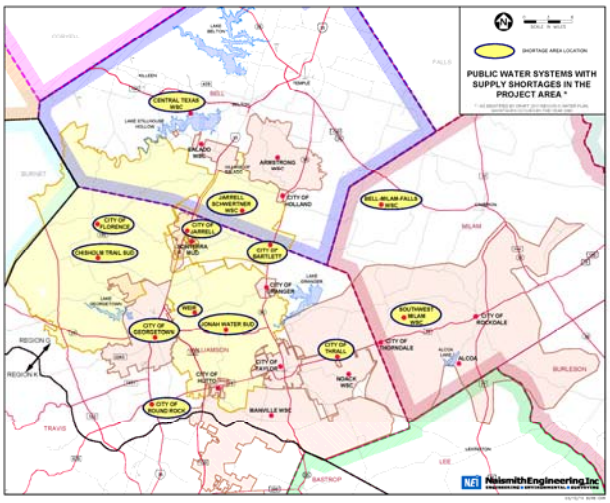
Projected Water Supply Shortages in the Project Area

PUBLIC WATER SYSTEM	TYPE OF SYSTEM	2030	2060
Bell-Milam-Falls WSC	G/S	(280)	(533)
Brazos River Authority (BRA)	S	(5,329)	(43,090)
Central Texas WSC (CTWSC)	S	954	(266)
Chisholm Trail SUD	G/S	3,141	(3,795)
City of Bartlett	G	(136)	(179)
City of Florence	G	(161)	(344)
City of Georgetown	G/S	(763)	(16,082)
City of Jarrell	G	(169)	(164)
City of Round Rock	G/S	(24,043)	(62,609)
City of Thrall	G	(185)	(293)
City of Weir (dba Weir Water Works)	G	(288)	(568)
Jarrell-Schwertner WSC (JSWSC)	G	(442)	(1,499)
Jonah Water SUD	G/S	(305)	(2,346)
Southwest Milan WSC	G	(533)	(910)

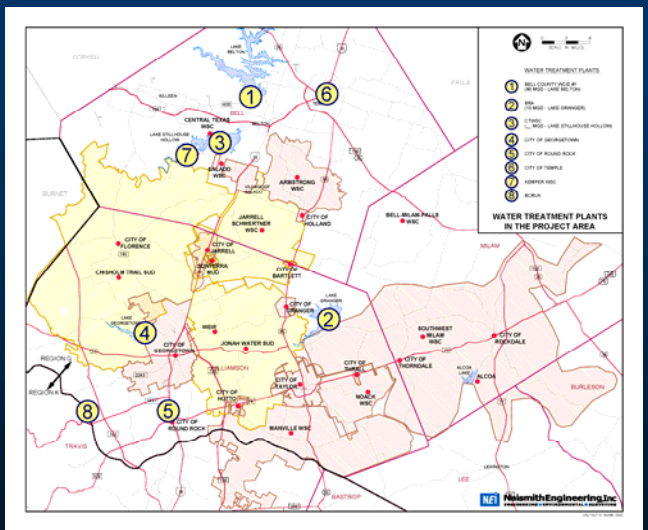
- Information from Draft 2011 Region G Water Plan
- All 2030 / 2060 water supply shortages shown in acre-feet / year
- Yellow text indicates Steering Committee Member (active Project Participant)

G – Groundwater System Only
S – Surface Water System Only
G/S – Combined Systems (G & S)

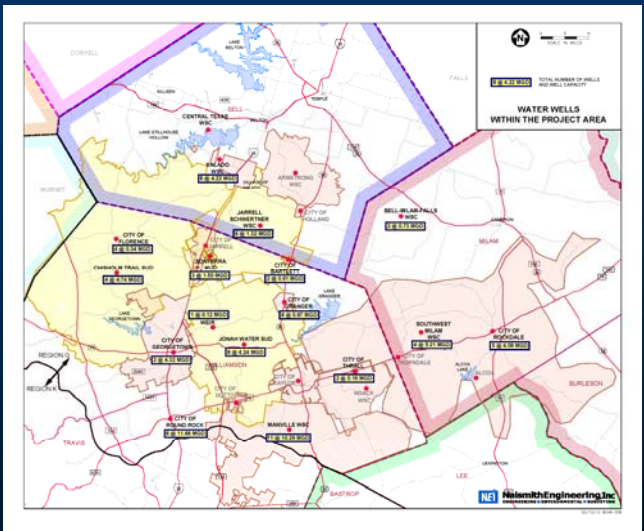
Projected Water Supply Shortages in the Project Area



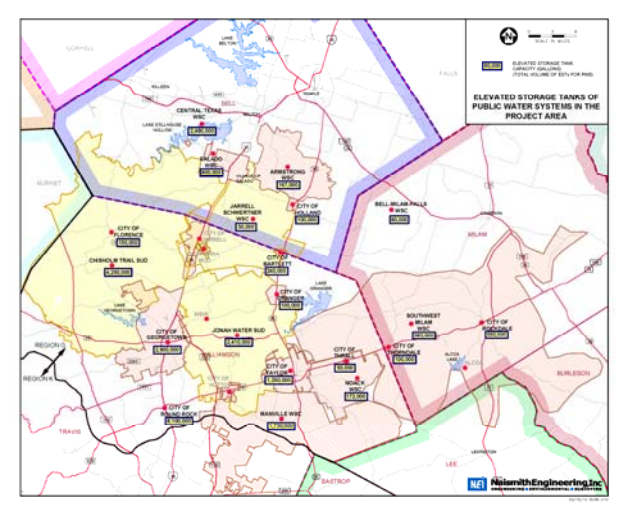
Location of Existing Infrastructure – Surface Water Treatment Plants



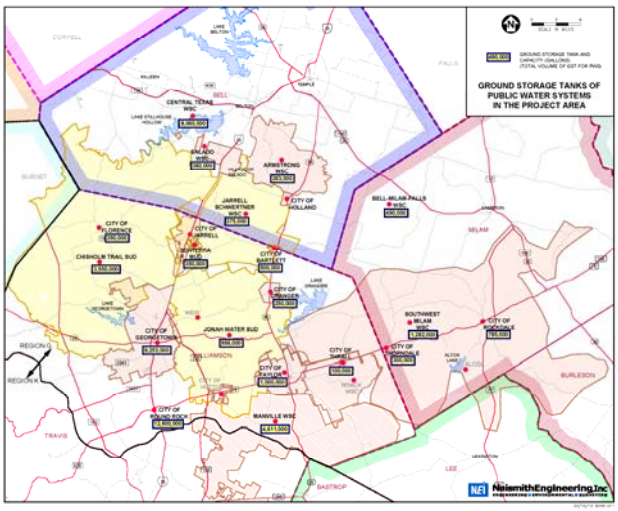
Location of Existing Infrastructure – Groundwater Wells



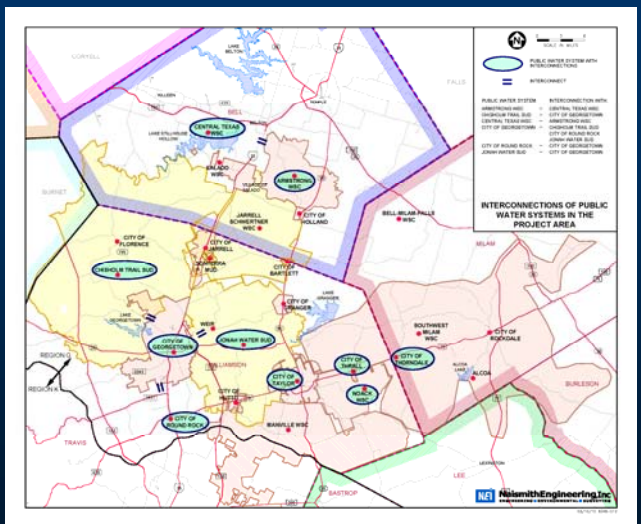
Location of Existing Infrastructure – Elevated Storage Tanks



Location of Existing Infrastructure – Ground Storage Tanks



Location of Existing Infrastructure – System Interconnections



Groundwater Conservation Districts' Rules & Issues

Groundwater Conservation District	County	Aquifer(s)	Fees, Permit Terms & Conditions
Clearwater UWCD	Bell	Edwards – BFZ Trinity	Operating Permit = $125 Deposit on New Wells = $100 Production Fees = none (District funded by ad valorem taxes; $0.004/$100) Export Fees = $0.025/1000 gal Export Permit Term = 1 yr
Lost Pines GCD	Lee and Bastrop	Carrizo-Wilcox	Operating Permit = $100-200 Production Fees = $0.12/1000 gal Export Fees = $0.05/1000 gal Export Permit Term = 5 years (All Export Permits are tied to Operating Permit Term limits) Reservation Permit Fee = $3.50/mo per ac-ft/yr of water reserved Reservation Permit Term = up to 15 yrs
Post Oak Savannah GCD	Burleson and Milam	Carrizo-Wilcox Trinity Brazos Alluvium Queen/Sparta	Operating Permit = $100 Production Fee = $0.02/1000 gal Export Permit Fee = $100 Export Fee = $0.06 / 1000 gal Export Permit Term = 3 yrs - if constr. not initiated: at least 30 yrs – if constr. is initiated.

- Information in Table based in part on Table 3.4-4 from 2006 Region G Water Plan;
- Export permits subject to review and approval by applicable GCD's Board of Directors;
- More detailed fee information may be obtained from the applicable GCD.

Groundwater Conservation Districts' Rules & Issues

Groundwater Conservation District	Exemption Well Limits	Total Number of Exempt wells	Total Est. Production from Exempt Wells	Total Number of Non-Exempt wells	Total Production from Non-Exempt Wells
Clearwater UWCD	25,000 gpd	Registered = 4,493 Producing = 4,397	2,931 ac-ft / yr	Registered = 95 Producing = 85	Permitted = 4,800 ac-ft / yr Actual Production = 2,979 ac-ft / yr
Lost Pines GCD	25,000 gpd	Domestic = 2,153	2,863 ac-ft / yr	Non-Exempt = 99 Other = 905	Non-Exempt = 21,218 ac-ft / yr Other = 30,040 ac-ft / yr
Post Oak Savannah GCD	25,000 gpd	To be Provided	To be Provided	To be Provided	To be Provided

- Information in Table based in part on Table 3.4-4 from 2006 Region G Water Plan.

Bell/Williamson Regional Water Supply Facility Plan March 11, 2010

Groundwater Conservation Districts' Rules & Issues

Groundwater Conservation District	Combined "Potential" Total Production ac-ft / yr	Combined "Actual" Total Production ac-ft /yr	Total Surplus ac-ft / yr
Clearwater UWCD	7,731	5,910	4,861
Lost Pines GCD	80,641	32,903	47,738
Post Oak Savannah GCD	To be Provided	To be Provided	To be Provided

- Information in Table based in part on Table 3.4-4 from 2006 Region G Water Plan.

Groundwater Conservation Districts' Rules & Issues

Groundwater Conservation District	TWDB Groundwater Availability Model (GAM) Completed?	Managed Available Groundwater (MAG) [ac-ft / yr]	GCD's Estimated Available Groundwater (ac-ft / yr)	Draft 2011 Region G Water Plan Estimated Available Groundwater (ac-ft / yr)
Clearwater UWCD	Yes	Edwards–BFZ = 7,000 Trinity = 5.595 Total = 12,595	See MAG #.	Edwards–BFZ = 6,469 Trinity = 7,075 Total = 13,544
Lost Pines GCD	No Tentative completion in 2011	To be determined	Bastrop Co. = 28,000 Lee Co. = 7.500 Total = 35,500	Bastrop Co. = 28,000 Lee Co. = 31,477 Total = 59,477
Post Oak Savannah GCD	No Tentative completion in 2011	To be determined	All Aquifers = 148,721	Burleson Co. = 52,124 Milam Co. = 20,937 Total = 73,061
Williamson County	No	N/A	N/A	Total = 5,938

- All numbers in acre-ft / year.
- Information in Table based in part on Table 3.4-4 from 2006 Region G Water Plan.

Water Quality Issues for Public Water Systems in the Project Area

CONTAMINANT	RECORDED LEVEL	MAXIMUM CONTAMINENT LEVEL (MCL)	YEAR OF VIOLATION
Aluminum	0.02 mg/l	0.05 mg/l	2004
Manganese	121 mg/l	0.5 mg/l	2006
Fluoride	3.84 mg/l	4.0 mg/l	2008
Fluoride	4.3 mg/l	4.0 mg/l	2005, 2006

Note: information based on Consumer Confidence Reports obtained from the TCEQ

Public Water System Issues in the Project Area

CONTAMINANT	RECORDED LEVEL	MAXIMUM CONTAMINENT LEVEL (MCL)	YEAR OF VIOLATION
Chlorine	8.8 mg/l	4.0 mg/l	2008
pH	7.2, 7.7, 7.7, 7.8	7.0	2006, 2008
Fecal Coliform	Found	Present	2008
Total Coliform	2 x in same month	Two or more samples found in any single month	2003, 2005, 2006, 2008
Turbidity	0.4, 0.6 NTU	0.3 NTU	2008, 2008

Regional Water Quality Issues

- **Radionuclides**
  - Alpha and Beta
  - Uranium
  - Radon
- **Inorganics**
  - Arsenic
  - Dissolved Solids
    - Sodium (Health)
    - Total Salinity (Health / Aesthetics)

Notable Identified Water Management Strategies from the Draft 2011 Region G Water Plan

PROJECT	FOR	DESCRIPTION	EXPECTED YIELD (ac-ft / yr)
SYSTEM OPERATION of BRA RESERVOIRS [4B.4]	BRA & Their Customers	Maximization of Water Usage in the BRA System	395,000 (firm supply)
LAKE GRANGER AUGMENTATION – CONJUNCTIVE USE [4B.5]	City of Round Rock, Chisholm Trail SUD & others	WTP Expansion, Transmission line, pump station	38,394
LITTLE RIVER RESERVOIR [4B.12.6]	Multiple WUGs	New Reservoir on Little River; Small Project Vol. – 321,000 ac-ft Large Project Vol. – 877,770 ac-ft	Small Project – 71,275 Large Project – 119,940
LITTLE RIVER RESERVOIR – OFF-CHANNEL RESERVOIR [4B.13.5]	Multiple WUGs	New Off-Channel Reservoir on the Little River; Vol. – 155,812 ac-ft	
CARRIZO-WILCOX DEVELOPMENT [4B.15.1]	Williamson County WUGs	New Well Field in Lee/Burleson Co. w/ pipeline, pump station, WTP	35,000
RESERVOIR CONNECTION – Lakes Belton & Stillhouse Hollow [4B.20]	BRA & Multiple WUGs	Transfer Pipeline to Utilize Currently Unused Water in L. Belton	30,000
CARRIZO-WILCOX DEVELOPMENT [4B.17.3.15]	Southwest Milam WSC	Well field, transmission line, treatment	966
TRANSMISSION LINE – from the City of Round Rock [4B.17.3.19]	Chisholm Trail SUD	Transmission line, pump station	3,472
TRINITY AQUIFER DEVELOPMENT [4B.17.3.19]	City of Florence	Well field, transmission line, treatment	322
EWCRTS SUPPLY TO WILLIAMSON CO. – BRA/L. Granger WTP [4B.17.3.19]	Williamson County WUGs	Transmission line, pump station	847

Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322

- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414

Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

April 2010	- Potential WTP Projects
May 2010	- Potential Storage/Pump Station/Pipeline Projects
July 2010	- Wholesale & Retail Rates
August 2010	- Implementation Alternatives & Financing Options
September 2010	- Review of "Draft" Final Report
October 2010	-Final Report Presentation

PUBLIC MEETINGS:

July/August 2010	- Project Status Meeting (75%)
September/October 2010	- "Draft" Final Report Presentation

Possible Meeting Locations: Jarrell Community Center, Williamson Co. Maintenance Facility (Georgetown) , others??

Meeting Overview

- Introductions
- Review of Project Scope
- Project Area Map/Project Participants
- Population Projections/Water Demands
- Managed Available Groundwater
- Groundwater Availability
- Water Demands vs. Water Supply
- Data/Information Needs
- Questions & Comments
- Next meeting(s) – time, date & place

Introductions

- JSWSC (Project Administrator)
  - Mark Harbin – Board President
  - Sheila Cunningham – General Manager
- Project Participants – STEERING COMMITTEE MEMBERS
  - Armstrong WSC
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  - City of Florence
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  - Jonah Water SUD
  - Sonterra MUD
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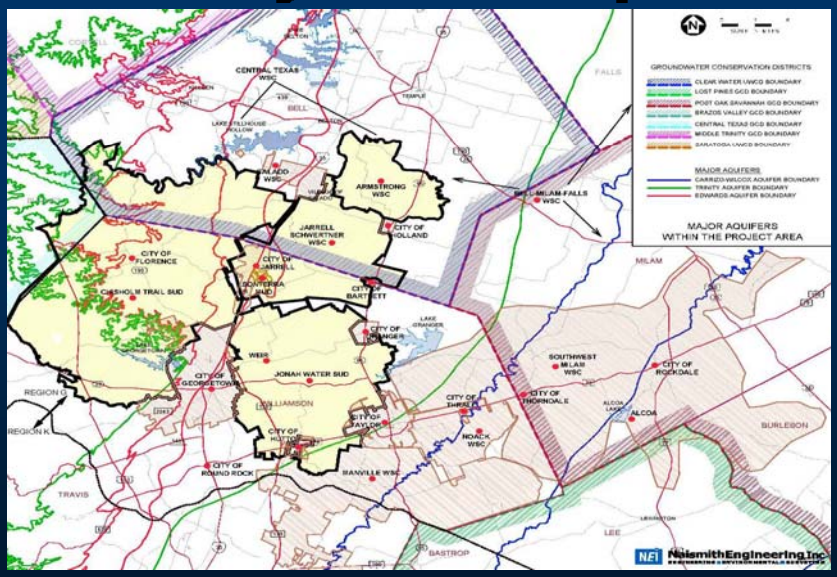
  - Duff – Bill Aston, P.E., Rodney Adamek, Miles Whitney, E.I.T

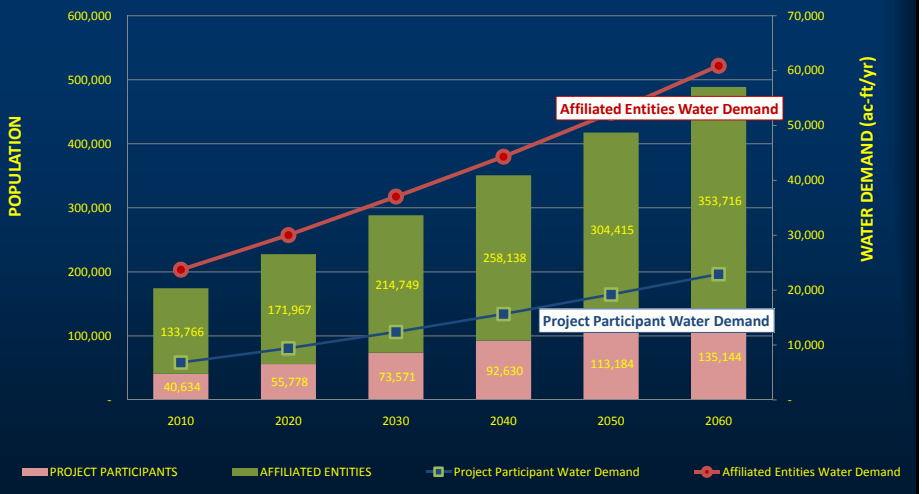
Project Scope - Summary

- Population and Water Demand Projections
- Preliminary Evaluation of Existing Facilities
- Preliminary Evaluation of Alternative Water Treatment Plants
- Preliminary Transmission, Distribution and Interconnects within the Systems
- Wholesale and Retail Rates
- Identify Implementation Alternatives and Sources of Financing
- Deliverables:
  - Public Meeting - @ 75 %
  - Draft Final Report
  - Public Meeting - Presenting Draft Final Report
  - Final Report

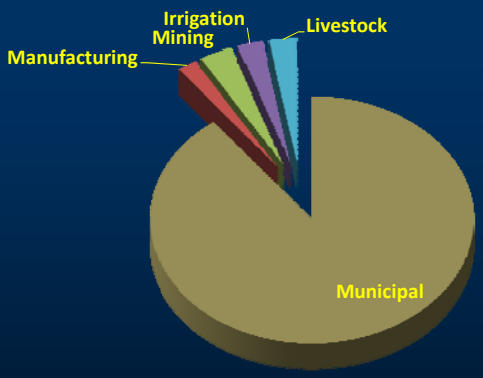
Project Area Map



Population Projections and Water Demands for Project Area

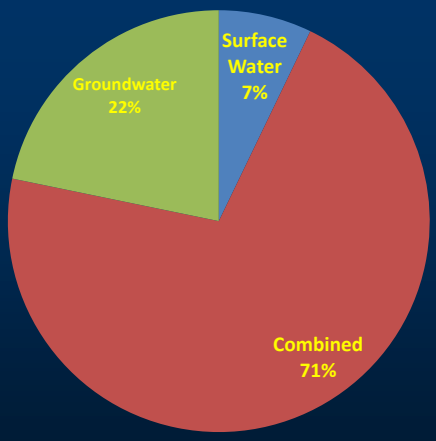


Total Water Demands for Bell and Williamson Counties

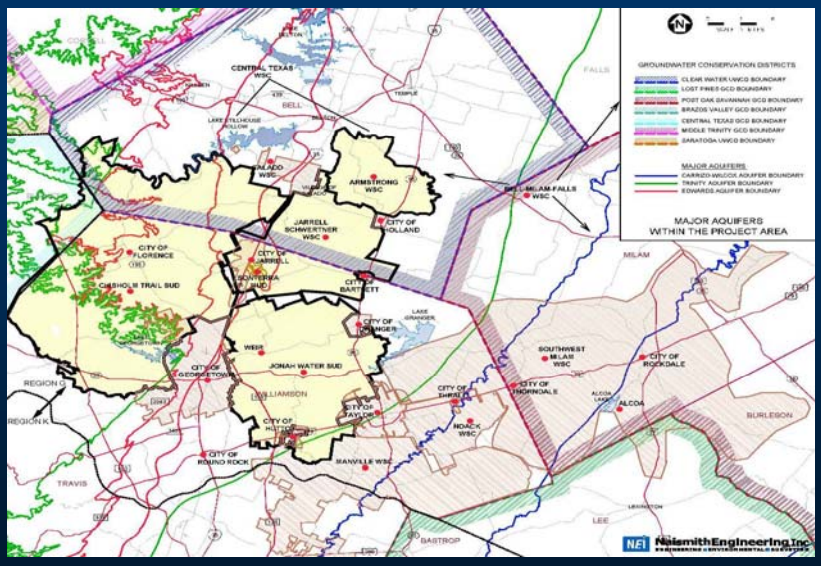


From Region G 2007 Water Use Survey Summary Estimates

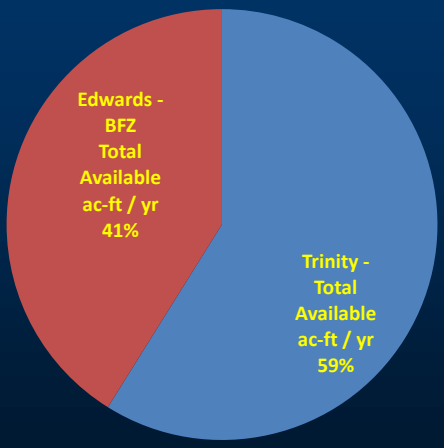
Water Supply Distribution and Sources for Project Area – 2010



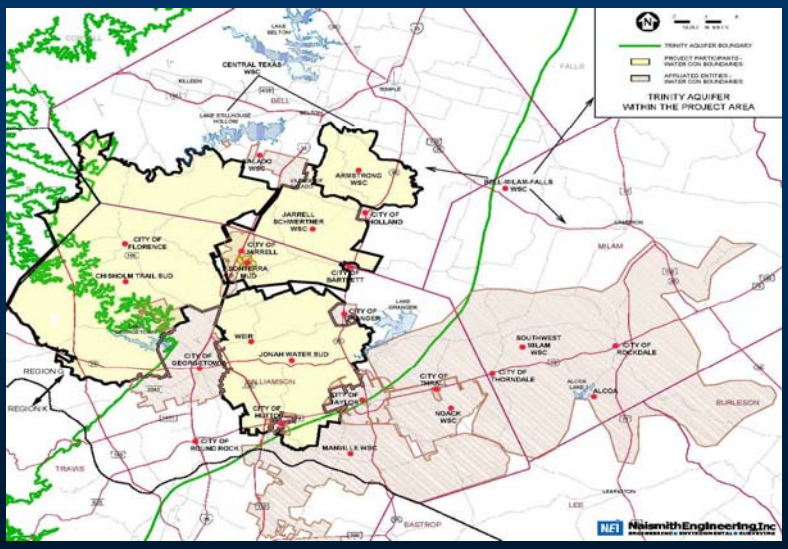
Major Aquifers in the Project Area



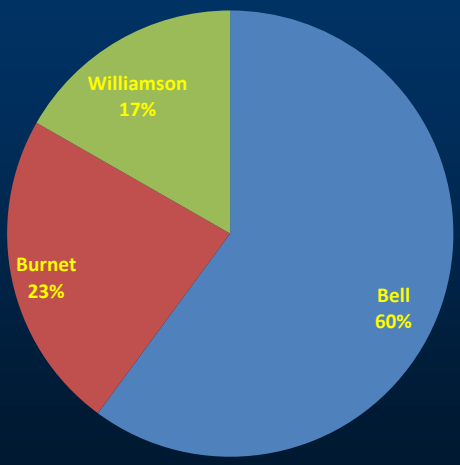
From TWDB MAG
Ground Water Supply Sources



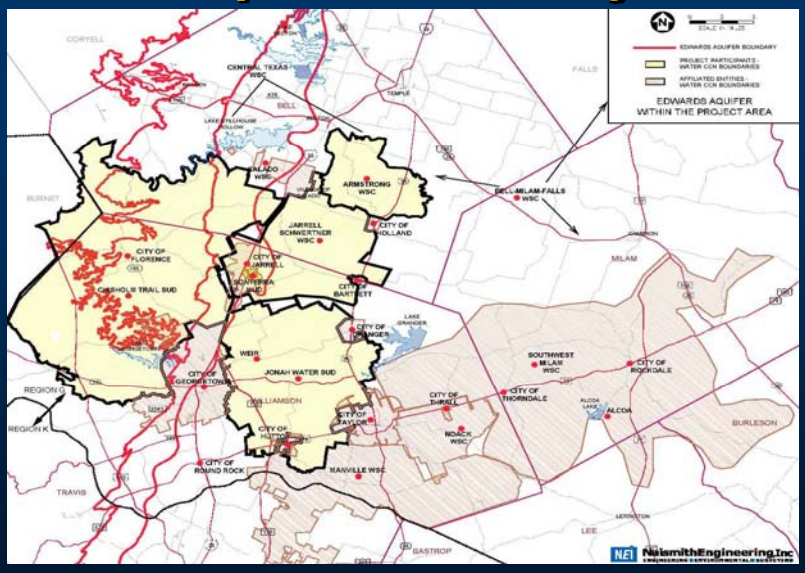
Trinity Aquifer in the Project Area



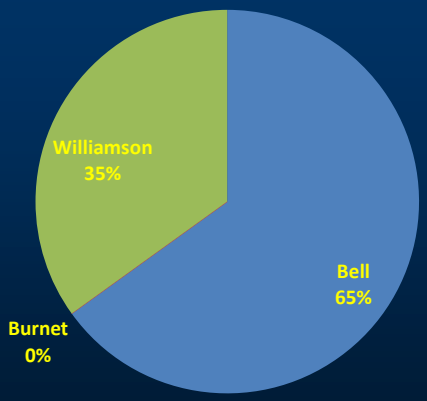
Trinity Aquifer Availability by County ac-ft/yr



Edwards Aquifer in the Project Area



Edwards BFZ Aquifer Availability by County ac-ft/yr

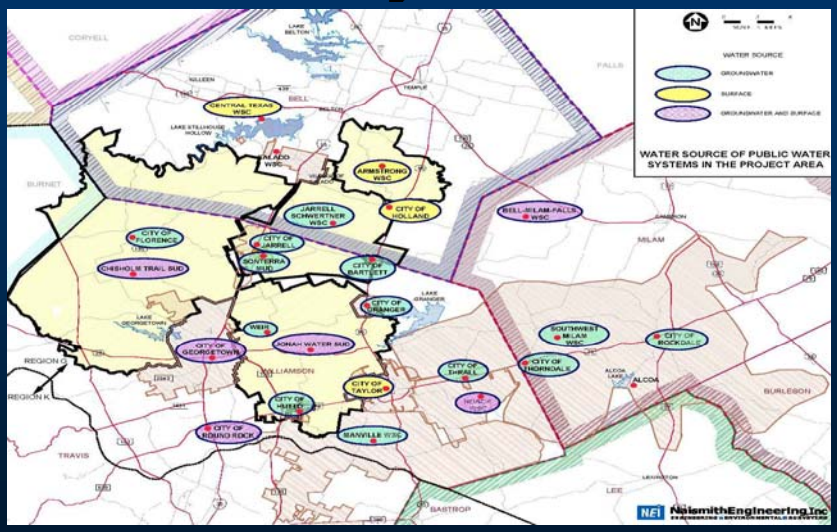


Water Demand Calculations for Capital Land & Livestock

- **Current Water Usage Calcs**
  - 100% Cattle
  - 0% Residential
  - Based on existing water usage
  - Calculates to 359 ac-ft/yr (9,756 gallons/acre)

- **Future Water Usage Calcs (2060)**
  - 0% Cattle
  - 100% Residential
  - Houses on 67% of total acreage
  - Each house located on a ½ acre lot
  - Assumed fully developed in 2060

Water Supply Sources for Project Area



Water Supply Constraints

- Surface Water (In Order)
  - Reservoir Firm Yield
  - Water Rights/Water Supply Contracts
  - Delivery Availability
  - Delivery Infrastructure
- Groundwater (In Order)
  - Aquifer Yield
  - Managed Available Groundwater
  - Groundwater Supply Allocations
  - Accounting for Exempted & Historical Uses
  - Permits

Project Water Supply Estimates

- Surface Water
  - Reservoir Yield & Water Rights are known
  - Water Supply Contracts Dates and Timelines
  - Timelines dictate timing of infrastructure construction
- Groundwater
  - Aquifer Yield only recently estimated
  - Some still unknown
  - Managed Available Groundwater Allocation Strategies
    - Rule of Capture "If I get it, it's mine!"
    - Correlative Rights "How much land I have tells me how much water I get."
    - Blend-some combination of Rule of Capture and Correlative Rights
  - Timelines dictate timing of infrastructure construction

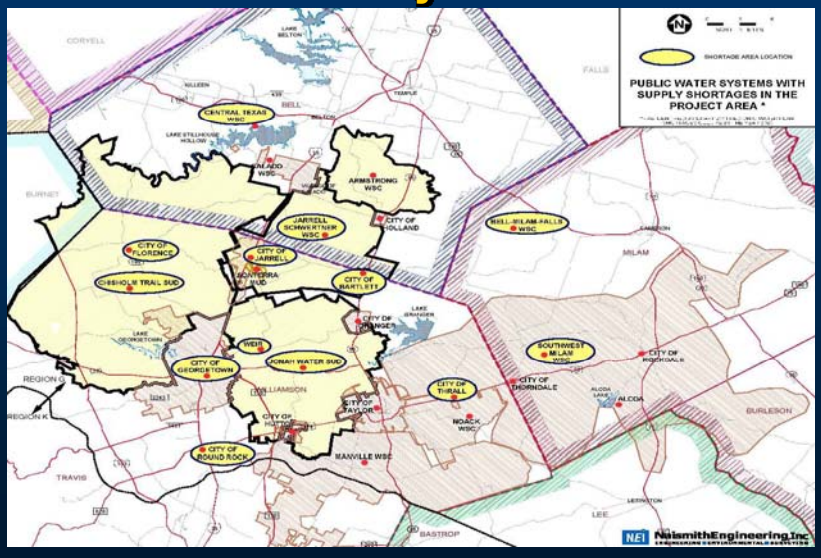
Projected Water Supply Shortages in the Project Area

PUBLIC WATER SYSTEM	TYPE OF SYSTEM	2030	2060
Bell-Milam-Falls WSC	G/S	(280)	(533)
Brazos River Authority (BRA)	S	(5,329)	(43,090)
Central Texas WSC (CTWSC)	S	954	(266)
Chisholm Trail SUD	G/S	3,141	(3,795)
City of Bartlett	G	(136)	(179)
City of Florence	G	(161)	(344)
City of Georgetown	G/S	(763)	(16,082)
City of Jarrell	G	(169)	(164)
City of Round Rock	G/S	(24,043)	(62,609)
City of Thrall	G	(185)	(293)
City of Weir (dba Weir Water Works)	G	(288)	(568)
Jarrell-Schwertner WSC (JSWSC)	G	(442)	(1,499)
Jonah Water SUD	G/S	(305)	(2,346)
Southwest Milan WSC	G	(533)	(910)

- Information from Draft 2011 Region G Water Plan
- All 2030 / 2060 water supply shortages shown in acre-feet / year
- Yellow text indicates Steering Committee Member (active Project Participant)

G – Groundwater System Only
S – Surface Water System Only
G/S – Combined Systems (G & S)

Projected Water Supply Shortages in the Project Area



Bell / Williamson Regional Water Supply Facility Plan June 16, 2010

"Managed" Available Groundwater for Project Participants

- For this project - based on:
  - Water System's "Footprint"
  - Managed Available Groundwater
  - Aquifers: Trinity, Edwards – Balcones Fault Zone
- Managed Available Groundwater (MAG)
  - Groundwater available for withdrawal during the drought of record (paraphrased definition) [actual volume for MAG is based on Desired Future Conditions as set by Groundwater Management Area and is used in TWDB groundwater model]
  - Source: TWDB

Aquifer Levels

Groundwater Availability Calculations

- Determine Available Groundwater for Trinity & Edwards – BFZ Aquifer by County (from TWDB)
- Obtain Footprint of Each Aquifer by County
- Calculate Available Groundwater / acre
- Determine Area of Footprint of Each Water System over Trinity & Edwards Aquifer
- Calculate Available Groundwater for Each System

"Managed" Available Groundwater Calculations for Project Participants

County	Trinity	Edwards – BFZ	Trinity	Edwards – BFZ	Trinity	Edwards – BFZ
	ac-ft / year	ac-ft / year	acres	acres	ac-ft/yr/acre	ac-ft/yr/acre
Bell	7,068	6,469	678,916	232,192	0.010411	0.027861
Burnet	2,723	--	12,388	--	0.219809	--
Williamson	1,968	3,472	444,117	135,425	0.004431	0.025638
Total	9,791	6,469	1,050,134	415,414	0.234651	0.053498

- Table based on information from 2011 Region G I.P.P., as well as information obtained directly from TWDB

"Managed" Available Groundwater Calculations for Project Participants

System	County	Total Area	Trinity Area	Edwards – BFZ Area	Trinity - Available	Edwards – Available	Total Available
		acres	Acres	acres	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong	Be	39,524	39,524	--	411	411	411
Capital L&L[1]	Be, W	12,000	12,000	--	125	125	125
Chisholm Trail	Be, Bu, W	257,702	257,702	131,399	4,205	7,684	7,684
Florence	W	520	520	520	2	16	16
Jonah	W	120,802	114,132	546	506	520	520
JSWSC	Be, W	79,997	79,997	14,833	354	735	735
Sonterra	W	1,102	1,102	1,102	5	33	33
TOTAL		511,647	504,977	148,400	5,609	3,915	9,524

1 – Footprint of Capital Land & Livestock MUD No. 1 assumed to be entirely over the Trinity Aquifer

Table 1 – Region G Water Plan #'s 2010

System	Demand	Supply = From Region G Draft 2011 Plan			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	--	--	--	--	--
Capital L&L MUD #1	--	--	--	--	--
Chisholm Trail SUD	3,156	9,390	399	9,789	6,663
City of Florence	241	0	171	171	(70)
JSWSC	1,078	848	135	983	(95)
Jonah Water SUD	1,676	2,068	431	2,499	823
Sonterra MUD	--	--	--	--	--
TOTAL	6,151	12,306	1,136	13,442	7,291

1. Demand / Supply are annual average.

Table 1 – Region G Water Plan #'s 2030

System	Demand	Supply = From Region G Draft 2011 Plan			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	--	--	--	--	--
Capital L&L MUD #1	--	--	--	--	--
Chisholm Trail SUD	6,675	9,390	399	9,789	3,114
City of Florence	332	0	171	171	(161)
JSWSC	1,682	848	135	983	(699)
Jonah Water SUD	2,804	2,068	431	2,499	(305)
Sonterra MUD	--	--	--	--	--
TOTAL	11,493	12,306	1,136	13,442	1,949

1. Demand/Supply are annual average.

Table 1 – Region G Water Plan #'s 2060

System	Demand	Supply = From Region G Draft 2011 Plan			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	--	--	--	--	--
Capital L&L MUD #1	--	--	--	--	--
Chisholm Trail SUD	13,612	9,390	399	9,789	(3,823)
City of Florence	514	0	171	171	(343)
JSWSC	2,763	848	135	983	(1,780)
Jonah Water SUD	4,845	2,068	431	2,499	(2,346)
Sonterra MUD	--	--	--	--	--
TOTAL	21,734	12,306	1,136	13,442	(8,292)

1. Demand/Supply are annual average.

Table 2 – Theoretical Supply 2010

System	Demand	Contracted SW + "Tested" Well Capacity			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	486	92	??	92	(394??)
Capital L&L MUD #1	359	--	--	--	(359)
Chisholm Trail SUD	3,156	11,100	5,307	16,407	13,251
City of Florence	241	500	468	968	727
JSWSC	1,078	1,000	1,484	2,484	1,406
Jonah Water SUD	1,676	2,439	9,548	11,616	9,940
Sonterra MUD	161	--	1,678	1,678	1,517
TOTAL	7,157	15,131	18,485	33,245	26,088

1. Demand/Supply are annual average.

Table 2 – Theoretical Supply 2030

System	Demand	Contracted SW + "Tested" Well Capacity			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	594	92	??	92	(502??)
Capital L&L MUD #1	2,865	--	--	--	(2,865)
Chisholm Trail SUD	6,675	11,100	5,307	16,407	9,732
City of Florence	332	500	468	968	636
JSWSC	1,682	1,000	1,484	2,484	(301)
Jonah Water SUD	2,804	2,439	9,548	11,616	8,812
Sonterra MUD	292	--	1,678	1,678	1,386
TOTAL	15,244	15,131	18,485	33,245	18,001

1. Demand/Supply are annual average.

Table 2 – Theoretical Supply 2060

System	Demand	Contracted SW + "Tested" Well Capacity			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	664	92	??	92	(572??)
Capital L&L MUD #1	8,417	--	--	--	(8,417)
Chisholm Trail SUD	13,612	11,100	5,307	16,407	2,795
City of Florence	514	500	468	968	454
JSWSC	2,763	1,000	1,484	2,484	(324)
Jonah Water SUD	4,845	2,439	9,548	11,616	6,771
Sonterra MUD	510	--	1,678	1,678	1,168
TOTAL	31,325	15,131	18,485	33,245	1,920

1. Demand/Supply are annual average.

Table 3 – Planning Supply 2010

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	486	92	411	503	17
Capital L&L MUD #1	359	--	125	125	(234)
Chisholm Trail SUD	3,156	9,390	7,684	17,074	13,918
City of Florence	241	500	15	515	274
JSWSC	1,078	848	734	1,582	504
Jonah Water SUD	1,676	2,068	520	2,588	912
Sonterra MUD	161	--	33	33	(128)
TOTAL	7,157	12,898	9,522	22,420	15,263

1. Demand/Supply are annual average.

Table 3 – Planning Supply 2030

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	594	92	411	503	(91)
Capital L&L MUD #1	2,865	--	125	125	(2,740)
Chisholm Trail SUD	6,675	9,390	7,684	17,074	10,399
City of Florence	332	500	15	515	183
JSWSC	1,682	848	734	1,582	(100)
Jonah Water SUD	2,804	2,068	520	2,588	(216)
Sonterra MUD	292	--	33	33	(259)
TOTAL	15,244	12,898	9,522	22,420	7,176

1. Demand/Supply are annual average.

Table 3 – Planning Supply 2060

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	664	92	411	503	(161)
Capital L&L MUD #1	8,417	--	125	125	(8,292)
Chisholm Trail SUD	13,612	9,390	7,684	17,074	3,462
City of Florence	514	500	15	515	1
JSWSC	2,763	848	734	1,582	(1,181)
Jonah Water SUD	4,845	2,068	520	2,588	(2,257)
Sonterra MUD	510	--	33	33	(477)
TOTAL	31,325	12,898	9,522	22,420	(8,905)

1. Demand/Supply are annual average.

Table 3 – Planning Supply by Project Participant

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
	ac-ft/yr	SW ac-ft/yr	GW ac-ft/yr	SW+GW ac-ft/yr	ac-ft/yr
Armstrong WSC					
2010	486	92	411	503	17
2030	594	92	411	503	(91)
2060	664	92	411	503	(161)

1. Demand/Supply are annual average.

Table 3 – Planning Supply by Project Participant

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
	ac-ft/yr	SW ac-ft/yr	GW ac-ft/yr	SW+GW ac-ft/yr	ac-ft/yr
Capital L&L MUD No. 1					
2010	359	0	125	125	(234)
2030	2,865	0	125	125	(2,740)
2060	8,417	0	125	125	(8,292)

1. Demand/Supply are annual average.

Table 3 – Planning Supply by Project Participant

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
	ac-ft/yr	SW ac-ft/yr	GW ac-ft/yr	SW+GW ac-ft/yr	ac-ft/yr
Chisholm Trail SUD					
2010	3,156	9,390	7,684	17,074	13,918
2030	6,675	9,390	7,684	17,074	10,399
2060	13,612	9,390	7,684	17,074	3,462

1. Demand/Supply are annual average.

Table 3 – Planning Supply by Project Participant

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
	ac-ft/yr	SW ac-ft/yr	GW ac-ft/yr	SW+GW ac-ft/yr	ac-ft/yr
City of Florence					
2010	241	500	15	515	274
2030	332	500	15	515	183
2060	514	500	15	515	1

1. Demand/Supply are annual average.

Table 3 – Planning Supply by Project Participant

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
	ac-ft/yr	SW ac-ft/yr	GW ac-ft/yr	SW+GW ac-ft/yr	ac-ft/yr
Jarrell-Schwertner WSC					
2010	1,078	848	734	1,582	504
2030	1,682	848	734	1,582	(100)
2060	2,763	848	734	1,582	(1,181)

1. Demand/Supply are annual average.

Table 3 – Planning Supply by Project Participant

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
	ac-ft/yr	SW ac-ft/yr	GW ac-ft/yr	SW+GW ac-ft/yr	ac-ft/yr
Jonah Water SUD					
2010	1,676	2,068	520	2,588	912
2030	2,804	2,068	520	2,588	(216)
2060	4,845	2,068	520	2,588	(2,257)

1. Demand/Supply are annual average.

Table 3 – Planning Supply by Project Participant

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Sonterra MUD					
2010	161	0	33	33	(128)
2030	292	0	33	33	(259)
2060	510	0	33	33	(477)

1. Demand/Supply are annual average.

Table 4 – Deliverable Supply 2010

System	Demand	Deliverable SW + Drought Well Capacity			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	486	92	--	92	(394)
Capital L&L MUD #1	359	--	--	--	(359)
Chisholm Trail SUD	3,156	9,390	399	9,789	6,633
City of Florence	241	--	171	171	(70)
JSWSC	1,078	--	135	135	(943)
Jonah Water SUD	1,676	2,068	431	2,499	823
Sonterra MUD	161	--	200	200	39
TOTAL	7,157	11,550	1,336	12,886	5,729

1. Demand/Supply are annual average.

Table 4 – Deliverable Supply 2030

System	Demand	Deliverable SW + Drought Well Capacity			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	594	92	--	92	(502)
Capital L&L MUD #1	2,865	--	--	--	(2,865)
Chisholm Trail SUD	6,675	9,390	399	9,789	3,114
City of Florence	332	--	171	171	(161)
JSWSC	1,682	--	135	135	(1,547)
Jonah Water SUD	2,804	2,068	431	2,499	(305)
Sonterra MUD	292	--	200	200	(92)
TOTAL	15,244	11,550	1,336	12,886	(2,358)

1. Demand/Supply are annual average.

Table 4 – Deliverable Supply 2060

System	Demand	Deliverable SW + Drought Well Capacity			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	664	92	--	92	(572)
Capital L&L MUD #1	8,417	--	--	--	(8,417)
Chisholm Trail SUD	13,612	9,390	399	9,789	(3,823)
City of Florence	514	--	171	171	(343)
JSWSC	2,763	--	135	135	(2,628)
Jonah Water SUD	4,845	2,068	431	2,499	(2,346)
Sonterra MUD	510	--	200	200	(310)
TOTAL	31,325	11,550	1,336	12,886	(18,439)

1. Demand/Supply are annual average.

Data Needs

- Contracts – Purchase GW + SW
- Contracts – Sell GW + SW
- Deliverable Supply
  - Surface Water – Deliverable SW
  - Ground Water - Deliverable GW (Drought Well Capacity)
- Storage Facilities
- Service Pump Facilities
- System Constraints?

NEXT MEETING

- WTP Capacity Evaluation & Recommendations
- GW Well Capacity Evaluation & Recommendations
- Storage & Service Pump Evaluation & Recommendations

Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

August 2010	- Potential WTP/Storage/Pump Station/Pipeline Projects
September 2010	- Wholesale & Retail Rates
	- Implementation Alternatives & Financing Options
October 2010	- Review of "Draft" Final Report
November 2010	-Final Report Presentation

PUBLIC MEETINGS:

September 2010	- Project Status Meeting (75%)
October/November 2010	- "Draft" Final Report Presentation

Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322

- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414

Bell/Williamson Regional Water Supply Facility Plan

For Portions of Bell and Williamson Counties, Texas

Steering Committee Meeting

Jonah Water SUD
4050 FM 1660, Hutto, Texas 78634

September 9, 2010

Meeting Overview

- Introductions
- Review of Project Scope
- Population Projections/Water Demands
- Groundwater Availability/GW Well Capacities
- Surface Water Treatment Plant Capacities
- Water Demands vs. Water Supply
- Questions & Comments
- Future Meetings
- Next meeting – time, date & place

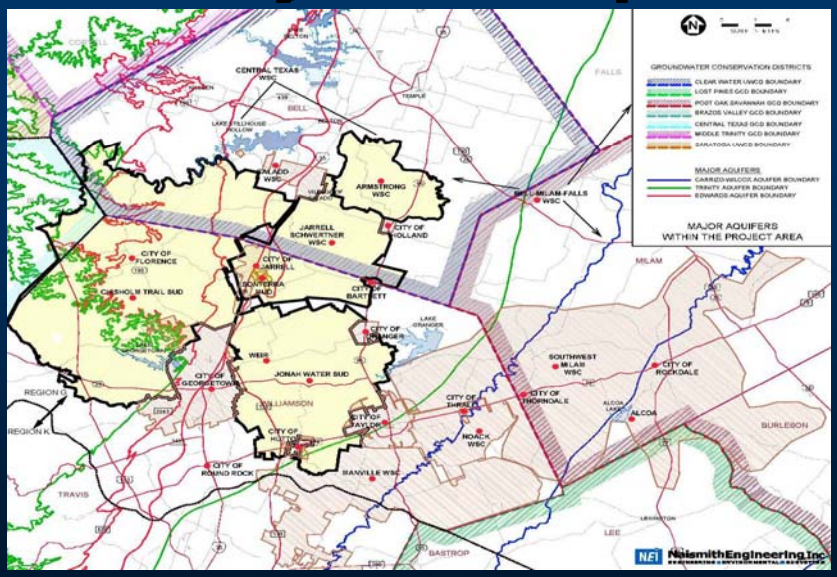
Introductions

- JSWSC (Project Administrator)
  - Mark Harbin – Board President
  - Sheila Cunningham – General Manager
- Project Participants – STEERING COMMITTEE MEMBERS
  - Armstrong WSC
  - Brazos River Authority
  - Capital Land & Livestock MUD No. 1
  - Chisholm Trail SUD
  - City of Florence
  - Jarrell Schwertner WSC
  - Jonah Water SUD
  - Sonterra MUD
  - Mr. David Meesey, Texas Water Development Board (50% of project funding)
- Acknowledgement of Guests
- Consulting Team: Naismith Engineering, Inc. (NEI) and Duff Consulting Engineers, Inc. (Duff)
  - NEI - Tom Brown, Grant Jackson, P.E., David Fusilier, P.E., Felise Canterini, E.I.T.
  - Duff – Bill Aston, P.E., Rodney Adamek, Miles Whitney, E.I.T

Project Scope - Summary

- Population and Water Demand Projections
- Preliminary Evaluation of Existing Facilities
- Preliminary Evaluation of Alternative Water Treatment Plants
- Preliminary Transmission, Distribution and Interconnects within the Systems
- Wholesale and Retail Rates
- Identify Implementation Alternatives and Sources of Financing
- Deliverables:
  - Public Meeting - @ 75 % [October 2010]
  - Draft Final Report
  - Public Meeting - Presenting Draft Final Report [November 2010]
  - Final Report

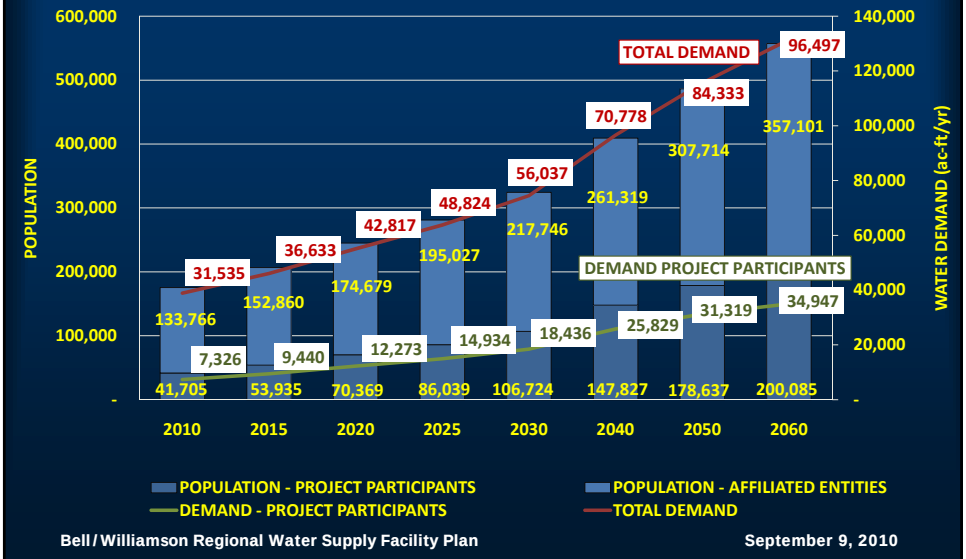
Project Area Map



Bell / Williamson Regional Water Supply Facility Plan

September 9, 2010

Population Projections and Water Demands for Project Area



Bell / Williamson Regional Water Supply Facility Plan

September 9, 2010

Water Supply Constraints

- Surface Water (In Order)
  - Reservoir Firm Yield
  - Water Rights/Water Supply Contracts
  - Delivery Availability
  - Delivery Infrastructure
- Groundwater (In Order)
  - Aquifer Yield
  - Managed Available Groundwater
  - Groundwater Supply Allocations
  - Accounting for Exempted & Historical Uses
  - Permits

Project Water Supply Estimates

- Surface Water
  - Reservoir Yield & Water Rights are known
  - Water Supply Contracts Dates and Timelines
  - Timelines dictate timing of infrastructure construction
- Groundwater
  - Aquifer Yield only recently estimated
  - Some still unknown
  - Managed Available Groundwater Allocation Strategies
    - Rule of Capture "If I get it, it's mine!"
    - Correlative Rights "How much land I have tells me how much water I get."
    - Blend-some combination of Rule of Capture and Correlative Rights
  - Timelines dictate timing of infrastructure construction

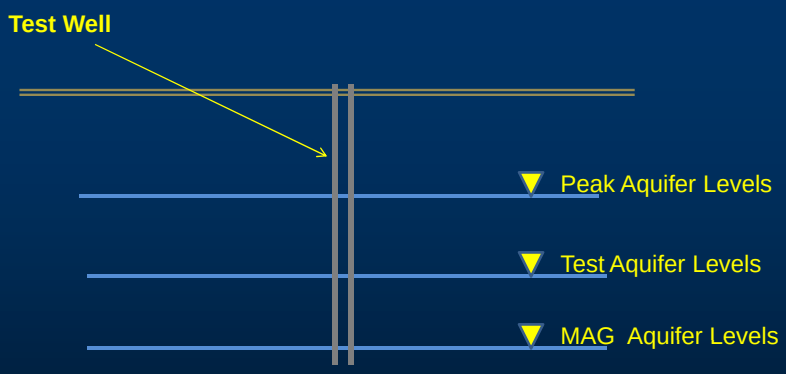
Groundwater Available

- Based on:
  - Water System's "Footprint"
  - Managed Available Groundwater
  - Aquifers: Trinity, Edwards – Balcones Fault Zone
- Managed Available Groundwater (MAG)
  - Amount of Groundwater Available for Development
  - Based on Desired Future Conditions
  - Goal is to Maintain Desired Future Conditions
  - Considered to be "sustainable" a withdrawal
  - Source: TWDB

Groundwater Availability Calculations

- Determine Available Groundwater for Trinity & Edwards – BFZ Aquifer by County
- Obtain Footprint of Each Aquifer by County
- Calculate Available Groundwater / acre
- Determine Area of Footprint of Each Water System over Trinity & Edwards Aquifer
- Calculate Available Groundwater for Each System

Aquifer Levels



Groundwater Availability Calculations

County	Trinity ac-ft / year	Edwards – BFZ ac-ft / year	Trinity acres	Edwards – BFZ acres	Trinity ac-ft/yr/acre	Edwards – BFZ ac-ft/yr/acre
Bell	7,068	6,469	678,916	232,192	0.010411	0.027861
Burnet	2,723	--	12,388	--	0.219809	--
Williamson	1,968	3,472	444,117	135,425	0.004431	0.025638
Total	9,791	6,469	1,050,134	415,414	0.234651	0.053498

- Table based on information from 2011 Region G I.P.P., as well as information obtained directly from TWDB

Groundwater Availability Calculations

System	County	Total Area	Trinity Area	Edwards – BFZ Area	Trinity - Available	Edwards – Available	Total Available
		acres	Acres	acres	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong	Be	39,524	39,524	--	411	--	411
Capital L&L[1]	Be, W	12,000	12,000	--	125	--	125
Chisholm Trail	Be, Bu, W	257,702	257,702	131,399	4,205	3,479	7,684
Florence	W	520	520	520	2	13	15
JSWSC	Be, W	79,997	79,997	14,833	354	380	734
Jonah	W	120,802	114,132	546	506	14	520
Sonterra	W	1,102	1,102	1,102	5	28	33
TOTAL		511,647	504,977	148,400	5,608	3,914	9,522

1 – Footprint of Capital Land & Livestock MUD No. 1 assumed to be entirely over the Trinity Aquifer

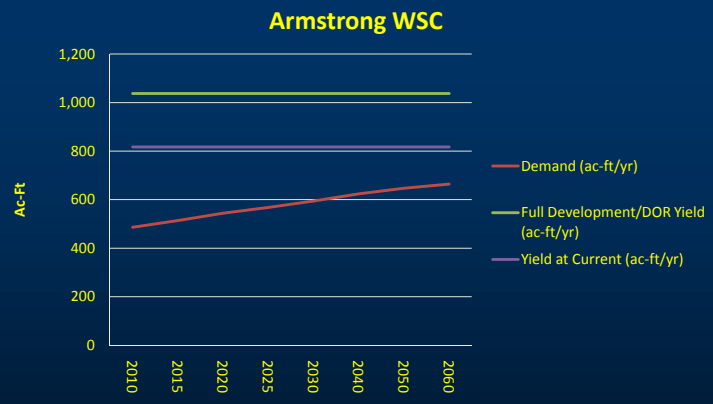
Demand vs. Supply

- Demand
  - Population Projections – from Region G Plan or Project Participant
  - Per Capita Water Usage – from Region G Plan or Neighboring Water System
  - Demand = Population x Per Capita Usage
- Supply
  - Sustainable Yield – based on MAG #'s & system footprint
  - Yield At Current – based on past pumping records
  - Includes Surface WTP Capacities
  - Includes Water Supply Contracts

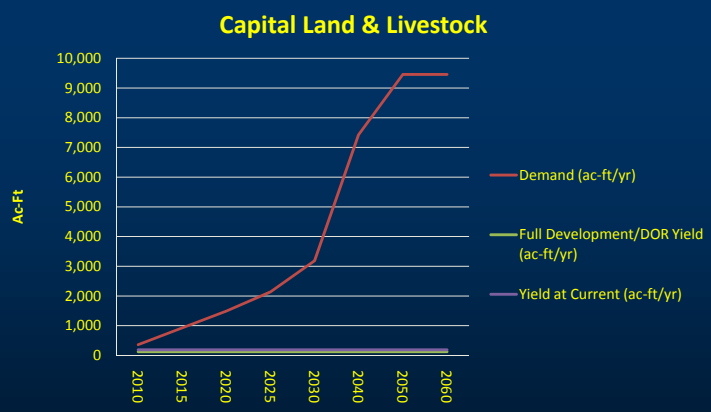
Demand vs. Supply

- Shown on Handout
- Table Includes Plan Participants
- Graphs of Individual Systems

Individual System Demand vs. Supply

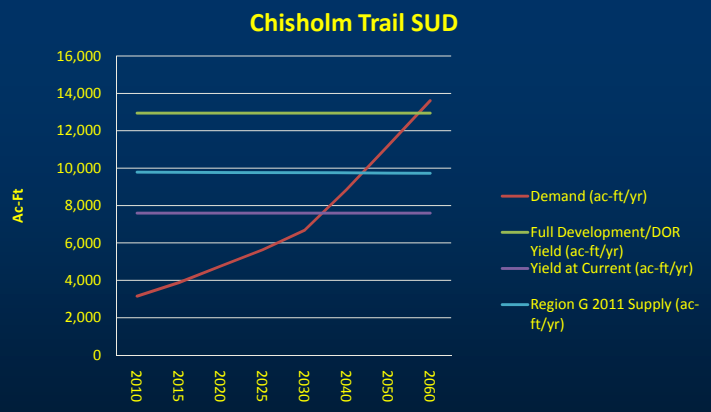


Individual System Demand vs. Supply



Bell / Williamson Regional Water Supply Facility Plan

Individual System Demand vs. Supply



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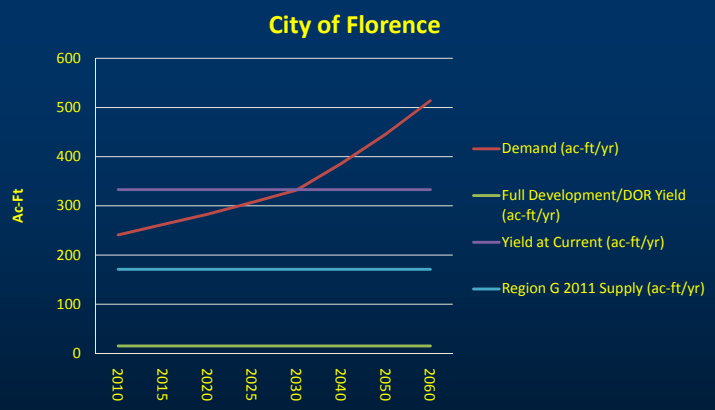

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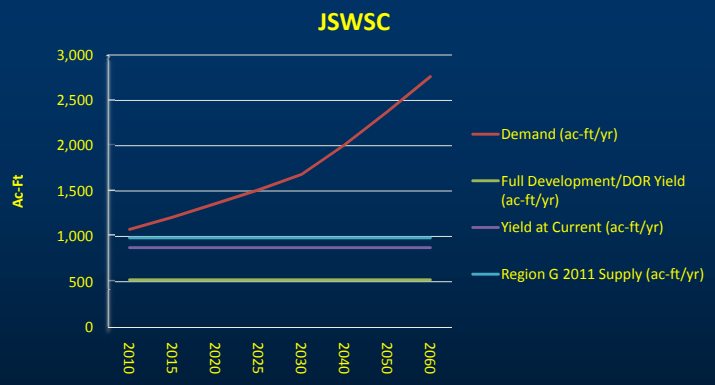

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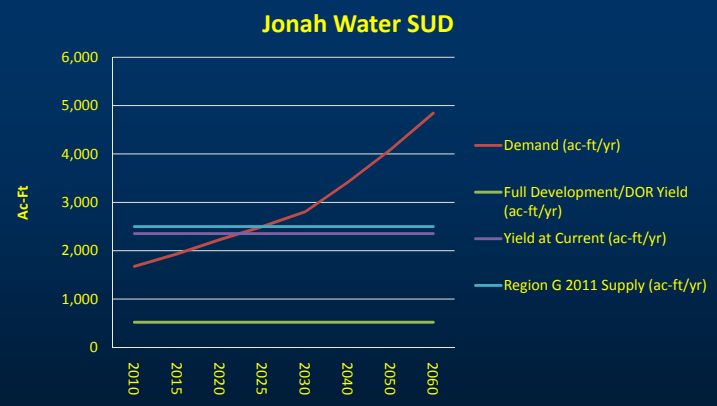

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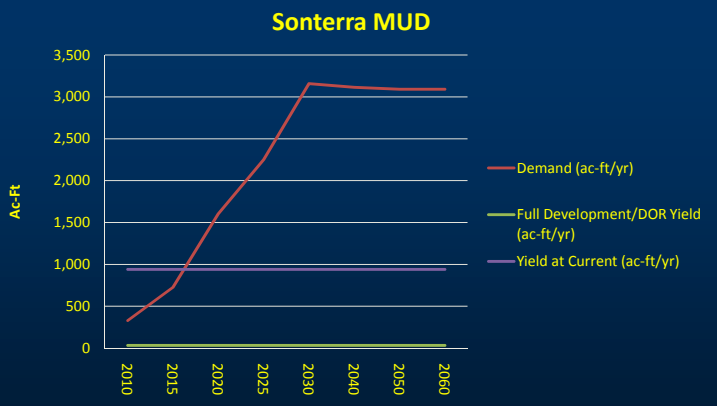

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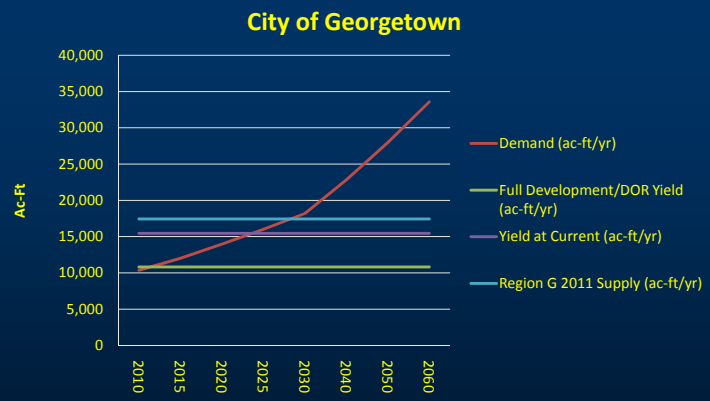

Data Needs

- We still need clarification on some data (contracts, capacities, etc…)
- NEI will be contacting participants next week to clarify information

NEXT MEETING

Where & When:

September 30, 2010 @ 1:30 pm
Offices of Jonah Water SUD

What:

- Potential Projects:
  - WTP, Wells, Pump Stations, Piplines
  - Individual Projects
  - "Regional" Projects

Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

September 30th	- Potential WTP/Storage/Pump Station/Pipeline Projects
October 2010	- Wholesale & Retail Rates
	- Implementation Alternatives & Financing Options
October 2010	- Review of "Draft" Report / Public Meeting
November 2010	- Final Report Presentation / Public Meeting

PUBLIC MEETINGS:

October 2010	- Project Status Meeting (75%)
November 2010	- Final Report Presentation

Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322

- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414

Meeting Overview

- Introductions
- Review of Project Scope
- Identified Individual Water System Projects
- Overview of Identified Region G Projects from the 2011 Draft IPP
- Next Meeting/Future Meetings – Date, Time & Place
- Questions & Comments

Introductions

- JSWSC (Project Administrator)
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- Population and Water Demand Projections
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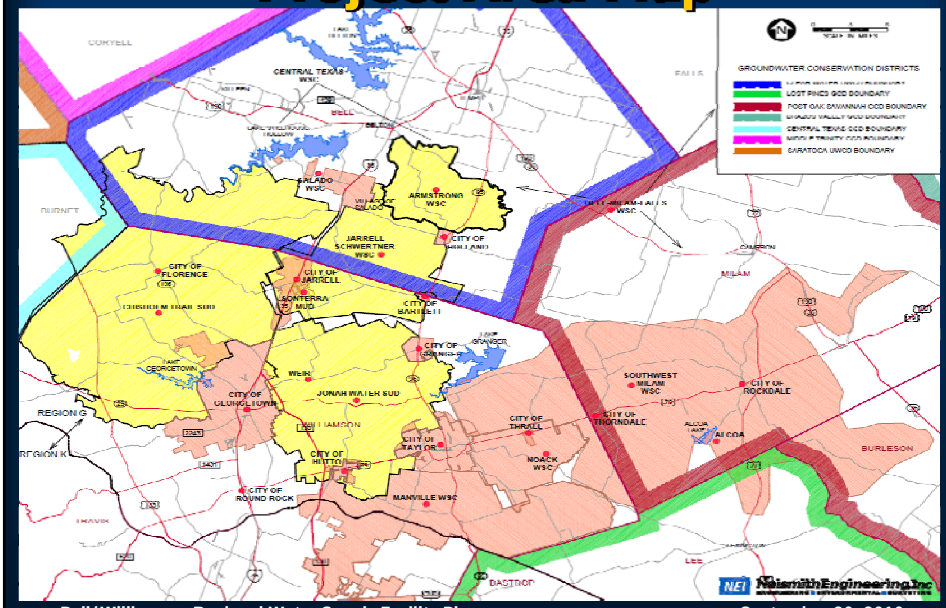
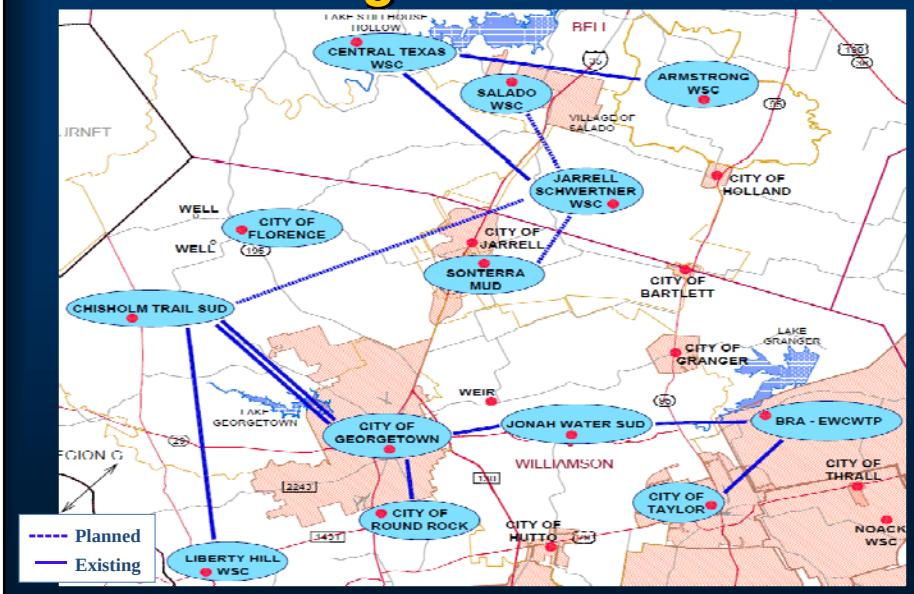
Project Area Map



Identified Individual Participant Water Management Strategies

- Emergency Interconnects
- Future Water Supply Projects (Wells & WTPs)
- Future Infrastructure Projects
- Short Term Projects (<10 years)
- Long Term Projects (>10 years)

Existing Interconnects



Proposed Emergency Interconnects

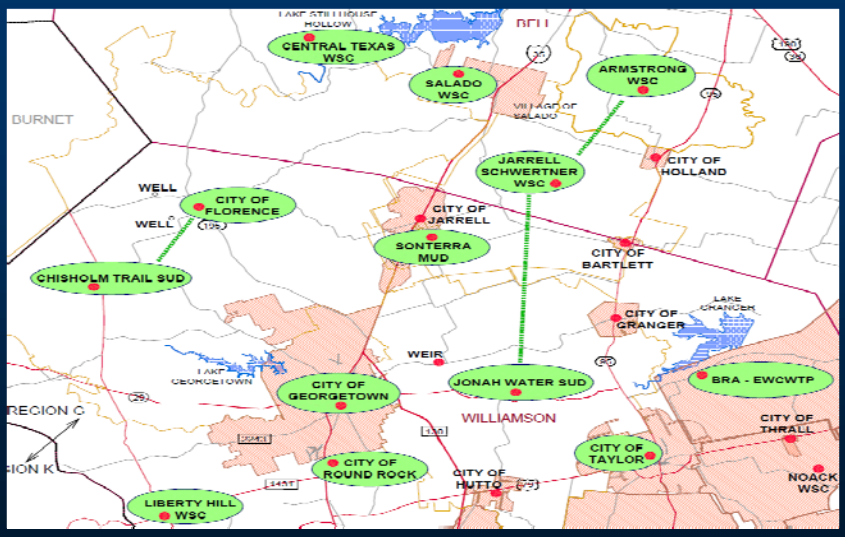


Table 1
Exist. SW Supply + Exist. DOR GW

Participant	2010	2015	2020	2025	2030	2040	2050	2060
Armstrong WSC								
Capital Land & Livestock	X X							
Chisholm Trail SUD						X		X
City of Florence	X				X			
JSWSC (includes City of Jarrell)	X X							
Jonah Water SUD	X			X				
Sonterra MUD	X		X					
City of Georgetown		X		X				

X – Drought of Record yield capacity
X – Current yield capacity

Table 2
Existing Contracted for Surface Water That is Currently Unavailable

Participant	BRA	Chisholm Trail SUD
Armstrong WSC		
Capital Land & Livestock		
Chisholm Trail SUD		
City of Florence		500 ac-ft/yr
JSWSC (includes City of Jarrell)	1,000 ac-ft/yr	
Jonah Water SUD	2,439 ac-ft/yr	
Sonterra MUD		
City of Georgetown		

Table 3
Deadlines for Future Individual System Infrastructure Projects Existing Systems

Participant	Additional Water Supply	Elevated Storage Tank	Ground Storage Tank	Interconnect	Pump Station
Armstrong WSC					
Capital Land & Livestock MUD No. 1	NOW	NOW	NOW		
Chisholm Trail SUD	2030				
City of Florence	NOW				
JSWSC (includes City of Jarrell)	NOW		2040		
Jonah Water SUD	NOW				
Sonterra MUD	NOW		2015		
City of Georgetown	2015	2040			

Note: Dates reflect start date for required planning, design, construction.
Based on worse-case scenario of DOR Yield or Current Yield.

Short Term Projects (<10 yrs)

- CL & L MUD No. 1
  - Water Supply and Storage
- City of Florence
  - Water Supply
- JSWSC
  - Water Supply
- Jonah Water SUD
  - Water Supply
- Sonterra MUD
  - Water Supply and Storage

Long Term Project (>10 yrs)

- Armstrong WSC
  - Water Supply
- Chisholm Trail SUD
  - Water Supply
- JSWSC
  - Storage
- City of Georgetown
  - Storage

Region G 2011 Draft Plan - Identified Water Management Strategies

- BRA System Operation
- Reallocation of Storage in Federal Reservoirs
- Lake Granger Augmentation
- Carrizo-Wilcox Aquifer Development
- BRA reservoir connections –
  - Connect Lake Belton to Lake Stillhouse Hollow
- Miscellaneous Projects:
  - Interconnection – Central Texas WSC & Salado WSC
  - BCRUA Water From City of Round Rock to Chisholm Trail SUD
  - Trinity Aquifer Development (2 wells) – City of Florence
  - EWCWTP (BRA – Lake Granger) Supply – Multiple WUGs
  - Expansion of Existing WTP – City of Georgetown

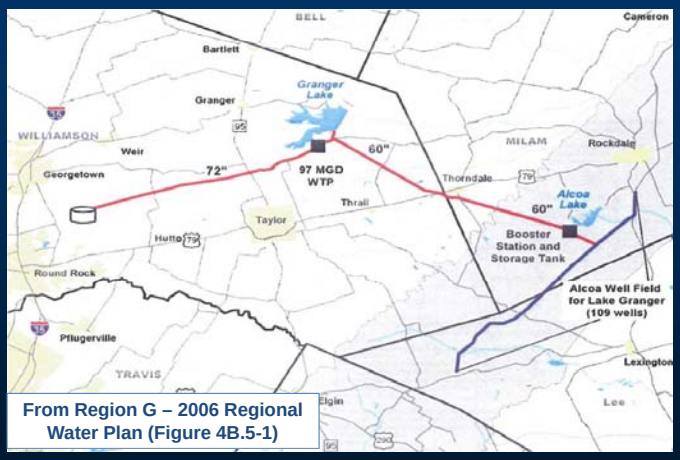
Region G 2011 Draft Plan - Identified Water Management Strategies: BRA System Operations

- **BRA System Operation:**
  - BRA Permit Application to TCEQ requesting additional appropriation of water
  - Firm supply of up to 421,449 ac-ft
  - Interruptible supply of up to 670,000 ac-ft (75% available 75% of the time)
  - Optimize operation of Brazos River Basin

Region G 2011 Draft Plan - Identified Water Management Strategies: Reallocation of Storage in Federal Reservoirs

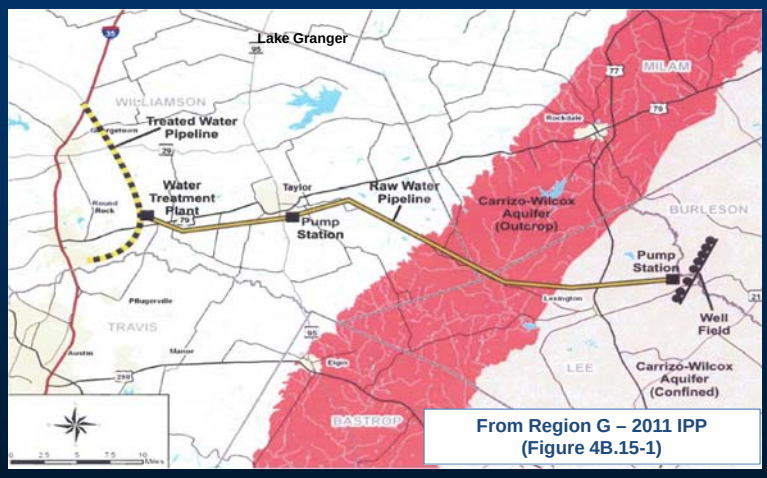
- Change Flood Control Storage to Water Supply Storage (process is called reallocation)
- Effects (in part) Lakes Belton, Stillhouse Hollow, Georgetown, Granger
- USACE has Authority to Reallocate Up to 50,000 ac-ft without Congressional Approval

Region G 2011 Draft Plan - Identified Water Management Strategies: Lake Granger Augmentation



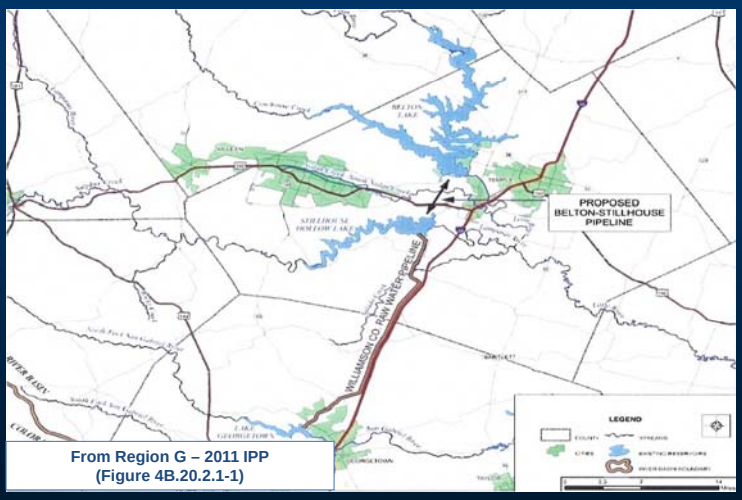
From Region G – 2006 Regional Water Plan (Figure 4B.5-1)

Region G 2011 Draft Plan - Identified Water Management Strategies: Carrizo-Wilcox Aquifer Development



From Region G – 2011 IPP (Figure 4B.15-1)

Region G 2011 Draft Plan - Identified Water Management Strategies: Connect Lake Belton to Lake Stillhouse Hollow



From Region G – 2011 IPP (Figure 4B.20.2.1-1)

Region G 2011 Draft Plan - Identified Water Management Strategies: Miscellaneous Supply Strategies

- Interconnect - Central Texas WSC and Salado WSC
- BCRUA Water From City of Round Rock to Chisholm Trail SUD
- Trinity Aquifer Development (2 wells – 200 gpm each) – City of Florence
- EWCWTP (BRA – Lake Granger) Supply – Multiple WUGs
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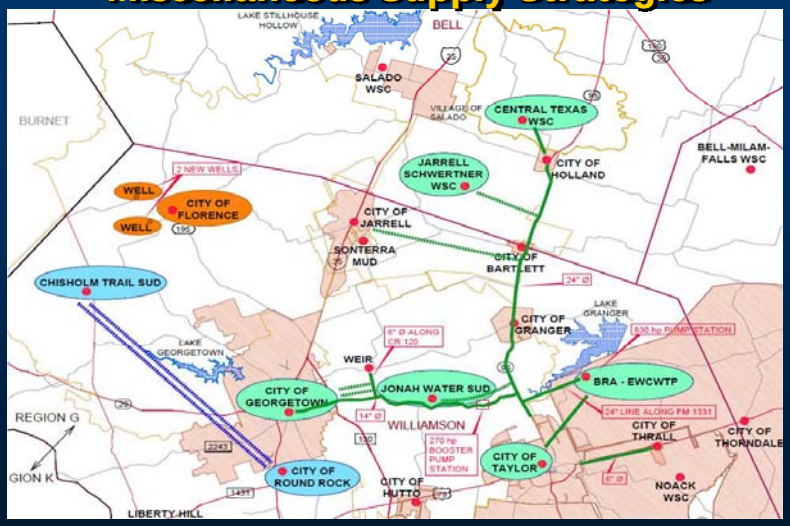
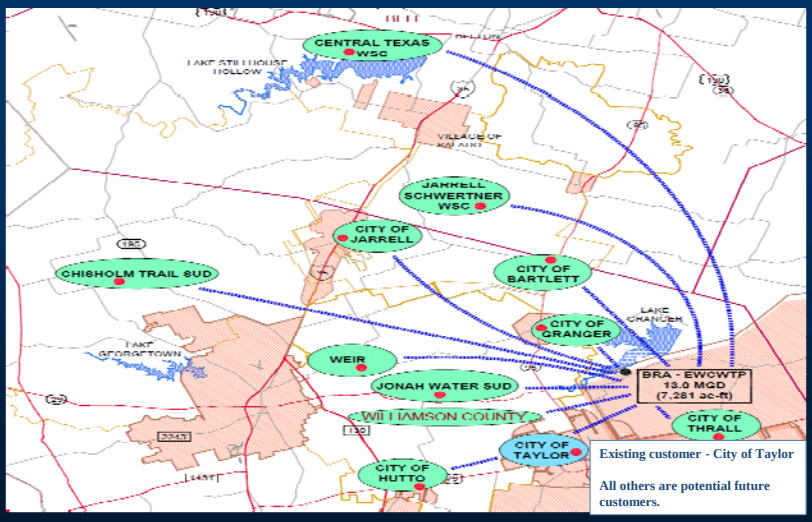
Region G 2011 Draft Plan - Identified Water Management Strategies: Miscellaneous Supply Strategies



Region G 2011 Draft Plan - Identified Water Management Strategies: BRA's Lake Granger WTP (EWCWTP) Treated Water to New Customers

- **Existing EWCWTP Customers:**
  - City of Taylor
- **Future EWCWTP Customers:**
  - Chisholm Trail SUD
  - City or Bartlett
  - City of Granger
  - City of Jarrell
  - City of Thrall
  - City of Weir
  - City of Hutto
  - JSWSC
  - Jonah Water SUD
  - Central Texas WSC
  - Williamson Co. - Other

Region G 2011 Draft Plan - Identified Water Management Strategies: BRA's Lake Granger WTP (EWCWTP) Treated Water to New Customers



Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

October 19, 2010	- Regional Projects
	- Implementation Alternatives
	- Financing Options
November 4, 2010	- Draft Report Presentation

PUBLIC MEETINGS:

October 27, 2010	- Project Status Meeting (75%)
November 17, 2010	- Final Report Presentation

Questions & Comments

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- Review of Project Scope
- Recommended Individual Water System Projects
- Recommended Regional Water System Projects
- Regional System Approach – Implementation Alternatives
  – Financing Options
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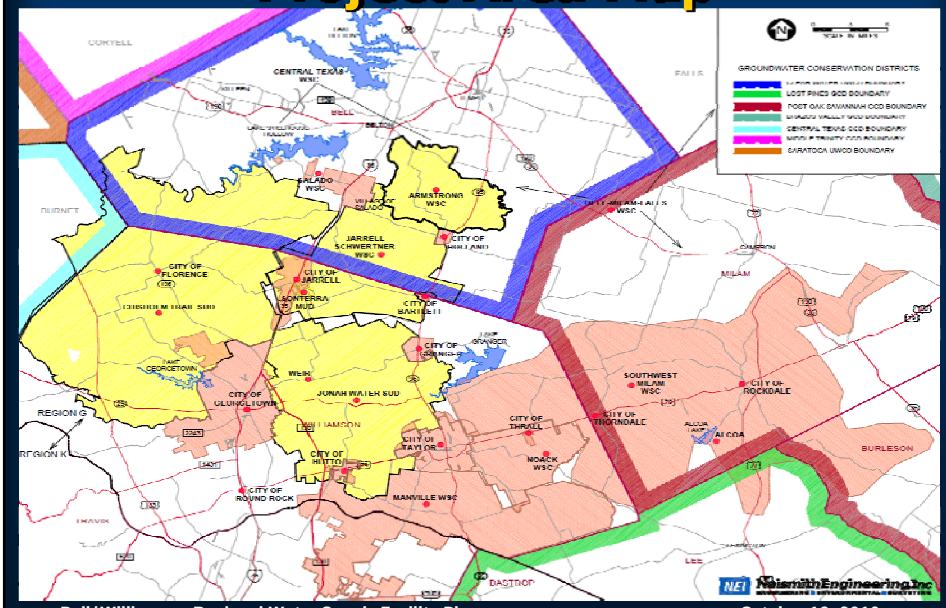
Project Area Map



Identified Participant Water Management Strategies

- Interconnects
- Future Water Supply Projects (Wells & WTPs)
- Future Infrastructure Projects
- Short Term Projects (<10 years)
- Long Term Projects (>10 years)
- Regional Projects

Deadlines for Future Individual System Infrastructure Projects Existing Systems

Participant	Additional Water Supply	Elevated Storage Tank	Ground Storage Tank	Interconnect	Pump Station
Armstrong WSC					
Capital Land & Livestock MUD No. 1	NOW	NOW	NOW		
Chisholm Trail SUD	2030				
City of Florence	NOW				
JSWSC (includes City of Jarrell)	NOW		2040		
Jonah Water SUD	NOW*				
Sonterra MUD	NOW		2015		
City of Georgetown	2015	2040			

* - additional water supply of Jonah Water SUD is to allow access to 2,439 ac-ft of Lake Stillhouse Hollow water that is currently unavailable to the district due to infrastructure limitations.

Note: Dates reflect start date for required planning, design, construction. Based on worse-case scenario of DOR Yield or Current Yield.

Short Term Projects (<10 yrs)

- Capital & Land and Livestock MUD No. 1
  - 3 Wells @ 250 gpm each (576 ac-ft/yr)
  - Storage (Elevated)
- City of Florence
  - 1 Well @ 200 gpm (153 ac-ft/yr)
  - Interconnect with Chisholm Trail SUD
- Sonterra MUD
  - 1 Well @ 250 gpm (192 ac-ft/yr)
  - Interconnect with JSWSC
  - Storage (Elevated)

Short Term Projects (<10 yrs)

- Chisholm Trail SUD
  - Interconnect with City of Florence
- JSWSC
  - Interconnects:
    - Sonterra MUD
    - Jonah Water SUD
    - Armstrong WSC
  - Access BRA's EWCWTP

    or
  - Purchase Water from Central Texas WSC
    (use 1,000 ac-ft L. Belton water)

Short Term Projects (<10 yrs)

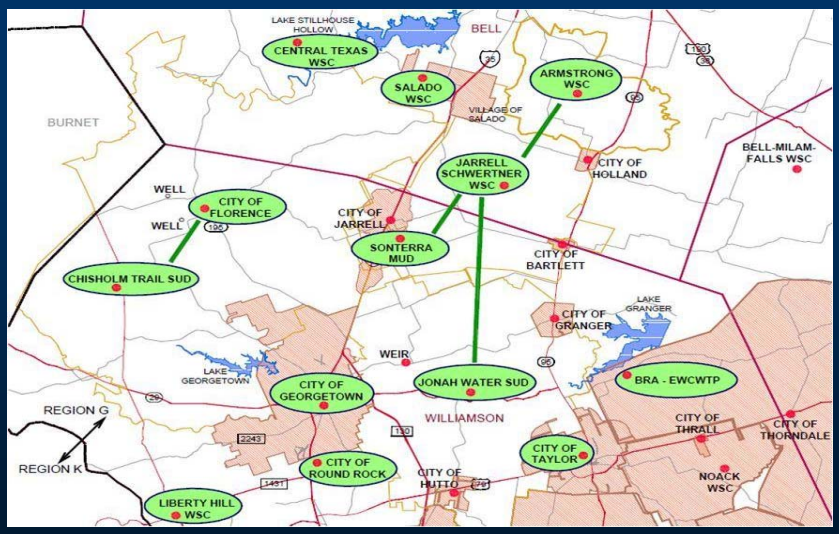
- Jonah Water SUD
  - Additional BRA EWCWTP Supply

    or
  - Purchase Water from Central Texas WSC
    (use 2,349 ac-ft from Lake Stillhouse Hollow)
  - Interconnect with JSWSC
- Armstrong WSC
  - Interconnect with JSWSC

Long Term Project (>10 yrs)

- Chisholm Trail SUD
  - Water Supply
- JSWSC
  - Storage
- City of Georgetown
  - Storage

Proposed Emergency Interconnects



Regional Projects

Short-Term:

- BRA System Operation
- BRA reservoir connections
  - Connect Lake Belton to Lake Stillhouse Hollow
- EWCWTP (BRA – Lake Granger) Supply - Multiple Systems

Long-Term:

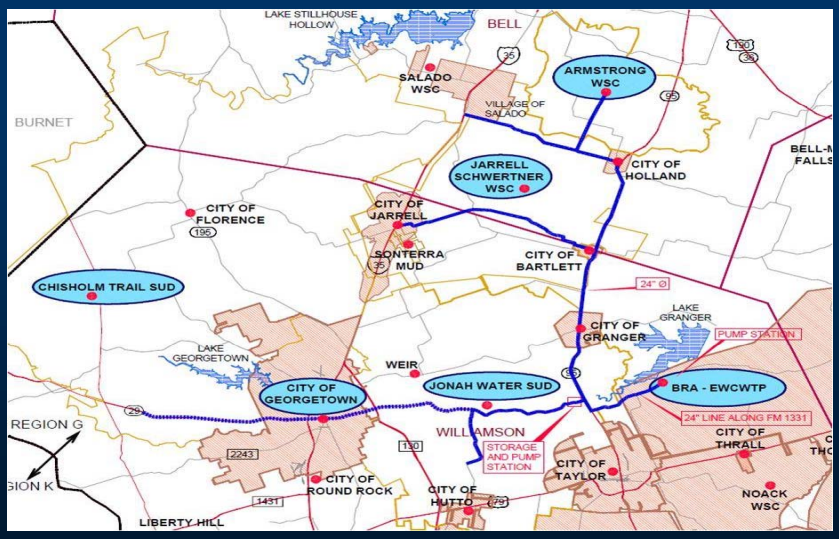
- Lake Granger Augmentation

  or
- Carrizo-Wilcox Aquifer Development
- Expansion of Existing WTP – City of Georgetown

Note: All of strategies listed above are included in the Region G 2011 Draft Water Plan

Regional Projects

BRA's Lake Granger WTP (EWCWTP) Treated Water to New Customers



Public Water Utilities

- Cities
- Special Purpose Districts
- Water Supply Corporations

Public Water Utilities

- Cities
  - Type A General Law Municipality
    - Constitutes an unincorporated city of town;
    - contains 600 or more inhabitants;
    - less thank 2 square miles in territory.
  - Type B General Lay Municipality
    - Contains 201 to 4,999 inhabitants; not more than
  - Home-Rule Municipality
    - A municipality is a home-rule municipality if it operates under a municipal charter that has been adopted or amended as authorized by article XI, Section 5 of the Texas Constitution.

Public Water Utilities

- Special Purpose Districts
  - "District" means any district or authority created by authority of either Sections 52(b)(1) and (2), Article III, or Section 59, Article XVI, Texas Constitution, regardless of how created.
  - Special purpose districts are political subdivisions of the State of Texas and can be created by act of the legislature or through procedures detailed in the Texas Water Code.

Public Water Utilities

- Provisions of Art. XVI, Sec. 59 of the Texas Constitution
  - Conservation & Reclamation Districts are given broad authority to:
    - Political Subdivision of the State of Texas
    - Authorized to promote the conservation and development of all of the natural resources of the State.
    - Flood Control
    - Water development
    - Development of parks and recreational facilities
    - Hydroelectric power
    - Navigation

Public Water Utilities

- Water Control and Improvement Districts
  - Created under Art. XVI, Sec. 59 to address a particular local issues by local landowners
  - Board of Directors are elected by the residents of the District
  - Typically are limited to local projects that serve only one jurisdiction
  - Limited ability to implement multi-jurisdictional projects
  - Usually have taxing authority
  - Require TCEQ oversight under Chapter 49 of the Texas Water Code

Public Water Utilities

<u>Types of Special Districts Created through the Texas Water Code</u>

- Water Control and Improvement Districts (WCID) created under Chapter 51 Texas Water Code.
- Municipal Utility District (MUD) created under Chapter 54 of the Texas Water Code.
- Special Utility District (SUD) created under Chapter 65 of the Texas Water Code.
- Water Supply Corporation (WSC) created under Chapter 67 of the Texas Water Code.

Public Water Utilities

- Creation of a District Water Control & Improvement District
  - If the land to be included in a district is within one county, the creation of the district shall be considered and ordered by the commissioners court, but if the land to be included in a district is in two or more counties, the creation of the district shall be considered and ordered by the TCEQ.
  - Public hearings are held and the Commissioners Court or TCEQ makes a finding that the District is in the public interest and passes an order establishing the District.
  - Are regulated by the TCEQ and all bond issues must be approved by the TCEQ.

Public Water Utilities

- Municipal Utility District
  - May be created by the Texas Legislature
  - If all or part of a proposed district is to be located outside the extraterritorial jurisdiction of a city, the commissioners court of the county in which the district is to be located may review the petition for creation.

Public Water Utilities

- When it is proposed to create a district, a petition requesting creation shall be filed with the TCEQ. The petition shall be signed by a majority in value of the holders of title of the land within the proposed district.
- Public hearings are held and the Commissioners Court or TCEQ makes a finding that the District is in the public interest and passes an order establishing the District.
- Are regulated by the TCEQ under Chapter 49 of the Texas Water Code.

Public Water Utilities

- Special Utility District
  - If creation of a district is proposed by a water supply or sewer service corporation, a certified copy of a resolution requesting creation must be filed with the commission.
  - The resolution shall be signed by the president and secretary of the board of directors of a water supply or sewer service corporation and shall state that the water supply or sewer service corporation, acting through its board of directors, has found that it is necessary and desirable for the water supply or sewer service corporation to be converted into a district.

Public Water Utilities

- A district may operate within the corporate limits of a city or within the extraterritorial jurisdiction of a city, provided that a city may require that the district construct all facilities to serve the land in accordance with plans and specifications that are approved by the city. The city may also require that the city be entitled to inspect facilities being constructed by a district within the corporate limits or extraterritorial jurisdiction of the city.
- TCEQ holds a public hearing regarding the conversion from a WSC and makes a determination that the SUD will fulfill the reasons to become a SUD detailed in the resolution.
- TCEQ does not have oversight as prescribed in Chapter 49 of the Texas Water Code.

Public Water Utilities

- **Water Supply Corporations**
  - Three or more individuals who are citizens of this state may form a corporation by making an application to the secretary of state in the same manner as provided by law for an application for a private corporation.
  - The application for charter must include the number of directors and the name of each director.
  - The name designated for the corporation must include the words "Water Supply Corporation."
  - TCEQ approval is not needed to create a WSC nor is a public hearing required.
  - TCEQ does not have oversight as prescribed by Chapter 49 of the Texas Water Code.

Public Water Utilities

Types of Districts Created by the Legislature

- River Authorities
  - Created by the legislature to address conservation and reclamation issues identified in Art. XVI, Sec. 59 of the Texas Constitution
  - Political Subdivision of the State of Texas
  - Boards of Directors are usually appointed by the Governor with the consent of the Texas Senate
  - Jurisdiction is typically a river basin or part of a basin
  - Usually do not have taxing authority
  - Can contract with one or more jurisdictions to implement projects
  - Do not require TCEQ oversight under Chapter 49 of the Texas Water Code

Public Water Utilities

- Regional Authorities
  - Created under Art. XVI, Sec. 59 to address a particular local issues that involves more than one jurisdiction
  - Political Subdivision of the State of Texas
  - Selection of Board of Directors is established in the enabling legislation
  - Taxing jurisdiction is determined by the enabling legislation
  - Can contract with one or more jurisdictions to implement projects
  - Generally require TCEQ oversight under Chapter 49 of the Texas Water Code

Public Water Utilities

- Municipal Utility Districts
  - Created under Art. XVI, Sec. 59 to address a particular local issues by local landowners. These types of Districts are established to facilitate development
  - Board of Directors are elected by the residents of the District as development occurs
  - Have taxing authority to retire debt and for operations and maintenance
  - Can implement a broad range of projects within its jurisdiction
  - Limited ability to implement multi-jurisdictional projects
  - Require TCEQ oversight under Chapter 49 of the Texas Water Code

Funding Sources

- Major Sources of Funding for Regional Projects
  - Federal Sources of Funding through Congressional Authorization
    - U.S. Army Corps of Engineers
    - United States Department of the Interior-Bureau of Reclamation
    - United States Department of Agriculture-Rural Development
    - United States Department of Commerce-Economic Development Administration

Funding Sources

- State of Texas Sources of Funding
  - Texas Water Development Board
    - State Participation Program
    - Development Fund (D-Fund 2)
    - Water Infrastructure Fund (WIF)
    - Drinking Water State Revolving Fund (DWSRF)
    - Texas Environmental Infrastructure Projects (TEIP)

Funding Sources

State Participation Program:

- Eligible applicants are political subdivisions of the state, WSC's, or SUD's
- Intent of the program is to allow for optimization of regional projects
- Allows the TWDB to assume a temporary ownership interest in a regional project
- TWDB may acquire ownership interest in the water rights or an interest in the property and treatment and distribution works

Funding Sources

- Types of Projects:
  - New water supply projects
    - TWDB will fund up to 80% of the costs;
    - The applicant will finance at least 20% of the costs;
    - At least 20% of the total capacity of the proposed project will serve existing needs.

Funding Sources

- Other Regional Projects:
  - TWDB can fund up to 50% of costs;
  - Applicant will finance 50% of total project costs (Can be from other TWDB programs)
  - At least 50% of the total capacity of the proposed project will serve existing needs.

Funding Sources

- Repayment Terms:
  - Max. Term is 34 Years;
  - Interest Rate based on cost of funds to TWDB;
  - TWDB and applicant develop a Master Agreement defining the scope of the project;
  - TWDB will accept a pledge of tax and/or revenue pledge or contract revenue pledge.

Funding Sources

Water Development Fund (D-Fund 2):

- Eligible Applicants:
  - Political subdivisions of the state, WSC's and SUD's
- Types of Projects:
  - Local or Regional projects;
  - Water projects including financing for planning, design, acquiring, improving, or constructing water improvements;
  - Acquisition of water rights;

Funding Sources

- Repayment Terms:
  - Up to a 30 year term;
  - Interest rates set at 35 basis points above TWDB borrowing costs;
  - TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation and contract revenue pledges

Funding Sources

Water Infrastructure Fund:

- Eligible Applicants:
  - Political subdivisions of the state, WSC's and SUD's
  - Funding availability subject to Texas Legislature approval
- Types of Projects:
  - Projects identified in the Texas Water Plan

Funding Sources

- **Repayment Terms:**
  - Max. of 20 years
  - Interest rate set 2% below the TWDB cost of funds;
  - If a project has a long lead time funds for planning, design, permitting, and other up-front costs. Applicant may defer all interest and principal payments for up to 10 years or until the end of construction, whichever is sooner.
  - Interest is not accrued during this period;
  - TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation and contract revenue pledges

Funding Sources

Drinking Water State Revolving Fund (DWSRF):

- **Eligible Applicants:**
  - Political subdivisions of the state, WSC's and SUD's, Privately owned utilities, non-community public water supply systems, and state agencies.
  - Must go through a ranking process and be invited to submit an application.
- **Types of Projects:**
  - Planning, design and constructing projects to upgrade, or replace water supply infrastructure, correct deficiencies that violate the Safe Drinking Water Act standards, to consolidate water supplies, and to purchase capacity in water systems.

Funding Sources

- Repayment Terms:
  - 20 years for “mainstream” applicants and 30 years for “disadvantaged communities”;
  - Mainstream funds offer a fixed interest rate of 1.25% below market rate;
  - Disadvantaged communities offer a fixed interest rate of 1.25% below market rate; and 70% loan forgiveness if MHI is < or = to 75% of the State MHI;
  - 100% loan forgiveness if MHI is <or= to 60% of the State MHI;

Funding Sources

TEXAS ENVIRONMENTAL INFRASTRUCTURE PROGRAM (TEIP)

- Eligible Applicants:
  - “Political subdivision” includes a county, city, or other body politic or corporate of the state, including any district or authority created under Article III, Section 52 or Article XVI, Section 59 of the Texas Constitution

Funding Sources

- **Types of Projects:**
  - Facilitate construction of projects (or discrete increments of projects) to meet near-term water supply needs. Pre-construction activities are also eligible for TEIP assistance, but preference will be given to those SOIs that support construction of water supply within a reasonable time frame.
  - Provide financial assistance to develop water supply projects in Texas, including implementation of water management strategies recommended in regional water plans and "Water for Texas ," the Texas State Water Plan and not otherwise authorized under WRDA. This assistance is to be provided "in the form of planning, design and construction assistance for water-related environmental infrastructure and resource protection and development projects in Texas, including projects for water supply, storage, treatment and related facilities, environmental restoration, and surface water resource protection and development.“

Funding Sources

- **Repayment Terms:**
  - For a project constructed by USACE. The non-federal share of 25 percent may be provided in the form of cash, materials and in-kind services, including planning, design, construction and management services, as determined to be necessary for the project that are initiated following execution of a Project Partnership
  - (b) For a project to be constructed by a non-Federal entity. The federal share of project costs will be provided through a reimbursement of 75 percent of the total project cost upon *completion of the project. The non-federal share may be provided in the form of cash, in-kind services, including planning, design, construction, and management services, as determined to be necessary for the project. However, work eligible for credit or reimbursement on a project may not be initiated until a Project Partnership Agreement has been executed with USACE.*

Funding Sources

- **Eligibility and Ranking:**

The ranking criteria to be used by the executive administrator are as follows:

1. Whether the proposed project is recommended in the 2011 regional water plans, which form the basis of the State Water Plan due to be published in 2012;
2. Whether the proposed project is for new water supply in the near-term;
3. Construction projects are preferred over pre-construction projects;
4. Date for which the project is intended to meet needs;
5. Projected completion date;
6. Status of federal 404 permit authorization and other relevant state and federal permits; and
7. Other

Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

November 4, 2010 - Draft Report Presentation
(Jonah Water SUD Office at 1:30)

PUBLIC MEETINGS:

October 27, 2010 -Project Status Meeting (75%)
(City of Jarrell Community Center at 6:30 pm)

November 17, 2010 -Final Report Presentation
(City of Jarrell Community Center at 6:30 pm)

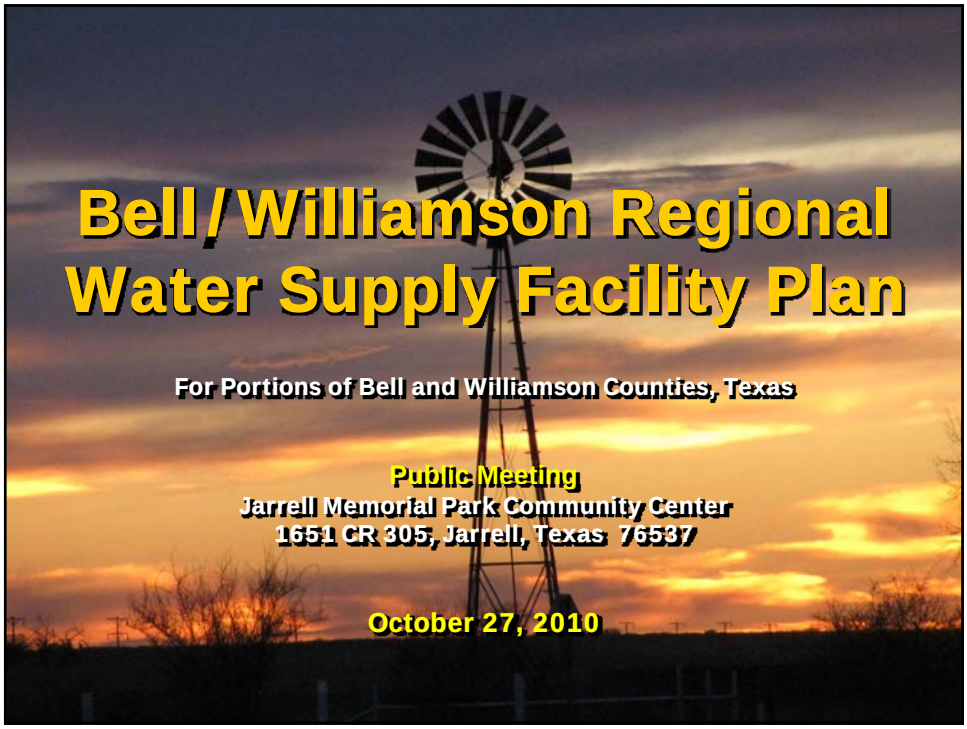
Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322

- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414



Bell/Williamson Regional Water Supply Facility Plan

For Portions of Bell and Williamson Counties, Texas

Public Meeting
Jarrell Memorial Park Community Center
1651 CR 305, Jarrell, Texas 76537

October 27, 2010

Introductions

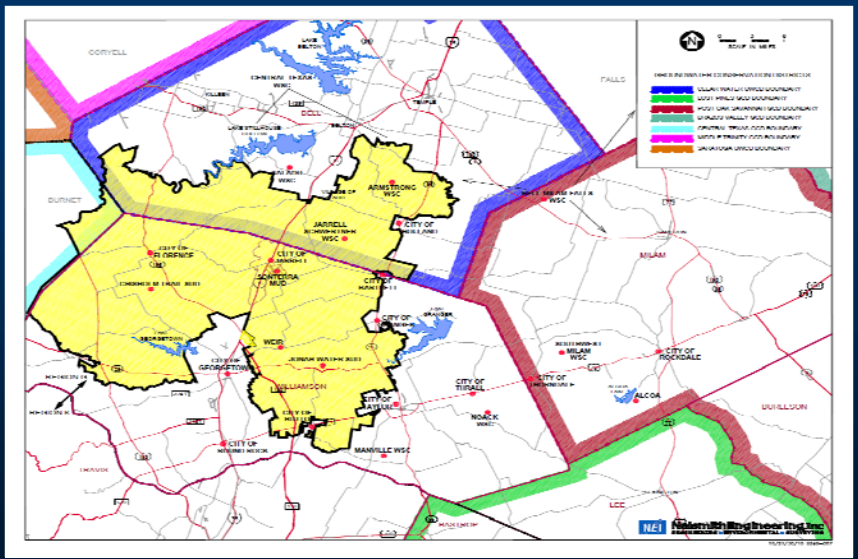
- JSWSC (Project Administrator)
  - Sonny Kretzschmar – Board President
  - Sheila Cunningham – General Manager
- Project Participants – STEERING COMMITTEE MEMBERS
  - Armstrong WSC
  - Brazos River Authority
  - Capital Land & Livestock MUD No. 1
  - Chisholm Trail SUD
  - City of Florence
  - Jarrell Schwertner WSC
  - Jonah Water SUD
  - Sonterra MUD
  - Mr. David Meesey, Texas Water Development Board (50% of project funding)
- Acknowledgement of Guests
- Consulting Team: Naismith Engineering, Inc. (NEI) and Duff Consulting Engineers, Inc. (Duff)
  - NEI - Tom Brown, Grant Jackson, P.E., David Fusilier, P.E., Felise Canterini, E.I.T.
  - Duff – Bill Aston, P.E., Rodney Adamek, Miles Whitney, E.I.T

Project Purpose

- **Project Purpose:**
  - Provide the participants with a cost sharing plan to access each of their existing individual water supply sources; and
  - Develop alternative means of water supply sources; and
  - Provide alternative means of infrastructure to access and share water supply throughout the planning area.

- **Identified Water Demand & Supply Issues:**
  - Growth & Increasing Demand
  - Diminishing Groundwater Supply
  - Surface Water for Future Use
  - Security & Emergency Interconnects
  - Pressure Maintenance/Delivery

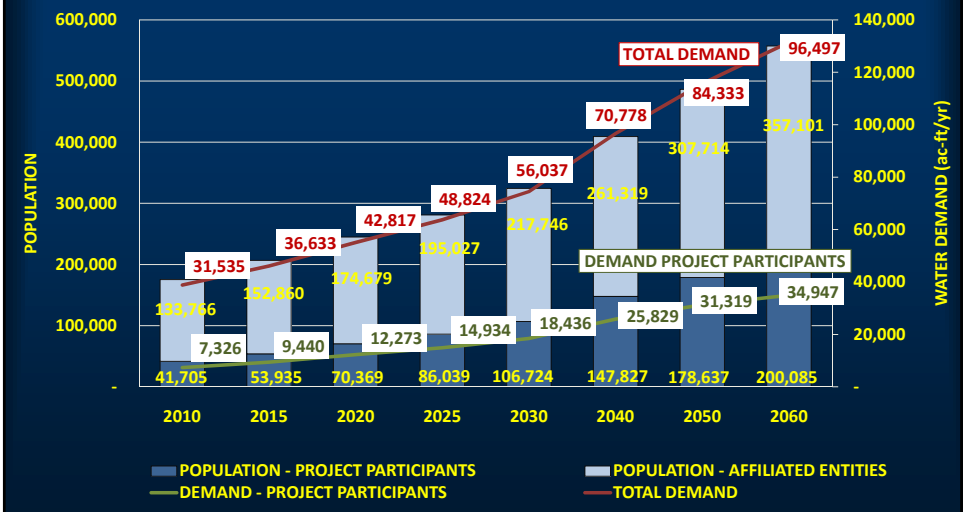
Project Area Map



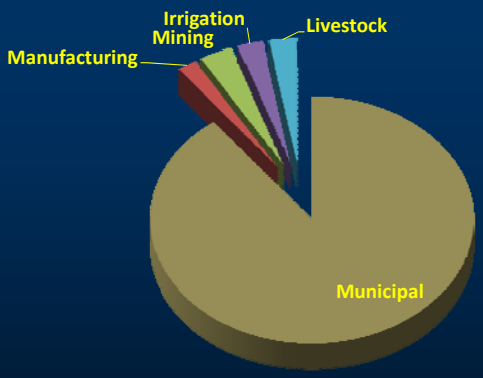
Project Scope - Summary

- Population and Water Demand Projections
- Preliminary Evaluation of Existing Facilities
- Preliminary Evaluation of Alternative Water Treatment Plants
- Preliminary Transmission, Distribution and Interconnects within the Systems
- Wholesale and Retail Rates
- Identify Implementation Alternatives and Sources of Financing
- Deliverables:
  - Public Meeting - @ 75 % [October 27, 2010]
  - Public Meeting - Presenting Draft Final Report [November 17, 2010]
  - Final Report (due to the TWDB by December 31, 2010)

Population Projections and Water Demands for Project Area

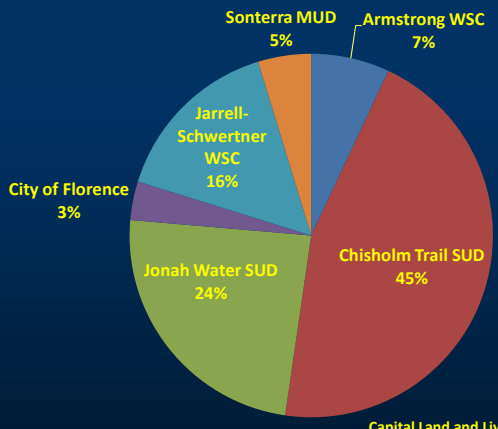


Total Water Demands for Bell and Williamson Counties



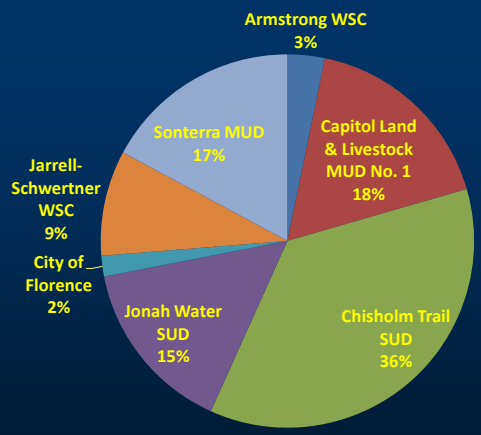
From Region G 2007 Water Use Survey Summary Estimates

Municipal Water Demands 2010 Project Participants

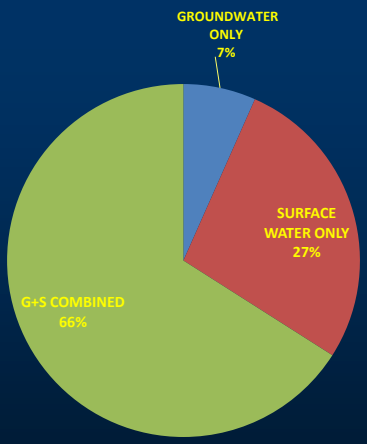


Capital Land and Livestock MUD No. 1 Municipal Use = 0%

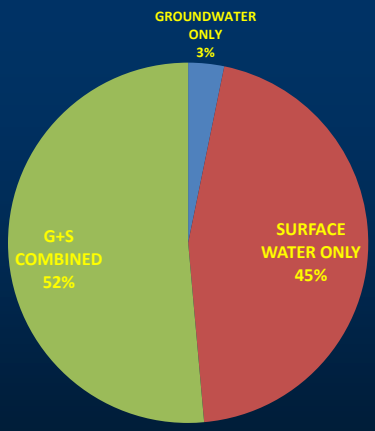
Municipal Water Demands 2030 Project Participants



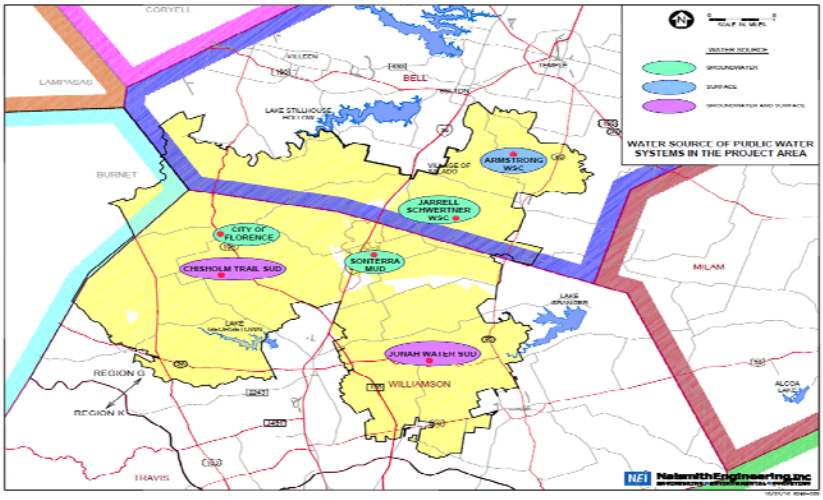
Water Supply Sources for Project Area - 2010



Water Supply Sources for Project Area - 2030



Water Supply Sources for Project Area



Project Water Supply Estimates

- Surface Water
  - Reservoir Yield & Water Rights are known
  - Water Supply Contracts Dates and Timelines
  - Timelines dictate timing of infrastructure construction
- Groundwater
  - Aquifer Yield only recently estimated
  - Some still unknown
  - Managed Available Groundwater Allocation Strategies
    - Rule of Capture "If I get it, it's mine!"
    - Correlative Rights "How much land I have tells me how much water I get."
    - Blend-some combination of Rule of Capture and Correlative Rights
  - Timelines dictate timing of infrastructure construction

Water Supply Constraints

- Surface Water (In Order)
  - Reservoir Firm Yield
  - Water Rights
  - Delivery Availability
  - Water Supply Contracts
  - Delivery Infrastructure
- Groundwater (In Order)
  - Aquifer Yield
  - Managed Available Groundwater
  - Groundwater Supply Allocations
  - Accounting for Exempted & Historical Uses
  - Permits – Groundwater Districts

Projected Water Supply Shortages in the Project Area

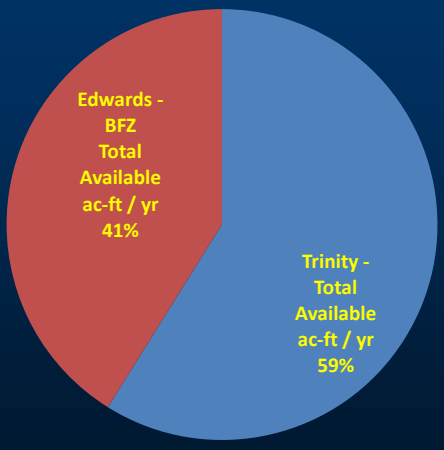
PUBLIC WATER SYSTEM	TYPE OF SYSTEM	2030	2060
Armstrong WSC	S	443	373
Capital Land and Livestock MUD No. 1	G	(3,064)	(9,332)
Chisholm Trail SUD	G/S	3,087	(3,889)
City of Florence	G	(161)	(344)
Jarrell-Schwertner WSC (JSWSC)	G	(699)	(1,779)
Jonah Water SUD	G/S	(305)	(2,346)
Sonterra MUD	G	(3,126)	(3,059)

- Information from Draft 2011 Region G Water Plan (Except for Armstrong WSC , Capital Land and Livestock MUD No. 1 and Sonterra MUD. Neither were included in the Draft 2011 Region G Plan)
- All 2030 / 2060 water supply shortages shown in acre-feet / year
- Yellow text indicates Steering Committee Member (active Project Participant)

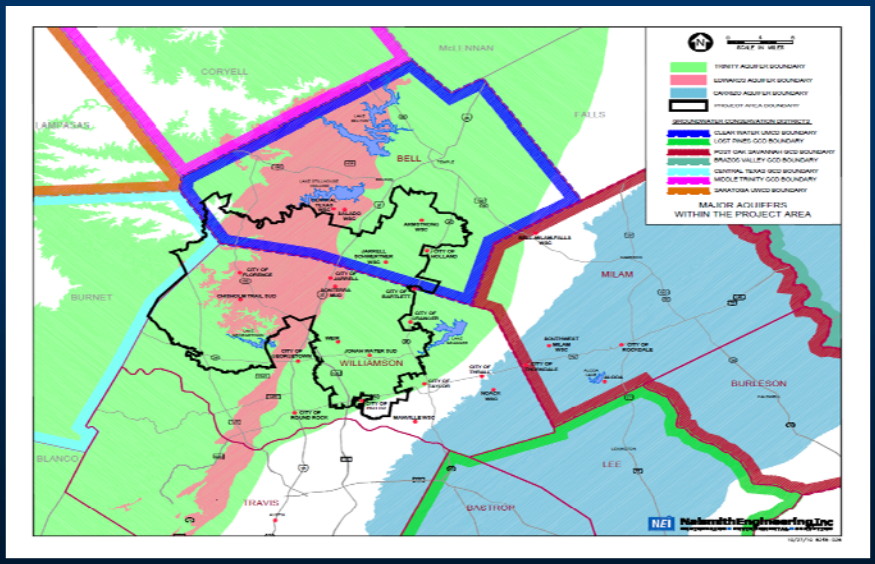
G – Groundwater System Only
S – Surface Water System Only
G/S – Combined Systems (G & S)

Ground Water Supply Sources

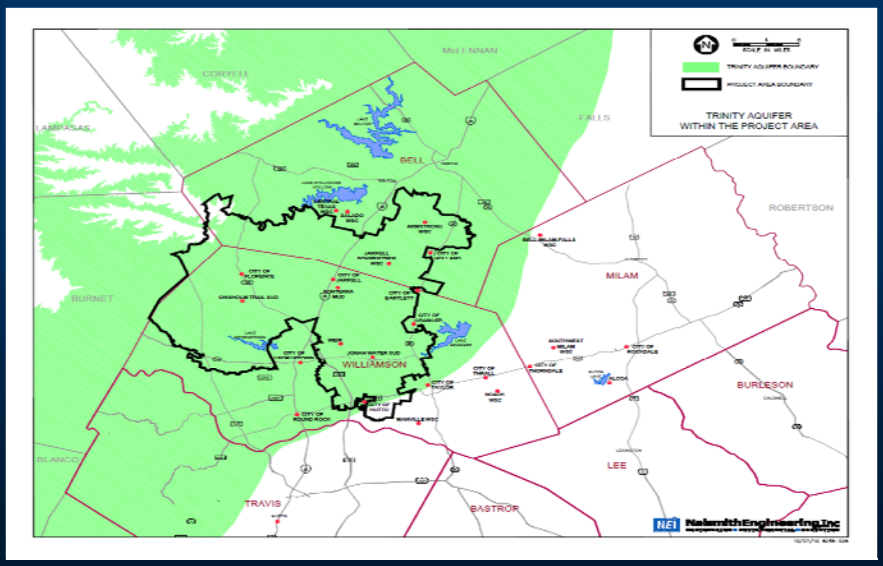
(based on TWDB MAG numbers)



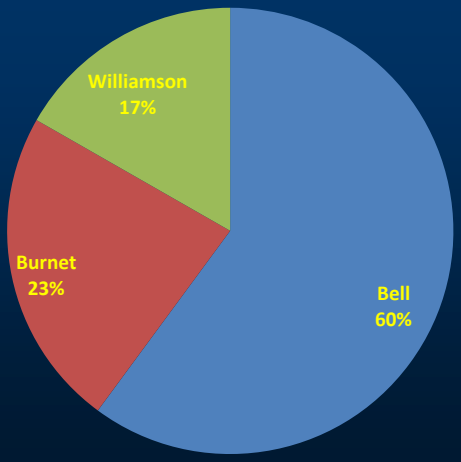
Major Aquifers in the Project Area



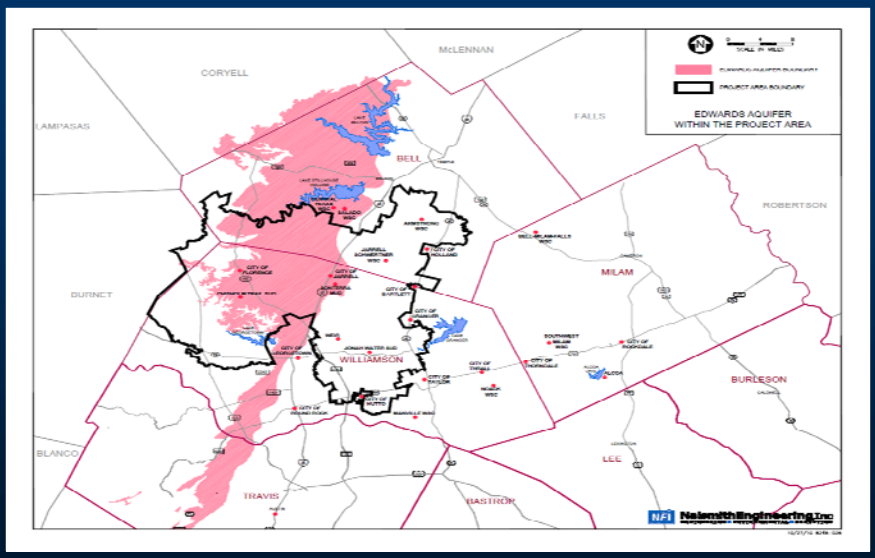
Trinity Aquifer in the Project Area



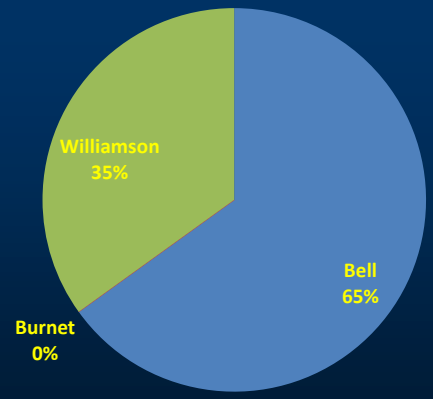
Trinity Aquifer Availability by County (based on ac-ft/yr)



Edwards Aquifer in the Project Area



Edwards - BFZ Aquifer Availability by County (based on ac-ft/yr)



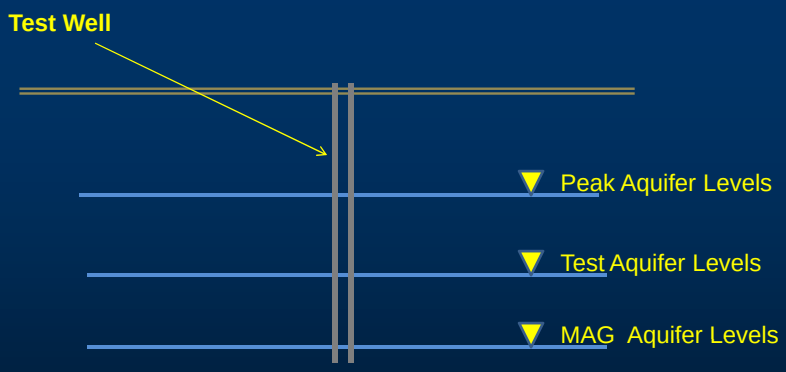
Groundwater Available

- **Based on:**
  - Water System's "Footprint"
  - Managed Available Groundwater
  - Aquifers: Trinity, Edwards – Balcones Fault Zone
- **Managed Available Groundwater (MAG)**
  - Amount of Groundwater Available for Development
  - Based on Desired Future Conditions
  - Goal is to Maintain Desired Future Conditions
  - Considered to be "sustainable" a withdrawal
  - Source: TWDB

Groundwater Availability Calculations

- Determine Available Groundwater by County
  - for Trinity & Edwards – BFZ Aquifer
- Obtain Footprint of Each Aquifer by County
- Calculate Available Groundwater by County
  - Acre-feet / acre
- Determine Footprint Area of Each PWS
  - by County over Trinity & Edwards-BFZ Aquifers
- Calculate Available Groundwater for Each System

Aquifer Levels



Groundwater Availability Calculations

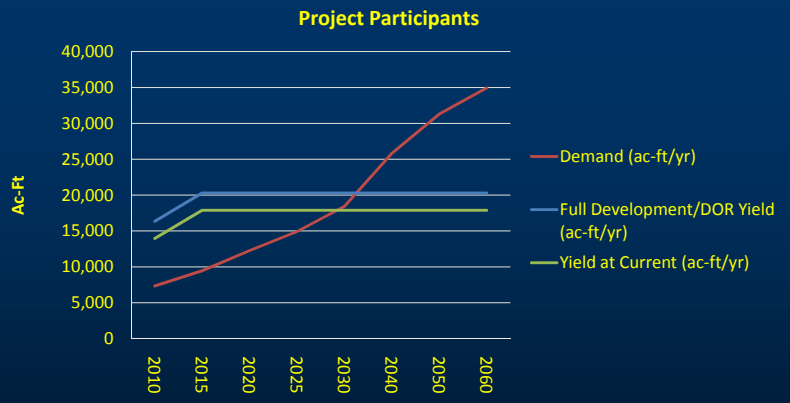
System	County	Total Area	Trinity Area	Edwards – BFZ Area	Trinity - Available	Edwards – Available	Total Available
		acres	Acres	acres	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong	Be	39,524	39,524	--	411	--	411
Capital L&L[1]	Be, W	12,000	12,000	--	125	--	125
Chisholm Trail	Be, Bu, W	257,702	257,702	131,399	4,205	3,479	7,684
Florence	W	520	520	520	2	13	15
JSWSC	Be, W	79,997	79,997	14,833	354	380	734
Jonah	W	120,802	114,132	546	506	14	520
Sonterra	W	1,102	1,102	1,102	5	28	33
TOTAL		511,647	504,977	148,400	5,608	3,914	9,522

1 – Footprint of Capital Land & Livestock MUD No. 1 assumed to be entirely over the Trinity Aquifer

Demand vs. Supply

- **Demand**
  - Population Projections – from Region G Plan or Project Participant
  - Per Capita Water Usage – from Region G Plan or Neighboring Water System
  - Demand = Population x Per Capita Usage
- **Supply**
  - Full Development / DOR – based on MAG #'s & system footprint
  - Yield At Current – based on past pumping records
  - Includes Surface WTP Capacities
  - Includes Water Supply Contracts

Demand vs. Supply for Project Participants



Surplus/Deficit – based on Region G Draft 2011 Plan

System	Surplus / Deficit (from Region G Draft 2011 Plan)		
	2010	2030	2060
	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC*	--	--	--
Capital L&L MUD #1*	--	--	--
Chisholm Trail SUD	6,663	3,087	(3,889)
City of Florence	(70)	(161)	(343)
JSWSC	(95)	(699)	(1,779)
Jonah Water SUD	823	(305)	(2,346)
Sonterra MUD*	--	--	--

* - not included as a separate Water User Group (WUG) in the Region G Draft 2011 Plan.

1. Demand/Supply are annual average.

Surplus/Deficit –
based on Current GW Yield (well capacity)

System	Surplus / Deficit (based on Current GW Yield – aka Well Capacity)		
	2010	2030	2060
	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	331	223	153
Capital L&L MUD #1	(359)	(3,189)	(9,457)
Chisholm Trail SUD	4,440	921	(6,016)
City of Florence	(12)	397	215
JSWSC	(201)	194	(886)
Jonah Water SUD	1,636	2,947	906
Sonterra MUD	610	(2,220)	(2,153)

1. Demand/Supply are annual average.

Surplus/Deficit –
based on Full Development & Drought of Record

System	Surplus / Deficit (based on Full Development & Drought of Record Well Yield		
	2010	2030	2060
	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	551	443	373
Capital L&L MUD #1	(234)	(3,064)	(9,332)
Chisholm Trail SUD	9,787	6,268	(669)
City of Florence	(226)	183	1
JSWSC	(555)	(160)	(1,240)
Jonah Water SUD	(6)	1,305	(736)
Sonterra MUD	(296)	(3,126)	(3,059)

1. Demand/Supply are annual average.

Region G 2011 Draft Plan - Identified Water Management Strategies

- Reallocation of Storage in Federal Reservoirs
- Lake Granger Augmentation
- Carrizo-Wilcox Aquifer Development
- BRA reservoir connections –
  - Connect Lake Belton to Lake Stillhouse Hollow
- Miscellaneous Projects:
  - Interconnection – Central Texas WSC & Salado WSC
  - BCRUA Water From City of Round Rock to Chisholm Trail SUD
  - Trinity Aquifer Development (2 wells) – City of Florence
  - EWCWTP (BRA – Lake Granger) Supply – Multiple WUGs
  - Expansion of Existing WTP – City of Georgetown

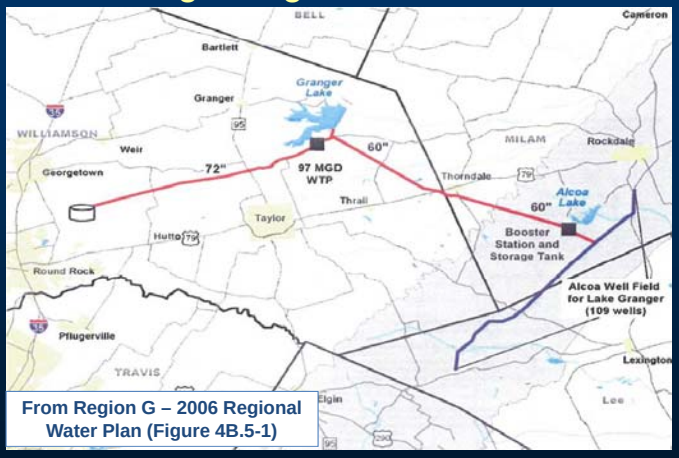
Region G 2011 Draft Plan - Identified Water Management Strategies

Reallocation of Storage in Federal Reservoirs:

- Change Flood Control Storage to Water Supply Storage (process is called reallocation)
- Effects (in part) Lakes Belton, Stillhouse Hollow, Georgetown, Granger
- USACE has Authority to Reallocate Up to 50,000 ac-ft without Congressional Approval

Region G 2011 Draft Plan - Identified Water Management Strategies

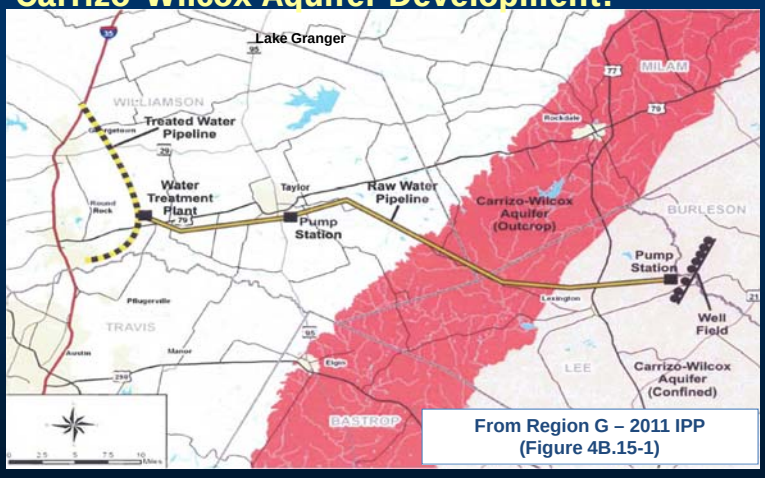
Lake Granger Augmentation:



From Region G – 2006 Regional Water Plan (Figure 4B.5-1)

Region G 2011 Draft Plan - Identified Water Management Strategies

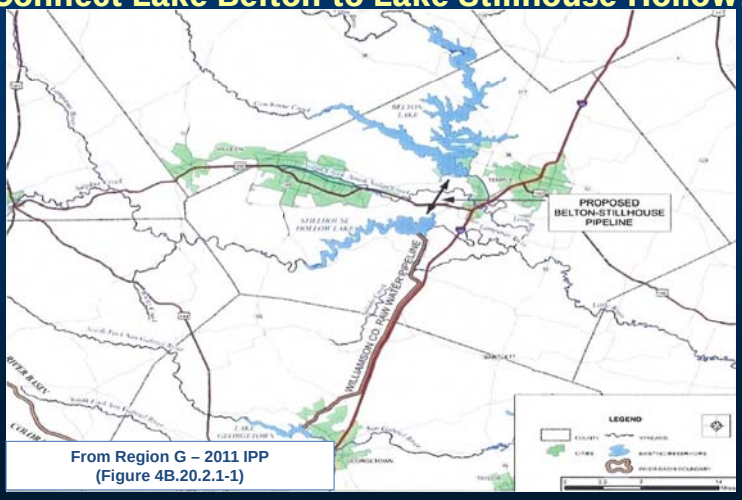
Carrizo-Wilcox Aquifer Development:



From Region G – 2011 IPP (Figure 4B.15-1)

Region G 2011 Draft Plan - Identified Water Management Strategies

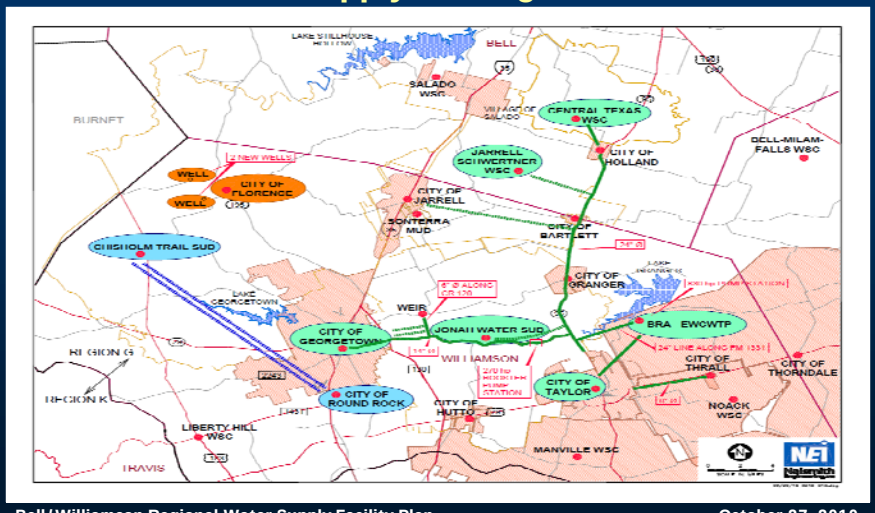
Connect Lake Belton to Lake Stillhouse Hollow:



From Region G – 2011 IPP
(Figure 4B.20.2.1-1)

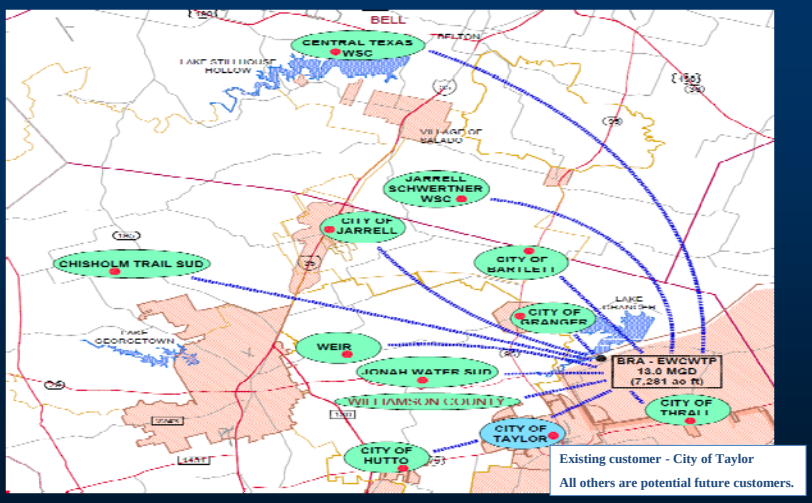
Region G 2011 Draft Plan - Identified Water Management Strategies

Miscellaneous Supply Strategies:



Region G 2011 Draft Plan - Identified Water Management Strategies

BRA's Lake Granger WTP (EWCWTP) - Treated Water to New Customers:



Identified Participant Water Management Strategies

- Interconnects
- Future Water Supply Projects (Wells & WTPs)
- Future Infrastructure Projects
- Short Term Projects (<10 years)
- Long Term Projects (>10 years)
- Regional Projects

Existing Contracted for Surface Water – not Currently Accessible

Participant	Contracted Surface Water
Armstrong WSC	
Capital Land & Livestock	
Chisholm Trail SUD	
City of Florence	500 ac-ft/yr
JSWSC (includes City of Jarrell)	1,000 ac-ft/yr
Jonah Water SUD	2,439 ac-ft/yr
Sonterra MUD	
City of Georgetown	

Exist. SW Supply + Exist. DOR GW

Participant	2010	2015	2020	2025	2030	2040	2050	2060
Armstrong WSC								
Capital Land & Livestock	X X							
Chisholm Trail SUD					X		X	
City of Florence	X				X			
JSWSC (includes City of Jarrell)	X X							
Jonah Water SUD							X	
Sonterra MUD	X	X						

X – Drought of Record yield capacity
X – Current yield capacity

Deadlines for Future Individual System Infrastructure Projects Existing Systems

Participant	Additional Water Supply	Elevated Storage Tank	Ground Storage Tank	Raw Surface Water Connections
Armstrong WSC				
Capital Land & Livestock MUD No. 1	NOW	NOW	NOW	
Chisholm Trail SUD	2030			
City of Florence	NOW			NOW*
JSWSC (includes City of Jarrell)	NOW		2040	NOW*
Jonah Water SUD	2050			NOW*
Sonterra MUD	NOW		2015	
City of Georgetown	2015	2040		

* - requires infrastructure for access to currently contracted for surface water that is not accessible due to infrastructure limitations

Note: Dates reflect start date for required planning, design, construction. Based on worse-case scenario of DOR Yield or Current Yield.

Short Term Projects (<10 yrs)

- Capital & Land and Livestock MUD No. 1
  - 3 Wells @ 250 gpm each (576 ac-ft/yr)
  - Storage (Elevated)
- City of Florence
  - 1 Well @ 200 gpm (153 ac-ft/yr)
  - Interconnect with Chisholm Trail SUD
- Sonterra MUD
  - 1 Well @ 250 gpm (192 ac-ft/yr)
  - Interconnect with JSWSC
  - Storage (Elevated)

Short Term Projects (<10 yrs)

- Chisholm Trail SUD
  - Interconnect with City of Florence
- JSWSC
  - Interconnects:
    - Sonterra MUD
    - Jonah Water SUD
    - Armstrong WSC
  - Access BRA's EWCWTP

    or
  - Purchase Water from Central Texas WSC
    (use 1,000 ac-ft L. Stillhouse Hollow water)

Short Term Projects (<10 yrs)

- Jonah Water SUD
  - Additional BRA EWCWTP Supply

    or
  - Purchase Water from Central Texas WSC
    (use 2,349 ac-ft from Lake Stillhouse Hollow)
  - Interconnect with JSWSC
- Armstrong WSC
  - Interconnect with JSWSC

Long Term Project (>10 yrs)

- Armstrong WSC
  - Water Supply (optional)
- Chisholm Trail SUD
  - Water Supply
- JSWSC
  - Storage
- City of Georgetown
  - Storage

Regional Projects

Short-Term:

- BRA reservoir connections
  - Connect Lake Belton to Lake Stillhouse Hollow
- EWCWTP (BRA – Lake Granger) Supply - Multiple Systems

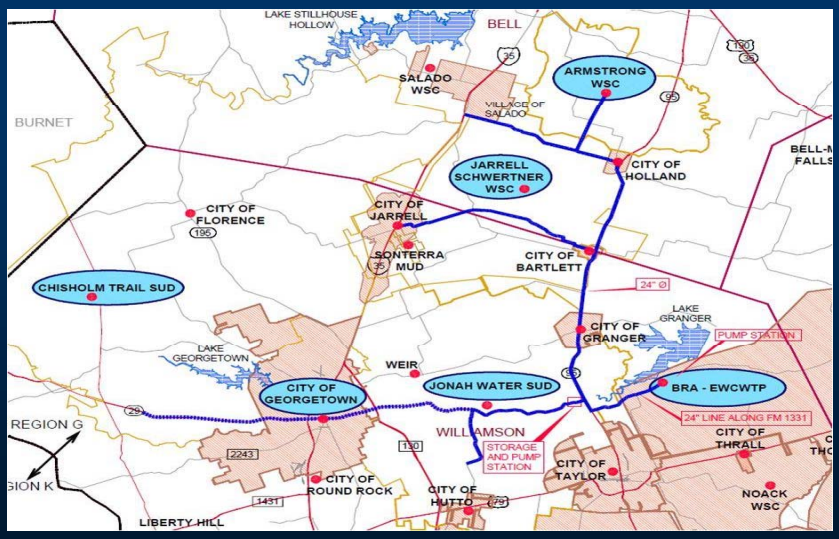
Long-Term:

- Lake Granger Augmentation

  or
- Carrizo-Wilcox Aquifer Development
- Expansion of Existing WTP – City of Georgetown

Note: All of strategies listed above are included in the Region G 2011 Draft Water Plan

Regional Projects
BRA's Lake Granger WTP (EWCWTP)
Treated Water to New Customers



Public Water Utilities

- Cities
- Special Purpose Districts
- Water Supply Corporations

Public Water Utilities

- Cities
  - Type A General Law Municipality
    - Constitutes an unincorporated city of town;
    - contains 600 or more inhabitants;
    - less thank 2 square miles in territory.
  - Type B General Lay Municipality
    - Contains 201 to 4,999 inhabitants; not more than
  - Home-Rule Municipality
    - A municipality is a home-rule municipality if it operates under a municipal charter that has been adopted or amended as authorized by article XI, Section 5 of the Texas Constitution.

Public Water Utilities

- Special Purpose Districts
  - "District" means any district or authority created by authority of either Sections 52(b)(1) and (2), Article III, or Section 59, Article XVI, Texas Constitution, regardless of how created.
  - Special purpose districts are political subdivisions of the State of Texas and can be created by act of the legislature or through procedures detailed in the Texas Water Code.

Public Water Utilities

- Provisions of Art. XVI, Sec. 59 of the Texas Constitution
  - Conservation & Reclamation Districts are given broad authority to:
    - Political Subdivision of the State of Texas
    - Authorized to promote the conservation and development of all of the natural resources of the State.
    - Flood Control
    - Water development
    - Development of parks and recreational facilities
    - Hydroelectric power
    - Navigation

Public Water Utilities

<u>Types of Special Districts Created through the Texas Water Code</u>

- Water Control and Improvement Districts (WCID) created under Chapter 51 Texas Water Code.
- Municipal Utility District (MUD) created under Chapter 54 of the Texas Water Code.
- Special Utility District (SUD) created under Chapter 65 of the Texas Water Code.
- Water Supply Corporation (WSC) created under Chapter 67 of the Texas Water Code.

Public Water Utilities

Types of Districts Created by the Legislature

- River Authorities
  - Created by the legislature to address conservation and reclamation issues identified in Art. XVI, Sec. 59 of the Texas Constitution
  - Political Subdivision of the State of Texas
  - Boards of Directors are usually appointed by the Governor with the consent of the Texas Senate
  - Jurisdiction is typically a river basin or part of a basin
  - Usually do not have taxing authority
  - Can contract with one or more jurisdictions to implement projects
  - Do not require TCEQ oversight under Chapter 49 of the Texas Water Code

Public Water Utilities

- Regional Authorities
  - Created under Art. XVI, Sec. 59 to address a particular local issues that involves more than one jurisdiction
  - Political Subdivision of the State of Texas
  - Selection of Board of Directors is established in the enabling legislation
  - Taxing jurisdiction is determined by the enabling legislation
  - Can contract with one or more jurisdictions to implement projects
  - Generally require TCEQ oversight under Chapter 49 of the Texas Water Code

Funding Sources

- Major Sources of Funding for Regional Projects
  - Federal Sources of Funding through Congressional Authorization
    - U.S. Army Corps of Engineers
    - United States Department of the Interior-Bureau of Reclamation
    - United States Department of Agriculture-Rural Development
    - United States Department of Commerce-Economic Development Administration

Funding Sources

- State of Texas Sources of Funding
  - Texas Water Development Board
    - State Participation Program
    - Development Fund (D-Fund 2)
    - Water Infrastructure Fund (WIF)
    - Drinking Water State Revolving Fund (DWSRF)
    - Texas Environmental Infrastructure Projects (TEIP)

Funding Sources

State Participation Program:

- Eligible applicants are political subdivisions of the state, WSC's, or SUD's
- Intent of the program is to allow for optimization of regional projects
- Allows the TWDB to assume a temporary ownership interest in a regional project
- TWDB may acquire ownership interest in the water rights or an interest in the property and treatment and distribution works

Funding Sources

- Types of Projects:
  - New water supply projects
    - TWDB will fund up to 80% of the costs;
    - The applicant will finance at least 20% of the costs;
    - At least 20% of the total capacity of the proposed project will serve existing needs.

Funding Sources

- Other Regional Projects:
  - TWDB can fund up to 50% of costs;
  - Applicant will finance 50% of total project costs (Can be from other TWDB programs)
  - At least 50% of the total capacity of the proposed project will serve existing needs.

Funding Sources

- Repayment Terms:
  - Max. Term is 34 Years;
  - Interest Rate based on cost of funds to TWDB;
  - TWDB and applicant develop a Master Agreement defining the scope of the project;
  - TWDB will accept a pledge of tax and/or revenue pledge or contract revenue pledge.

Funding Sources

Water Development Fund (D-Fund 2):

- Eligible Applicants:
  - Political subdivisions of the state, WSC's and SUD's
- Types of Projects:
  - Local or Regional projects;
  - Water projects including financing for planning, design, acquiring, improving, or constructing water improvements;
  - Acquisition of water rights;

Funding Sources

- Repayment Terms:
  - Up to a 30 year term;
  - Interest rates set at 35 basis points above TWDB borrowing costs;
  - TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation and contract revenue pledges

Funding Sources

Water Infrastructure Fund:

- Eligible Applicants:
  - Political subdivisions of the state, WSC's and SUD's
  - Funding availability subject to Texas Legislature approval
- Types of Projects:
  - Projects identified in the Texas Water Plan

Funding Sources

- Repayment Terms:
  - Max. of 20 years
  - Interest rate set 2% below the TWDB cost of funds;
  - If a project has a long lead time funds for planning, design, permitting, and other up-front costs. Applicant may defer all interest and principal payments for up to 10 years or until the end of construction, whichever is sooner.
  - Interest is not accrued during this period;
  - TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation and contract revenue pledges

Funding Sources

Drinking Water State Revolving Fund (DWSRF):

- **Eligible Applicants:**
  - Political subdivisions of the state, WSC's and SUD's, Privately owned utilities, non-community public water supply systems, and state agencies.
  - Must go through a ranking process and be invited to submit an application.
- **Types of Projects:**
  - Planning, design and constructing projects to upgrade, or replace water supply infrastructure, correct deficiencies that violate the Safe Drinking Water Act standards, to consolidate water supplies, and to purchase capacity in water systems.

Funding Sources

- **Repayment Terms:**
  - 20 years for "mainstream" applicants and 30 years for "disadvantaged communities";
  - Mainstream funds offer a fixed interest rate of 1.25% below market rate;
  - Disadvantaged communities offer a fixed interest rate of 1.25% below market rate; and 70% loan forgiveness if MHI is < or = to 75% of the State MHI;
  - 100% loan forgiveness if MHI is <or= to 60% of the State MHI;

Funding Sources

TEXAS ENVIRONMENTAL INFRASTRUCTURE PROGRAM (TEIP)

- Eligible Applicants:
  - "Political subdivision" includes a county, city, or other body politic or corporate of the state, including any district or authority created under Article III, Section 52 or Article XVI, Section 59 of the Texas Constitution

Funding Sources

- Types of Projects:
  - Facilitate construction of projects (or discrete increments of projects) to meet near-term water supply needs. Pre-construction activities are also eligible for TEIP assistance, but preference will be given to those SOIs that support construction of water supply within a reasonable time frame.
  - Provide financial assistance to develop water supply projects in Texas, including implementation of water management strategies recommended in regional water plans and "Water for Texas ," the Texas State Water Plan and not otherwise authorized under WRDA. This assistance is to be provided "in the form of planning, design and construction assistance for water-related environmental infrastructure and resource protection and development projects in Texas, including projects for water supply, storage, treatment and related facilities, environmental restoration, and surface water resource protection and development."

Funding Sources

- **Repayment Terms:**
  - For a project constructed by USACE. The non-federal share of 25 percent may be provided in the form of cash, materials and in-kind services, including planning, design, construction and management services, as determined to be necessary for the project that are initiated following execution of a Project Partnership
  - (b) For a project to be constructed by a non-Federal entity. The federal share of project costs will be provided through a reimbursement of 75 percent of the total project cost upon *completion of the project. The non-federal share may be provided in the form of cash, in-kind services, including planning, design, construction, and management services, as determined to be necessary for the project. However, work eligible for credit or reimbursement on a project may not be initiated until a Project Partnership Agreement has been executed with USACE.*

Funding Sources

- **Eligibility and Ranking:**

The ranking criteria to be used by the executive administrator are as follows:

1. Whether the proposed project is recommended in the 2011 regional water plans, which form the basis of the State Water Plan due to be published in 2012;
2. Whether the proposed project is for new water supply in the near-term;
3. Construction projects are preferred over pre-construction projects;
4. Date for which the project is intended to meet needs;
5. Projected completion date;
6. Status of federal 404 permit authorization and other relevant state and federal permits; and
7. Other

Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

November 4, 2010	- Draft Report Presentation (Jonah Water SUD Office at 1:30)
December 2010	- Final Report Presentation

PUBLIC MEETINGS:

November 17, 2010	- Draft Final Report Presentation (City of Jarrell Community Center at 6:30 pm)

Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322
- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414

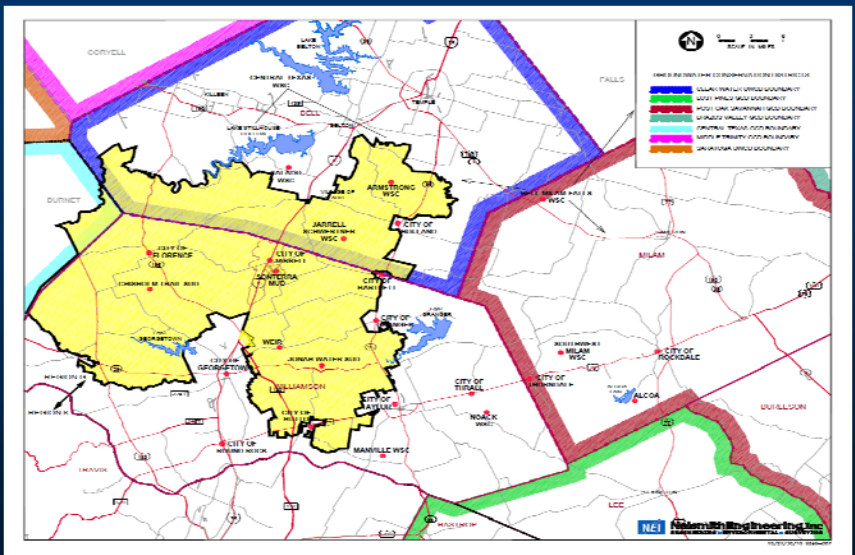
Meeting Overview

- Introductions
- Proposed Projects
- Implementation Strategies & Alternatives
- Project Funding Options
- Questions & Comments
- Future Schedule & Meetings

Introductions

- **JSWSC (Project Administrator)**
  - Mark Harbin – Board President
  - Sheila Cunningham – General Manager
- **Project Participants – STEERING COMMITTEE MEMBERS**
  - Armstrong WSC
  - Brazos River Authority
  - Capital Land & Livestock MUD No. 1
  - Chisholm Trail SUD
  - City of Florence
  - Jarrell Schwertner WSC
  - Jonah Water SUD
  - Sonterra MUD
  - Mr. David Meesey, Texas Water Development Board (50% of project funding)
- **Acknowledgement of Guests**
- **Consulting Team: Naismith Engineering, Inc. (NEI) and Duff Consulting Engineers, Inc. (Duff)**
  - NEI - Tom Brown, Grant Jackson, P.E., David Fusilier, P.E., Felise Canterini, E.I.T.
  - Duff – Bill Aston, P.E., Rodney Adamek, Miles Whitney, E.I.T

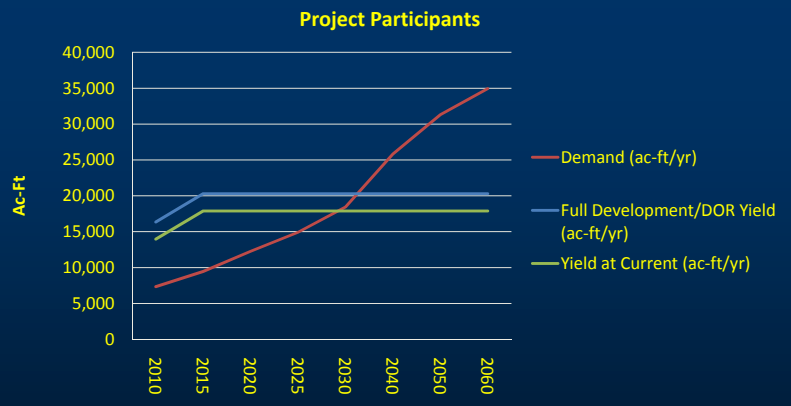
Project Area Map



Demand vs. Supply

- **Demand**
  - Population Projections – from Region G Plan or Project Participant
  - Per Capita Water Usage – from Region G Plan or Neighboring Water System
  - Demand = Population x Per Capita Usage
- **Supply**
  - Full Development/DOR – based on MAG #'s & system footprint
  - Yield At Current – based on past pumping records
  - Includes Surface WTP Capacities
  - Includes Water Supply Contracts

Demand vs. Supply for Project Participants



Planning Supply 2010

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	486	626	411	1,037	551
Capital L&L MUD #1	359	--	125	125	(234)
Chisholm Trail SUD	3,157	5,260	7,684	12,944	9,787
City of Florence	241	--	15	15	(226)
JSWSC	1,077	--	522	522	(555)
Jonah Water SUD	1,676	1,150	520	1,670	(6)*
Sonterra MUD	329	--	33	33	(296)
TOTAL	7,325	7,036	9,310	16,346	9,021

1. Demand/Supply are annual average.
* - current "Needs Met" contract with BRA allows Jonah Water SUD to meet existing demands

Planning Supply 2030

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	594	626	411	1,037	443
Capital L&L MUD #1	3,189	--	125	125	(3,064)
Chisholm Trail SUD	6,675	5,260	7,684	12,944	6,269
City of Florence	332	500	15	515	183
JSWSC	1,682	1,000	522	1,522	(160)
Jonah Water SUD	2,804	3,589	520	4,109	1,305
Sonterra MUD	3,159	--	33	33	(3,126)
TOTAL	18,435	10,975	9,310	20,285	1,850

1. Demand/Supply are annual average.

Planning Supply 2060

System	Demand	Contracted SW + "Managed Available Groundwater"			Surplus/ Deficit
		SW	GW	SW+GW	
	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	664	626	411	1,037	373
Capital L&L MUD #1	9,457	--	125	125	(9,332)
Chisholm Trail SUD	13,613	5,260	7,684	12,944	(669)
City of Florence	514	500	15	515	1
JSWSC	2,762	1,000	522	1,522	(1,240)
Jonah Water SUD	4,845	3,589	520	4,109	(736)
Sonterra MUD	3,092	--	33	33	(3,059)
TOTAL	34,947	10,975	9,310	20,285	(14,662)

1. Demand/Supply are annual average.

Surplus/Deficit – based on Full Development & Drought of Record

System	Surplus / Deficit (based on Full Development & Drought of Record Well Yield		
	2010	2030	2060
	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	551	443	373
Capital L&L MUD #1	(234)	(3,064)	(9,332)
Chisholm Trail SUD	9,787	6,269	(669)
City of Florence	(226)	183	1
JSWSC	(555)	(160)	(1,240)
Jonah Water SUD	(6)	1,305	(736)
Sonterra MUD	(296)	(3,126)	(3,059)
TOTAL	9,021	1,850	(14,662)

1. Demand/Supply are annual average.

* - current "Needs Met" contract with BRA allows Jonah Water SUD to meet existing demands

TYPES OF PROJECTS NEEDED

Project Type:

- Additional Water Sources (Supply)
  - Groundwater Wells
  - Lake Granger Augmentation
  - Carrizo-Wilcox Aquifer Development
  - Aquifer Storage & Recovery (ASR)
- Surface Water Projects – WTP (New & Expanded)
- Groundwater Projects – Wells (New & Refurbished)
- Interconnects – Emergency & Continuous
- Storage – EST/GST
- Pump Stations – Booster

Project Time-Frame:

- Short-Term (< 10 years)
- Long-Term (> 10 years)

Deadlines for Future Individual System Infrastructure Projects Existing Systems

Participant	Additional Water Supply	Elevated Storage Tank	Ground Storage Tank	Raw Surface Water Connections
Armstrong WSC				
Capital Land & Livestock MUD No. 1	NOW	NOW	NOW	
Chisholm Trail SUD	2060			
City of Florence	2060 (w/500 ac-ft)			NOW*
JSWSC (includes City of Jarrell)	2060 (w/1,000 ac-ft)		2040	NOW*
Jonah Water SUD	2050 (w/2,439 ac-ft)			NOW*
Sonterra MUD	NOW		2015	

* - requires infrastructure for access to currently contracted for surface water that is not accessible due to infrastructure limitations

Note: Dates reflect start date for required planning, design, construction. Based on worse-case scenario of DOR Yield or Current Yield.

Individual Projects – Short-Term

System	Project
Armstrong WSC	- Interconnection with JSWSC
Capital L&L MUD #1	- 3 Wells @ 250 gpm each (575 ac-ft/yr total)
	- Elevated Storage – 200,000 gallons
	- Ground Storage – 200,000 gallons
Chisholm Trail SUD	- Interconnection with City of Florence
City of Florence	- 1 Well @ 200 gpm (153 ac-ft/year)

Individual Projects – Short-Term

System	Project
JSWSC	- Interconnections with: • Sonterra MUD • Armstrong WSC
	- Purchase Water From Central Texas WSC (utilize 1,000 ac-ft from BRA contract)
Sonterra MUD	- 1 Well @ 250 gpm (192 ac-ft /year)
	- Interconnection with JSWSC
	- Elevated Storage – 200,000 gallons

Individual Projects – Long-Term

System	Project
Capital L&L MUD #1	- Elevated Storage – Up to 1.4 MG gallons
	- Ground Storage – Up to 1.4 MG gallons
Chisholm Trail SUD	- Expansion of City of Georgetown WTP
JSWSC	- Ground Storage – 250,000 gallons
Sonterra MUD	- Elevated Storage – 500,000 gallons
	- Ground Storage – 300,000 gallons

"Regional" Projects

Short-Term:

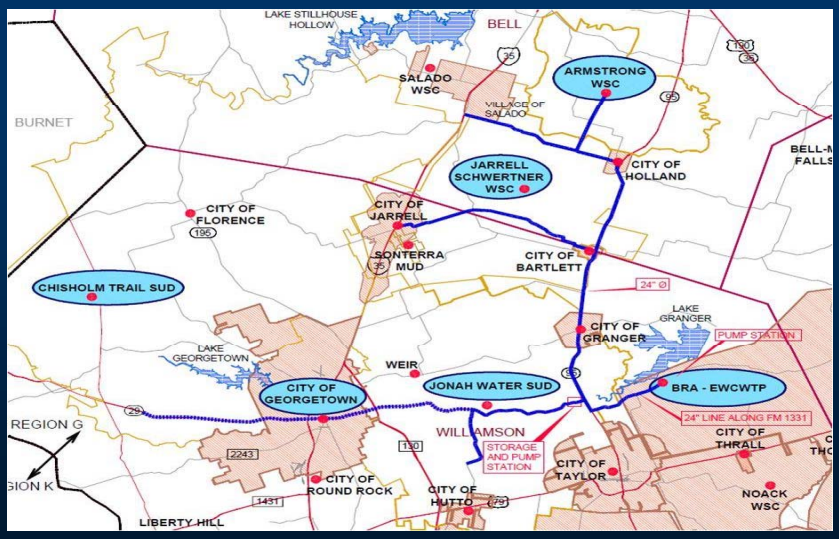
- BRA reservoir connections
  - Connect Lake Belton to Lake Stillhouse Hollow
- EWCWTP (BRA – Lake Granger) Supply - Multiple Systems

Long-Term:

- Reallocation of Storage in Federal Reservoirs
- Lake Granger Augmentation

  or
- Carrizo-Wilcox Aquifer Development
- Expansion of EWCWTP (BRA L. Granger WTP)
- Aquifer Storage & Recovery

Regional Projects
BRA's Lake Granger WTP (EWCWTP)
Treated Water to New Customers



PROPOSED PROJECTS IDENTIFIED IN REGION G 2011 DRAFT PLAN

- Reallocation of Storage in Federal Reservoirs
- Lake Granger Augmentation
- Carrizo-Wilcox Aquifer Development
- BRA reservoir connections –
  - Connect Lake Belton to Lake Stillhouse Hollow
- Miscellaneous Projects:
  - Trinity Aquifer Development – City of Florence wells
  - EWCWTP (BRA – Lake Granger) Supply – Multiple WUGs
  - Expansion of Existing WTP – City of Georgetown

PROPOSED PROJECTS NOT LISTED IN REGION G 2011 Draft Plan

Individual Projects:

- Capital Land & Livestock MUD #1 - Wells
- JSWSC - Interconnections
- Sonterra MUD - Wells
- All storage projects (elevated & ground)

Regional Projects:

- Aquifer Storage & Recovery

Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

December 15 or 16, 2010 - Final Report Presentation
(Jonah Water SUD at 1:30)

PUBLIC MEETINGS:

November 17, 2010 - Draft Final Report Presentation
(City of Jarrell Community Center at 6:30 pm)

REPORT SUBMITTAL:

December 31, 2010 - Final Report Submittal to TWDB

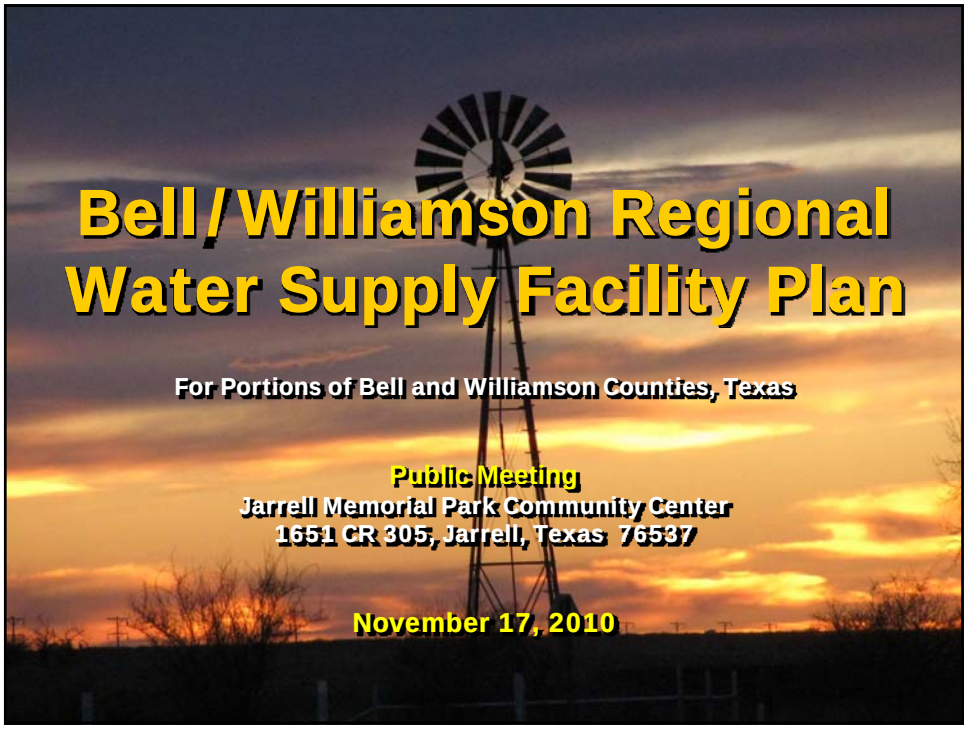
Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322

- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414



Bell/Williamson Regional Water Supply Facility Plan

For Portions of Bell and Williamson Counties, Texas

Public Meeting
Jarrell Memorial Park Community Center
1651 CR 305, Jarrell, Texas 76537

November 17, 2010

Introductions

- JSWSC (Project Administrator)
  - Sonny Kretzschmar – Board President
  - Sheila Cunningham – General Manager
- Project Participants – STEERING COMMITTEE MEMBERS
  - Armstrong WSC
  - Brazos River Authority
  - Capital Land & Livestock MUD No. 1
  - Chisholm Trail SUD
  - City of Florence
  - Jarrell Schwertner WSC
  - Jonah Water SUD
  - Sonterra MUD
  - Mr. David Meesey, Texas Water Development Board (50% of project funding)
- Acknowledgement of Guests
- Consulting Team: Naismith Engineering, Inc. (NEI) and Duff Consulting Engineers, Inc. (Duff)
  - NEI - Tom Brown, Grant Jackson, P.E., David Fusilier, P.E., Felise Canterini, E.I.T.
  - Duff – Bill Aston, P.E., Rodney Adamek, Miles Whitney, E.I.T

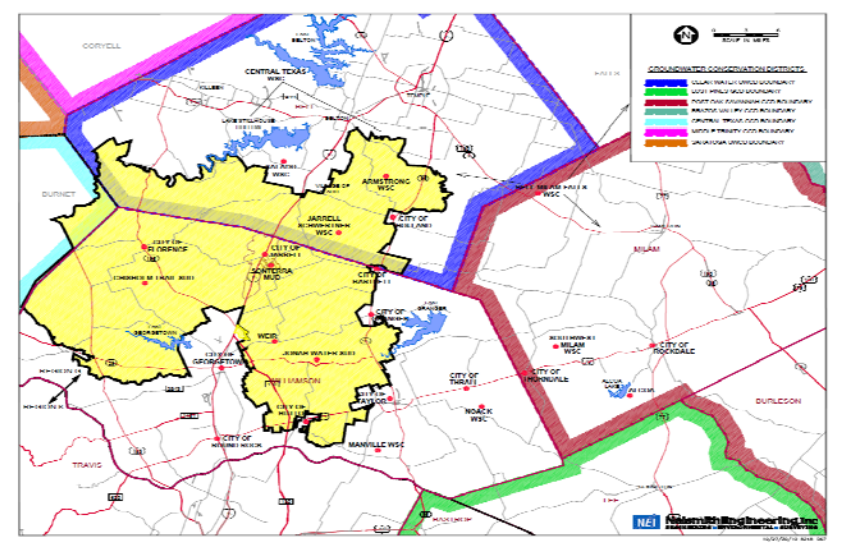
Project Purpose

- **Project Purpose:**
  - Provide the participants with a cost sharing plan to access each of their existing individual water supply sources;
  - Develop alternative means of water supply sources; and,
  - Provide alternative means of infrastructure to access and share water supply throughout the planning area.

Project Scope - Summary

- Population and Water Demand Projections
- Preliminary Evaluation of Existing Facilities
- Preliminary Evaluation of Alternative Water Treatment Plants
- Preliminary Transmission, Distribution and Interconnects within the Systems
- Wholesale and Retail Rates
- Identify Implementation Alternatives and Sources of Financing
- Deliverables:
  - Public Meeting - @ 75 % [October 27, 2010]
  - Public Meeting - Presenting Draft Final Report [November 17, 2010]
  - Final Report (due to the TWDB by December 31, 2010)

Project Area Map



Identified Participant Water Management Strategies

- Interconnects
- Future Water Supply Projects (Wells & WTPs)
- Future Infrastructure Projects
- Immediate Projects (Now)
- Short-Term Projects (<10 years)
- Long-Term Projects (>10 years)

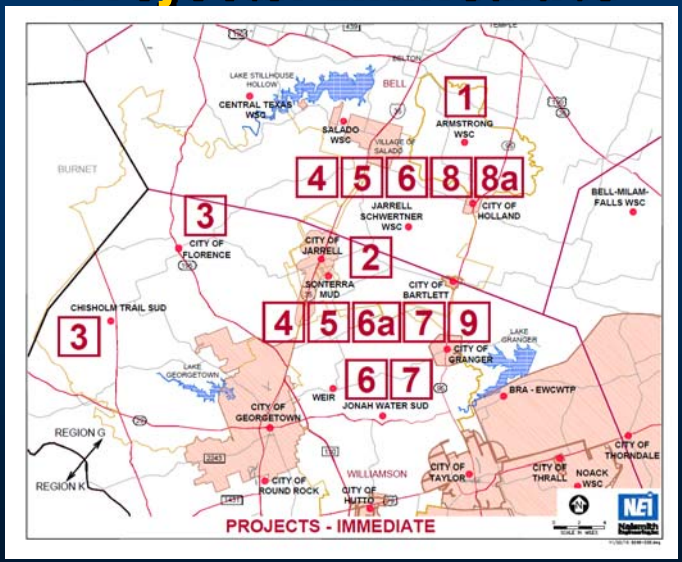
Projects: Immediate (< 5 yrs)

- **Armstrong WSC - 1**
  - New pump stations & groundwater well
- **CL & L MUD #1 - 2**
  - New groundwater wells and interconnects with JSWSC and Sonterra MUD
- **Chisholm Trail SUD - 3**
  - Interconnect with the City of Florence
- **City of Florence - 3**
  - Interconnect with Chisholm Trail SUD, and conversion to chloramine disinfection.

Projects: Immediate (< 5 yrs)

- **JSWSC - 2, 4, 5, 6, 7, 8, 8a**
  - Interconnects with Sonterra MUD, Jonah Water SUD, Capital Land and Livestock MUD No. 1, and CTWSC.
- **Jonah Water SUD - 6, 7, 8**
  - Interconnects with Sonterra MUD, JSWSC
- **Sonterra MUD - 4, 5, 6, 9**
  - Interconnects with JSWSC, Jonah Water SUD, and Capital Land and Livestock MUD No. 1

Projects: Immediate

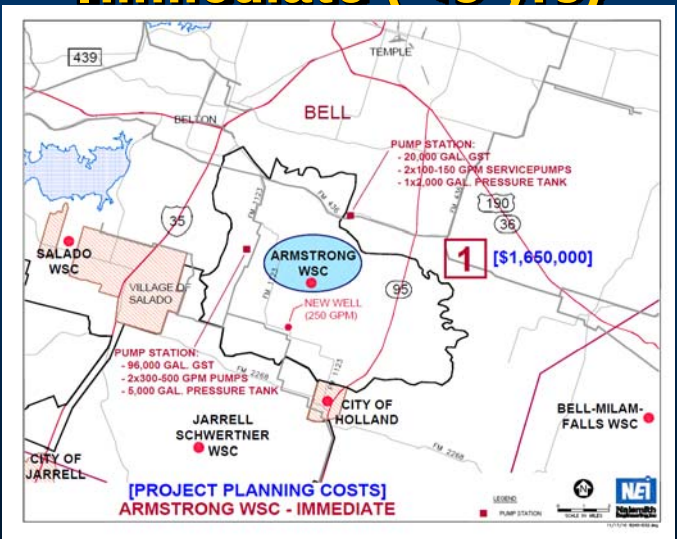


Armstrong WSC – Immediate (< 5 yrs)

1 - Multiple Connection / Supply Points with Central Texas WSC
(currently planned)

- New Water Well (@ 250 gpm)
(currently planned)

Armstrong WSC – Immediate (<5 yrs)



1 – Armstrong WSC - Immediate

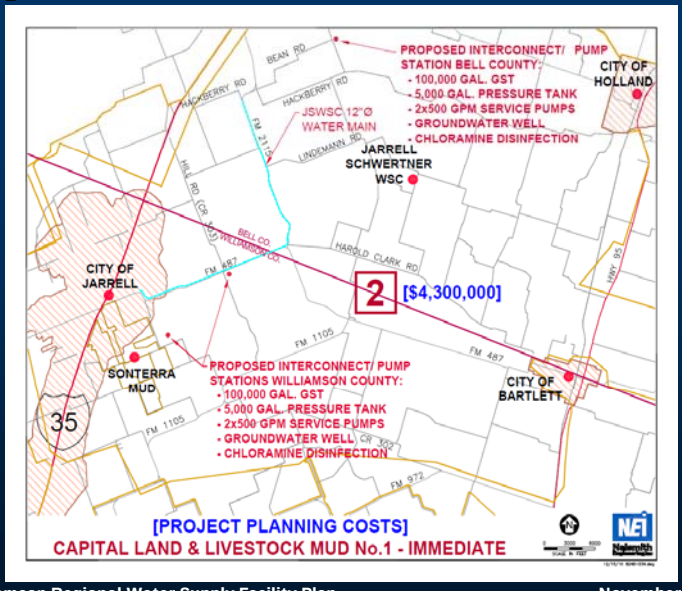
Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Groundwater Well					
	Groundwater Well	1	LS	$ 600,000.00	$ 600,000
	(includes drilling, site improvements, & TCEQ				
	approved testing/sampling)				
Pump Stations					
	Booster Pump Station (20,000 GST)	1	LS	$ 120,000.00	$ 120,000
	(includes GST/Service Pumps/Pressure Tanks)				
	Booster Pump Station (100,000 GST)	1	LS	$ 300,000.00	$ 300,000
	(includes GST/Service Pumps/Pressure Tanks)				
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 15,000.00	$ 15,000
Appurtenances					
	Major Water Line Tie-Ins (to exist. system)	3	EA	$ 2,000.00	$ 6,000
	New master meter (@ WTP Tie-In)	3	EA	$ 5,000.00	$ 15,000
				Subtotal	$ 1,071,000
				Contingency 15%	$ 160,650
				Estimated Construction Cost	$ 1,231,650
				Engineering - Planning, Final Design, Construction Management (12%)	$ 153,956
				Surveying (5%)	$ 61,583
				Geotechnical Engineering(3%)	$ 36,950
				On-Site Construction Inspection & Contract Admin (7%)	$ 86,216
				Total Estimated Construction & Engineering Related Costs	$ 1,570,354
				Right-of-Way, Easement & Land Acquisition	$ 9,757
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 36,950
				TOTAL PROJECT COSTS	$ 1,617,060
				PROJECT PLANNING COSTS	$ 1,650,000

Capital Land & Livestock MUD #1 - Immediate (< 5 yrs)

2 - 3 wells @ 250 gpm (each)
- Ground Storage
- Disinfection
- Service Pumps
- Interconnect with JSWSC

(this initial supply goes to JSWSC)

Capital Land & Livestock MUD #1



2 – Capital Land and Livestock MUD No. 1

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	8" DR-18 C-900 WL w/ ESC & Trench Safety	1,000	LF	$ 35.00	$ 35,000
Groundwater Well					
	Groundwater Well & Controls	3	LS	$ 600,000.00	$ 1,800,000
	(includes drilling, site improvements, & TCEQ				
	approved testing/sampling)				
Pump Stations					
	Booster Pump Station (100,000 GST)	3	LS	$ 300,000.00	$ 900,000
	(includes GST/Service Pumps/Pressure Tanks)				
Chlorination/Chloramines					
	Liquid Feed Chlorination	3	LS	$ 15,000.00	$ 45,000
	Liquid Feed Ammonia (liquid ammonium sulfate	3	LS	$ 15,000.00	$ 45,000
Appurtenances					
	6" Gate Valves	9	EA	$ 1,250.00	$ 11,250
	Major Water Line Tie-Ins (to exist. system)	3	EA	$ 2,000.00	$ 6,000
	Well meters	3	EA	$ 5,000.00	$ 15,000
				Subtotal	$ 2,857,250
				Contingency 15%	$ 428,588
				Estimated Construction Cost	$ 3,285,838
				Engineering - Planning, Final Design, Construction Management (12%)	$ 410,730
				Surveying (5%)	$ 164,292
				Geotechnical Engineering(3%)	$ 98,575
				On-Site Construction Inspection & Contract Admin (7%)	$ 230,009
				Total Estimated Construction & Engineering Related Costs	$ 4,189,443
				Right-of-Way, Easement & Land Acquisition	$ 9,757
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 98,575
				TOTAL PROJECT COSTS	$ 4,297,775
				PROJECT PLANNING COSTS	$ 4,300,000

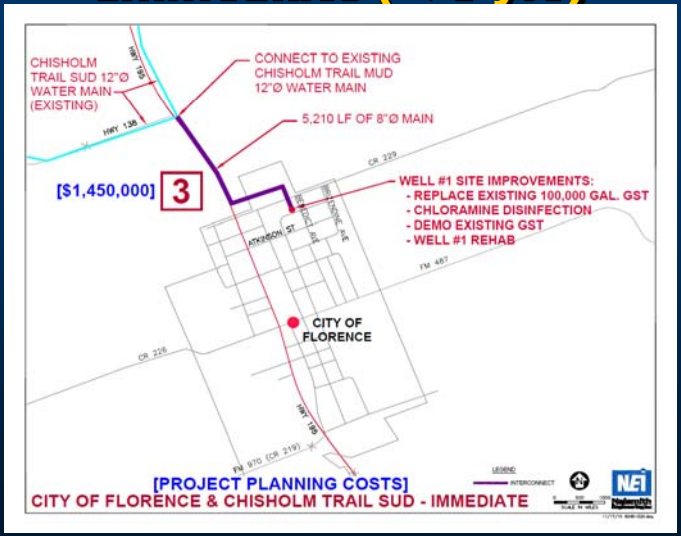
City of Florence - Immediate (< 5 yrs)

3 - Connect with Chisholm Trail SUD*:

- 5,210 LF of 8-inch water main
- 100,000 gallon Ground Storage Tank
- Water System conversion to Chloramines
- Existing well rehab

* - This will provide access to 500 ac-ft/yr of water that is currently contracted through Chisholm Trail SUD.

City of Florence - Immediate (< 5 yrs)



3 – City of Florence and Chisholm Trail Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	8" DR-18 C-900 WL w/ ESC & Trench Safety	5,210	LF	$ 35.00	$ 182,350
Pump Stations/Interconnect					
	Booster Pump Station & Controls (Includes meter, SCADA, reveiving tank, control valves, Well No. 1 Replacement/Plug	1	LS	$ 660,000.00	$ 660,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ WTP Tie-In)	1	EA	$ 50,000.00	$ 50,000
				Subtotal	$ 936,350
				Contingency 15%	$ 140,453
				Estimated Construction Cost	$ 1,076,803
				Engineering - Planning, Final Design, Construction Management (12%)	$ 134,600
				Surveying (5%)	$ 53,840
				Geotechnical Engineering(3%)	$ 32,304
				On-Site Construction Inspection & Contract Admin (7%)	$ 75,376
				Total Estimated Construction & Engineering Related Costs	$ 1,372,923
				Right-of-Way, Easement & Land Acquisition	$ 23,921
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 32,304
				TOTAL PROJECT COSTS	$ 1,429,148
				PROJECT PLANNING COSTS	$ 1,450,000

4 – JSWSC and Sonterra MUD Emergency Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Interconnections					
	Emergency Interconnection	1	LS	$ 40,000.00	$ 40,000
				Subtotal	$ 40,000
				Contingency 15%	
				Estimated Construction Cost	
				Engineering - Planning, Final Design, Construction Management (12%)	
				Surveying (5%)	
				Geotechnical Engineering(3%)	
				On-Site Construction Inspection & Contract Admin (7%)	
				Total Estimated Construction & Engineering Related Costs	
				Right-of-Way, Easement & Land Acquisition	
				Bond Counsel & Financial Advisor Costs (3% typical)	
				TOTAL PROJECT COSTS	$ 40,000
				PROJECT PLANNING COSTS	$ 40,000

Jarrell Schwertner - WSC – Immediate (< 5 yrs)

2 - Supply from CL&L MUD No. 1

4 - Emergency Interconnect w/ Sonterra MUD

5 - Permanent Interconnect w/ Sonterra MUD

6 - Permanent Interconnect w/ Jonah WS (CR 311 Tie-in)

7 - Permanent Interconnect w/ Jonah WS (FM 1105 Tie-in)

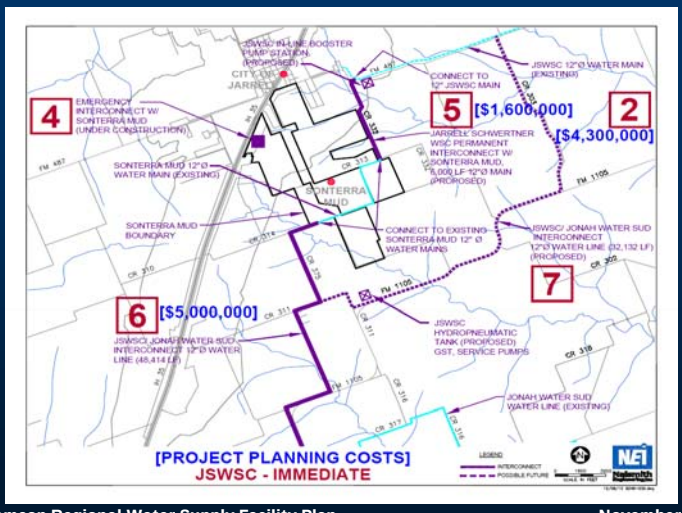
Jarrell Schwertner - WSC – Immediate (< 5 yrs)

8 - Connect to Central Texas WSC*

8a - Connect Prairie Dell & CR 487

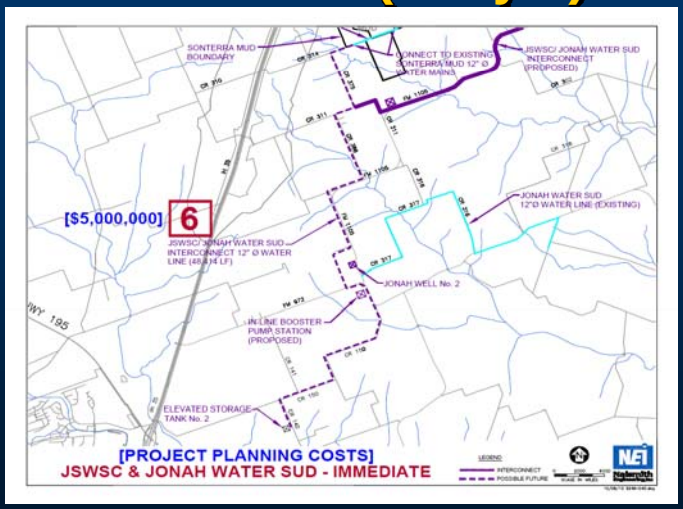
*** - This will provide access to 1,000 ac-ft/yr of water that is currently contracted through BRA.**

Jarrell Schwertner - WSC – Immediate (< 5 yrs)

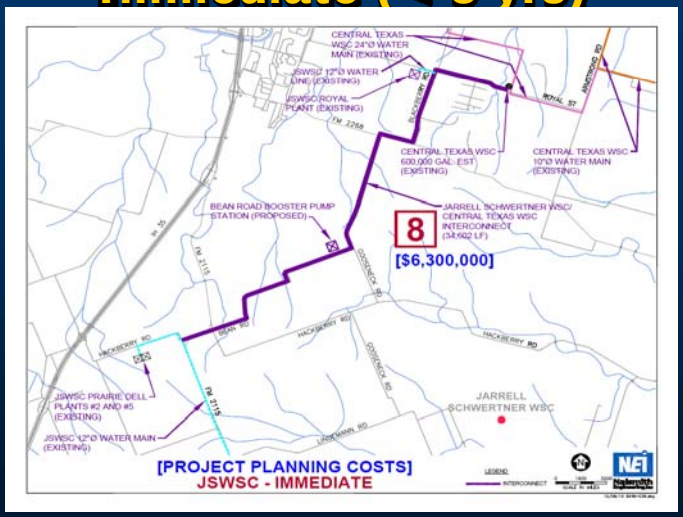


Bell/Williamson Regional Water Supply Facility Plan November 17, 2010

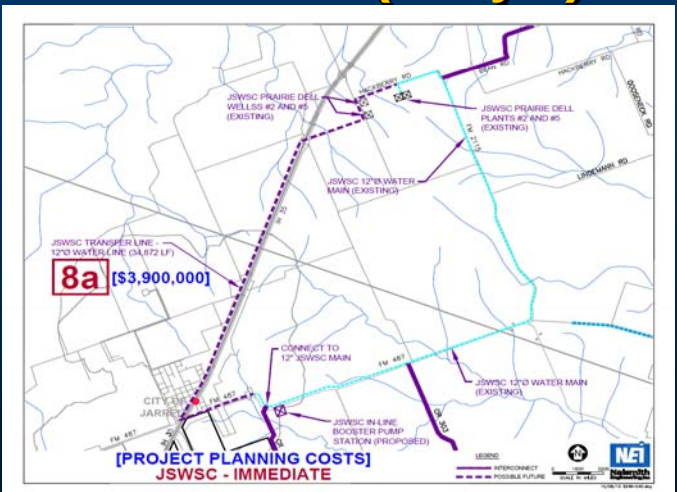
Jarrell Schwertner - WSC – Immediate (< 5 yrs)



Jarrell Schwertner - WSC – Immediate (< 5 yrs)



Jarrell Schwertner - WSC – Immediate (< 5 yrs)



5 – JSWSC and Sonterra MUD Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	6,000	LF	$ 45.00	$ 270,000
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Interconnections					
	Interconnection w/ meters & backflow preventer	1	LS	$ 120,000.00	$ 120,000
Appurtenances					
	12" Gate Valves	8	EA	$ 2,500.00	$ 20,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Minor Water Line Tie-Ins (to exist. system)	2	EA	$ 1,000.00	$ 2,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 1,022,000
				Contingency 15%	$ 153,300
				Estimated Construction Cost	$ 1,175,300
				Engineering - Planning, Final Design, Construction Management (12%)	$ 146,913
				Surveying (5%)	$ 58,765
				Geotechnical Engineering(3%)	$ 35,259
				On-Site Construction Inspection & Contract Admin (7%)	$ 82,271
				Total Estimated Construction & Engineering Related Costs	$ 1,498,508
				Right-of-Way, Easement & Land Acquisition	$ 27,548
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 35,259
				TOTAL PROJECT COSTS	$ 1,561,315
				PROJECT PLANNING COSTS	$ 1,600,000

6 – Jonah Water SUD CR 311 Tie In

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	48,414	LF	$ 45.00	$ 2,178,630
Bores & Casing					
	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
	30" Steel Casing Pipe & Bore		LF	$ 400.00	$ -
	36" Steel Casing Pipe & Bore		LF	$ 450.00	$ -
	48" Steel Casing Pipe & Bore		LF	$ 600.00	$ -
	60" Steel Casing Pipe & Bore		LF	$ 750.00	$ -
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Interconnections					
	Interconnection w/ meters & backflow preventer	2	LS	$ 120,000.00	$ 240,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	12" Gate Valves	20	EA	$ 2,500.00	$ 50,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	4" air release valve		EA	$ 10,000.00	$ -
	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 3,158,630
				Contingency 15%	$ 473,795
				Estimated Construction Cost	$ 3,632,425
				Engineering - Planning, Final Design, Construction Management (12%)	$ 454,053
				Surveying (5%)	$ 181,621
				Geotechnical Engineering(3%)	$ 108,973
				On-Site Construction Inspection & Contract Admin (7%)	$ 254,270
				Total Estimated Construction & Engineering Related Costs	$ 4,631,341
				Right-of-Way, Easement & Land Acquisition	$ 222,287
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 108,973
				TOTAL PROJECT COSTS	$ 4,962,600
				PROJECT PLANNING COSTS	$ 5,000,000

7 – JSWSC and Jonah Water SUD Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	32,132	LF	$ 45.00	$ 1,445,940
Bores & Casing					
	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Interconnections					
	Interconnection w/ meters & backflow preventer	1	LS	$ 120,000.00	$ 120,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	12" Gate Valves	15	EA	$ 2,500.00	$ 37,500
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	4" air release valve		EA	$ 10,000.00	$ -
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 2,289,440
				Contingency 15%	$ 343,416
				Estimated Construction Cost	$ 2,632,856
				Engineering - Planning, Final Design, Construction Management (12%)	$ 329,107
				Surveying (5%)	$ 131,643
				Geotechnical Engineering(3%)	$ 78,986
				On-Site Construction Inspection & Contract Admin (7%)	$ 184,300
				Total Estimated Construction & Engineering Related Costs	$ 3,356,891
				Right-of-Way, Easement & Land Acquisition	$ 147,530
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 78,986
				TOTAL PROJECT COSTS	$ 3,583,407
				PROJECT PLANNING COSTS	$ 3,600,000

8 – JSWSC and CTWSC Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	18" DR-18 C-900 WL w/ ESC & Trench Safety	34,602	LF	$ 75.00	$ 2,595,150
Bores & Casing					
	30" Steel Casing Pipe & Bore	160	LF	$ 400.00	$ 64,000
Pump Stations					
	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	18" Gate Valves	16	EA	$ 8,000.00	$ 128,000
	4" air release valve	2	EA	$ 10,000.00	$ 20,000
	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
	Major Water Line Tie-Ins (to exist. system)	4	EA	$ 2,000.00	$ 8,000
	New master meter (@ WTP Tie-In)	1	EA	$ 15,000.00	$ 15,000
				Subtotal	$ 4,074,150
				Contingency 15%	$ 611,123
				Estimated Construction Cost	$ 4,685,273
				Engineering - Planning, Final Design, Construction Management (12%)	$ 585,659
				Surveying (5%)	$ 234,264
				Geotechnical Engineering(3%)	$ 140,558
				On-Site Construction Inspection & Contract Admin (7%)	$ 327,969
				Total Estimated Construction & Engineering Related Costs	$ 5,973,722
				Right-of-Way, Easement & Land Acquisition	$ 158,871
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 140,558
				TOTAL PROJECT COSTS	$ 6,273,151
				PROJECT PLANNING COSTS	$ 6,300,000

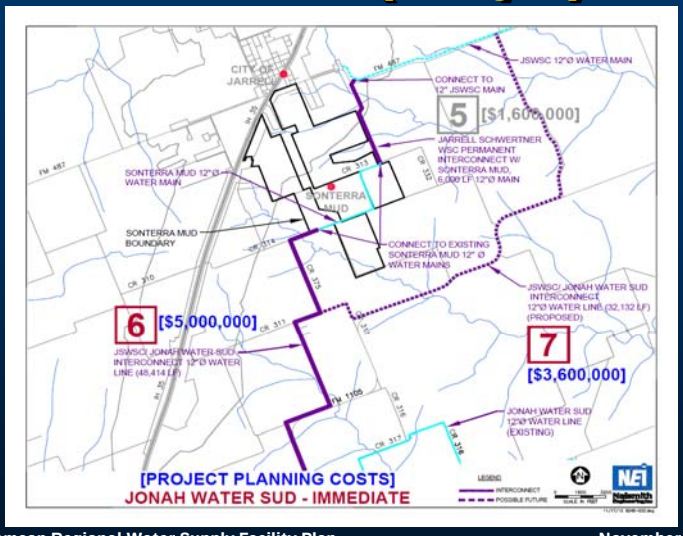
8a – Prairie Dell/FM 487 Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	34,872	LF	$ 45.00	$ 1,569,240
Bores & Casing					
	20" Steel Casing Pipe & Bore	800	LF	$ 300.00	$ 240,000
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Appurtenances					
	12" Gate Valves	10	EA	$ 2,500.00	$ 25,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 2,454,240
				Contingency 15%	$ 368,136
				Estimated Construction Cost	$ 2,822,376
				Engineering - Planning, Final Design, Construction Management (12%)	$ 352,797
				Surveying (5%)	$ 141,119
				Geotechnical Engineering(3%)	$ 84,671
				On-Site Construction Inspection & Contract Admin (7%)	$ 197,566
				Total Estimated Construction & Engineering Related Costs	$ 3,598,529
				Right-of-Way, Easement & Land Acquisition	$ 160,110
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 107,956
				TOTAL PROJECT COSTS	$ 3,866,595
				PROJECT PLANNING COSTS	$ 3,900,000

Jonah Water SUD - Immediate (< 5 yrs)

6 - Permanent Interconnect w/ JSWSC
(via Sonterra MUD)

Jonah Water SUD - Immediate (< 5 yrs)



Sonterra MUD - Immediate (< 5 yrs)

4 - Emergency Interconnect w/ JSWSC

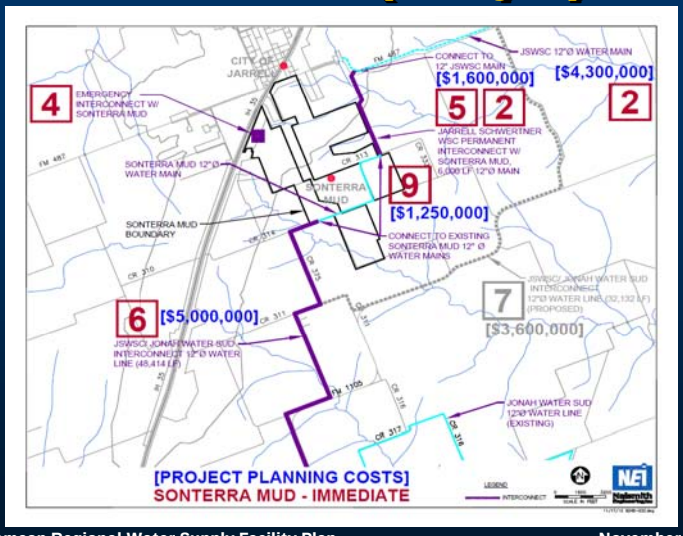
5 - Permanent Interconnect w/ JSWSC

6 - Permanent Interconnect w/ Jonah Water SUD

(allows pass through from JSWSC to Jonah WS)

9 - New Water Well (250 gpm)

Sonterra MUD - Immediate (< 5 yrs)



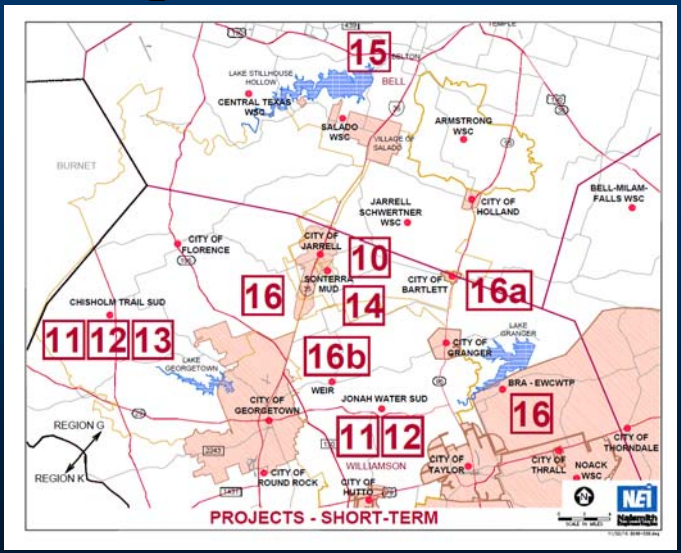
9 – Sonterra MUD Groundwater Well

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$ 30.00	$ 150,000
Groundwater Well					
	Groundwater Well & Controls	1	LS	$ 600,000.00	$ 600,000
	(includes drilling, site improvements, & TCEQ approved testing/sampling)				
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 15,000.00	$ 15,000
Appurtenances					
	6" Gate Valves	8	EA	$ 1,250.00	$ 10,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 810,000
				Contingency 15%	$ 121,500
				Estimated Construction Cost	$ 931,500
				Engineering - Planning, Final Design, Construction Management (12%)	$ 116,438
				Surveying (5%)	$ 46,575
				Geotechnical Engineering(3%)	$ 27,945
				On-Site Construction Inspection & Contract Admin (7%)	$ 65,205
				Total Estimated Construction & Engineering Related Costs	$ 1,187,663
				Right-of-Way, Easement & Land Acquisition	$ 24,105
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 27,945
				TOTAL PROJECT COSTS	$ 1,239,712
				PROJECT PLANNING COSTS	$ 1,250,000

Projects: Short-Term (< 10 yrs)

- **CL&L MUD #1 - 10**
  (ground storage & service pumps)
- **Chisholm Trail SUD - 11, 12, 13**
  (new WTP, Interconnect w/ Jonah Water SUD, Ronald Reagan – Ph. 4 water line)
- **Jonah Water SUD - 11, 12**
- **Sonterra MUD - 14**
  (elevated storage tank)
- **BRA - 15, 16**
  (L. Belton / L. Stillhouse Hollow Interconnect, L. Granger Augment.)

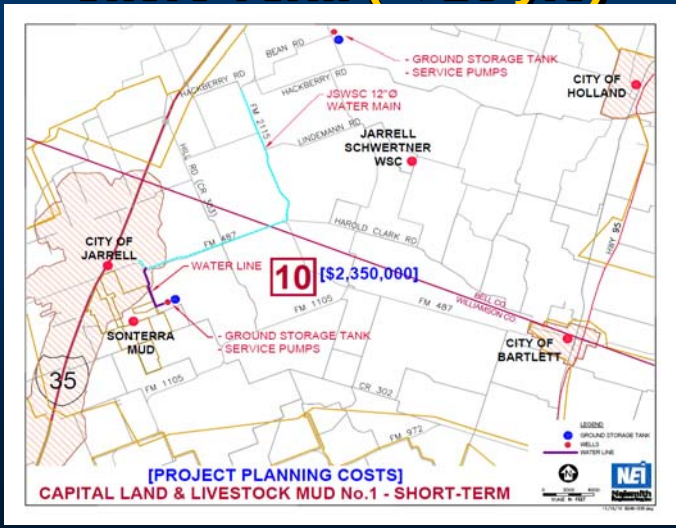
Projects: Short-Term



Capital Land & Livestock MUD #1 - Short-Term (< 10 yrs)

10 - 300,000 gallon GST & Service Pumps

Capital Land & Livestock MUD #1 - Short-Term (< 10 yrs)



10 – CL&L MUD No. 1 Booster Pump Station

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$ 30.00	$ 150,000
Pump Stations					
	Booster Pump Station - 900 gpm	2	LS	$ 500,000.00	$ 1,000,000
	Booster Pump Station - 1,500 gpm		LS	$ 800,000.00	$ -
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Ground/Elevated Storage Tanks					
	GST - 300,000 gal	1	LS	$ 300,000.00	$ 300,000
Appurtenances					
	6" Gate Valves	4	EA	$ 1,250.00	$ 5,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ Tie-In)	2	EA	$ 10,000.00	$ 20,000
				Subtotal	$ 1,525,000
				Contingency 15%	$ 228,750
				Estimated Construction Cost	$ 1,753,750
				Engineering - Planning, Final Design, Construction Management (12%)	$ 219,219
				Surveying (5%)	$ 87,688
				Geotechnical Engineering(3%)	$ 52,613
				On-Site Construction Inspection & Contract Admin (7%)	$ 122,763
				Total Estimated Construction & Engineering Related Costs	$ 2,236,031
				Right-of-Way, Easement & Land Acquisition	$ 24,105
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 52,613
				TOTAL PROJECT COSTS	$ 2,312,748
				PROJECT PLANNING COSTS	$ 2,350,000

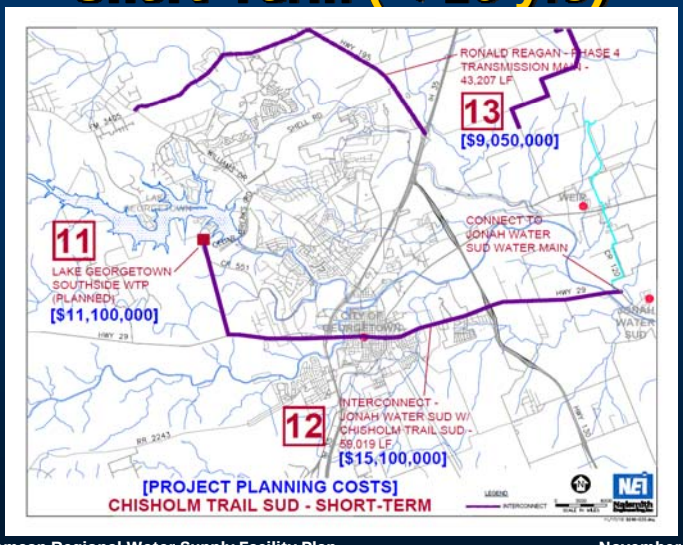
Chisholm Trail SUD - Short-Term (< 10 yrs)

11 - Construct Lake Georgetown Southside WTP
(partner with Jonah Water SUD)

12 - Permanent Interconnect w/ Jonah Water SUD

13 - Ronald Reagan Phase 4 Transmission Main

Chisholm Trail SUD - Short-Term (< 10 yrs)



Bell/Williamson Regional Water Supply Facility Plan November 17, 2010

11 – Chisholm Trail SUD Lake GT WTP

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	4.0 MGD Membrane WTP	1	LS	$ 3,000,000.00	$ 3,000,000
	Ground Storage - 1,000,000 gal	1	LS	$ 1,000,000.00	$ 1,000,000
	Service Pumps & Bldg	1	LS	$ 400,000.00	$ 400,000
	Pressure Tank - 5,000 gallons	1	LS	$ 50,000.00	$ 50,000
	Disinfection / Chemicals	1	LS	$ 350,000.00	$ 350,000
	Electrical	1	LS	$ 250,000.00	$ 250,000
	Site Improvements	1	LS	$ 200,000.00	$ 200,000
	Raw Water Pump Station	1	LS	$ 1,000,000.00	$ 1,000,000
	Sludge Processing & Storage	1	LS	$ 500,000.00	$ 500,000
	Office Bldg	1	LS	$ 250,000.00	$ 250,000
	SWPPP	1	LS	$ 50,000.00	$ 50,000
				Subtotal	$ 7,050,000
				Contingency 15%	$ 1,057,500
				Estimated Construction Cost	$ 8,107,500
				Engineering - Planning, Final Design, Construction Management (12%)	$ 1,013,438
				Surveying (5%)	$ 405,375
				Geotechnical Engineering(3%)	$ 243,225
				On-Site Construction Inspection & Contract Admin (7%)	$ 567,525
				Total Estimated Construction & Engineering Related Costs	$ 10,337,063
				Right-of-Way, Easement & Land Acquisition	$ 500,000
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 243,225
				TOTAL PROJECT COSTS	$ 11,080,288
				PROJECT PLANNING COSTS	$ 11,100,000

12 – Chisholm Trail SUD and Jonah Water SUD

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Urban Area					
	18" DR-25 C-905 WL w/ ESC & Trench Safety	33,019	LF	$ 105.00	$ 3,466,995
	18" DR-25 C-905 WL (through Georgetown)	26,000	LF	$ 150.00	$ 3,900,000
Bores & Casing					
	30" Steel Casing Pipe & Bore	1,000	LF	$ 400.00	$ 400,000
Pump Stations					
	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 60,000.00	$ 60,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 60,000.00	$ 60,000
Ground/Elevated Storage Tanks					
	GST - 500,000 gal	1	LS	$ 500,000.00	$ 500,000
Appurtenances					
	18" Gate Valves	30	EA	$ 8,000.00	$ 240,000
	24" Gate Valves		EA	$ 15,000.00	$ -
	4" air release valve	4	EA	$ 10,000.00	$ 40,000
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 5,000.00	$ 10,000
	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 9,886,995
				Contingency 15%	$ 1,483,049
				Estimated Construction Cost	$ 11,370,044
				Engineering - Planning, Final Design, Construction Management (12%)	$ 1,421,256
				Surveying (5%)	$ 568,502
				Geotechnical Engineering(3%)	$ 341,101
				On-Site Construction Inspection & Contract Admin (7%)	$ 795,903
				Total Estimated Construction & Engineering Related Costs	$ 14,496,806
				Right-of-Way, Easement & Land Acquisition	$ 272,126
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 341,101
				TOTAL PROJECT COSTS	$ 15,110,034
				PROJECT PLANNING COSTS	$ 15,100,000

13 – Chisholm Trail SUD Ronald Reagan Phase 4

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	43,207	LF	$ 100.00	$ 4,320,700
Bores & Casing					
	30" Steel Casing Pipe & Bore	400	LF	$ 400.00	$ 160,000
Pump Stations					
	Booster Pump Station - 3,000 gpm	1	LS	$ 1,000,000.00	$ 1,000,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 30,000.00	$ 30,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 30,000.00	$ 30,000
Appurtenances					
	24" Gate Valves	22	EA	$ 15,000.00	$ 330,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 5,890,700
				Contingency 15%	$ 883,605
				Estimated Construction Cost	$ 6,774,305
				Engineering - Planning, Final Design, Construction Management (12%)	$ 846,788
				Surveying (5%)	$ 338,715
				Geotechnical Engineering(3%)	$ 203,229
				On-Site Construction Inspection & Contract Admin (7%)	$ 474,201
				Total Estimated Construction & Engineering Related Costs	$ 8,637,239
				Right-of-Way, Easement & Land Acquisition	$ 199,527
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 203,229
				TOTAL PROJECT COSTS	$ 9,039,995
				PROJECT PLANNING COSTS	$ 9,050,000

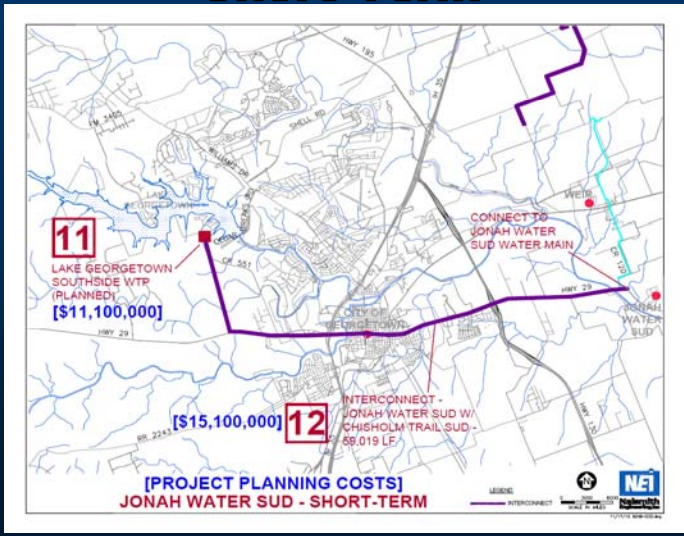
Jonah Water SUD - Short-Term

11 - Construct Lake Georgetown Southside WTP
(partner w/ Chisholm Trail SUD)

12 - Permanent Interconnect w/ Chisholm Trail SUD

[These projects will allow access to 2,439 ac-ft of existing contracted raw water.]

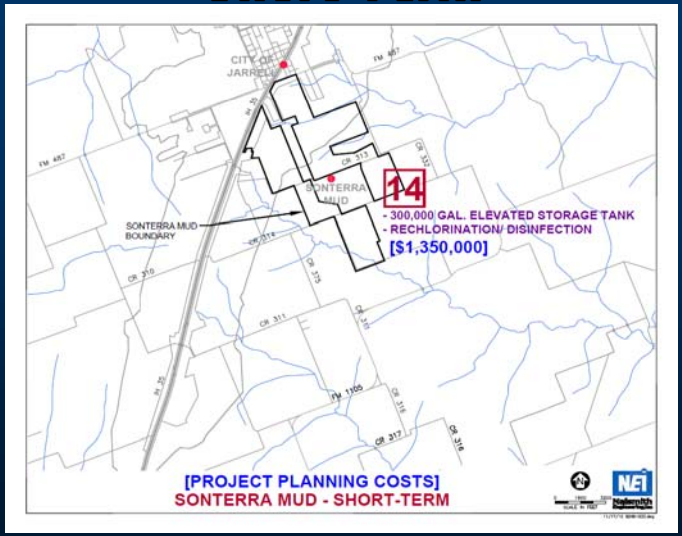
Jonah Water SUD - Short-Term



Sonterra MUD - Short-Term

14 - 300,000 Elevated Storage Tank

Sonterra MUD - Short-Term



14 – Sonterra MUD Elevated Storage Tank

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$ 45.00	$ 22,500
Constr. - Urban Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$ 65.00	$ 32,500
Bores & Casing					
	20" Steel Casing Pipe & Bore	80	LF	$ 300.00	$ 24,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Ground/Elevated Storage Tanks					
	EST - 300,000 gal	1	LS	$ 750,000.00	$ 750,000
Appurtenances					
	12" Gate Valves	6	EA	$ 2,500.00	$ 15,000
	2" air release valve	1	EA	$ 3,000.00	$ 3,000
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 891,000
				Contingency 15%	$ 133,650
				Estimated Construction Cost	$ 1,024,650
				Engineering - Planning, Final Design, Construction Management (12%)	$ 128,081
				Surveying (5%)	$ 51,233
				Geotechnical Engineering(3%)	$ 30,740
				On-Site Construction Inspection & Contract Admin (7%)	$ 71,726
				Total Estimated Construction & Engineering Related Costs	$ 1,306,429
				Right-of-Way, Easement & Land Acquisition	$ 5,739
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 30,740
				TOTAL PROJECT COSTS	$ 1,342,907
				PROJECT PLANNING COSTS	$ 1,350,000

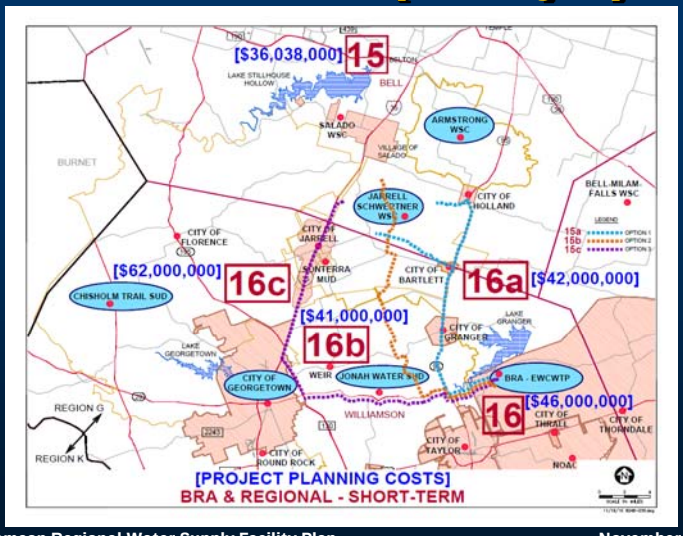
Brazos River Authority & Regional – Short-Term (< 10 yrs)

15 - Interconnection of Lake Belton & Lake Stillhouse Hollow
(project is currently planned)

16 - Interim Supply from Lake Granger WTP
(using Williamson County groundwater wells)

16a, 16b, 16c - Regional Transmission Mains from L. Granger WTP

Brazos River Authority & Regional – Short-Term (< 10 yrs)



Bell / Williamson Regional Water Supply Facility Plan November 17, 2010

15 – Brazos River Authority Lake Belton Lake Stillhouse Hollow Connection

2011 Region G Water Plan Cost: $36,038,000

16 – Brazos River Authority Lake Granger Supply

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	8" DR-18 C-900 WL w/ ESC & Trench Safety	30,000	LF	$ 35.00	$ 1,050,000
	18" DR-25 C-905 WL w/ ESC & Trench Safety	10,000	LF	$ 75.00	$ 750,000
Groundwater Well					
	Test Wells & Evaluation	2	LS	$ 300,000.00	$ 600,000
	Groundwater Well	6	LS	$ 750,000.00	$ 4,500,000
	(includes drilling, site improvements, & TCEQ approved testing/sampling)				
Pump Stations					
	Booster Pump Station - 5,000 gpm	1	LS	$ 3,000,000.00	$ 3,000,000
Treatment					
	Cooling Towers	1	LS	$ 2,000,000.00	$ 2,000,000
	Dissolved Solids	1	LS	$ 7,200,000.00	$ 7,200,000
Chlorination/Chloramines					
	Chloramine Disinfection	1	LS	$ 250,000.00	$ 250,000
Ground/Elevated Storage Tanks					
	GST - 3,600,000 gal	1	LS	$ 3,600,000.00	$ 3,600,000
	GST - 7,200,000 gal	1	LS	$ 7,200,000.00	$ 7,200,000
Appurtenances					
	8" Gate Valves	30	EA	$ 1,500.00	$ 45,000
	18" Gate Valves	10	EA	$ 8,000.00	$ 80,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Master meter (@ Tie-In)	1	EA	$ 15,000.00	$ 15,000
	Well Meters	6	EA	$ 3,000.00	$ 18,000
				Subtotal	$ 30,314,000
				Contingency 15%	$ 4,547,100
				Estimated Construction Cost	$ 34,861,100
				Engineering - Planning, Final Design, Construction Management (12%)	$ 4,357,638
				Surveying (5%)	$ 1,743,055
				Geotechnical Engineering(3%)	$ 1,045,833
				On-Site Construction Inspection & Contract Admin (7%)	$ 2,440,277
				Total Estimated Construction & Engineering Related Costs	$ 44,447,903
				Right-of-Way, Easement & Land Acquisition	$ 204,316
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 1,045,833
				TOTAL PROJECT COSTS	$ 45,698,051
				PROJECT PLANNING COSTS	$ 46,000,000

16a – Brazos River Authority Lake Granger

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	16" DR-25 C-905 WL w/ ESC & Trench Safety	58,198	LF	$ 65.00	$ 3,782,870
	24" DR-25 C-905 WL w/ ESC & Trench Safety	99,877	LF	$ 100.00	$ 9,987,700
Constr. - Urban Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	12,000	LF	$ 150.00	$ 1,800,000
Bores & Casing					
	20" Steel Casing Pipe & Bore	200	LF	$ 300.00	$ 60,000
	36" Steel Casing Pipe & Bore	1,000	LF	$ 450.00	$ 450,000
Pump Stations					
	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
	Circleville - Pump Station - (1,200 HP)	1	LS	$ 3,100,000.00	$ 3,100,000
	Bartlett - Pump Station - (375 HP)	1	LS	$ 1,700,000.00	$ 1,700,000
	Holland - Pump Station - (370 HP)	1	LS	$ 1,700,000.00	$ 1,700,000
Chlorination/Chloramines					
	Chloramine Disinfection	4	LS	$ 80,000.00	$ 320,000
Ground/Elevated Storage Tanks					
	GST - 300,000 gal	2	LS	$ 300,000.00	$ 600,000
	GST - 500,000 gal	2	LS	$ 500,000.00	$ 1,000,000
Appurtenances					
	16" Gate Valves	20	EA	$ 6,000.00	$ 120,000
	24" Gate Valves	68	EA	$ 15,000.00	$ 1,020,450
	4" air release valve	17	EA	$ 10,000.00	$ 170,075
	Master meter (@ Tie-In)	4	EA	$ 15,000.00	$ 60,000
				Subtotal	$ 27,271,095
				Contingency 15%	$ 4,090,664
				Estimated Construction Cost	$ 31,361,759
				Engineering - Planning, Final Design, Construction Management (12%)	$ 3,920,220
				Surveying (5%)	$ 1,568,088
				Geotechnical Engineering(3%)	$ 940,853
				On-Site Construction Inspection & Contract Admin (7%)	$ 2,195,323
				Total Estimated Construction & Engineering Related Costs	$ 39,986,243
				Right-of-Way, Easement & Land Acquisition	$ 900,253
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 940,853
				TOTAL PROJECT COSTS	$ 41,827,348
				PROJECT PLANNING COSTS	$ 42,000,000

16b – Brazos River Authority Lake Granger

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	156,414	LF	$ 100.00	$ 15,641,400
Bores & Casing					
	36" Steel Casing Pipe & Bore	500	LF	$ 450.00	$ 225,000
Pump Stations					
	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
	Circleville - Pump Station - (1,100 HP)	1	LS	$ 3,000,000.00	$ 3,000,000
	Mid-Way - Pump Station - (1,300 HP)	1	LS	$ 3,300,000.00	$ 3,300,000
Chlorination/Chloramines					
	Chloramine Disinfection	3	LS	$ 80,000.00	$ 240,000
Ground/Elevated Storage Tanks					
	GST - 500,000 gal	3	LS	$ 500,000.00	$ 1,500,000
Appurtenances					
	24" Gate Valves	63	EA	$ 15,000.00	$ 938,484
	4" air release valve	12	EA	$ 10,000.00	$ 120,000
	Master meter (@ Tie-In)	3	EA	$ 15,000.00	$ 45,000
				Subtotal	$ 26,409,884
				Contingency 15%	$ 3,961,483
				Estimated Construction Cost	$ 30,371,367
				Engineering - Planning, Final Design, Construction Management (12%)	$ 3,796,421
				Surveying (5%)	$ 1,518,568
				Geotechnical Engineering(3%)	$ 911,141
				On-Site Construction Inspection & Contract Admin (7%)	$ 2,125,996
				Total Estimated Construction & Engineering Related Costs	$ 38,723,492
				Right-of-Way, Easement & Land Acquisition	$ 745,702
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 1,161,705
				TOTAL PROJECT COSTS	$ 40,630,900
				PROJECT PLANNING COSTS	$ 41,000,000

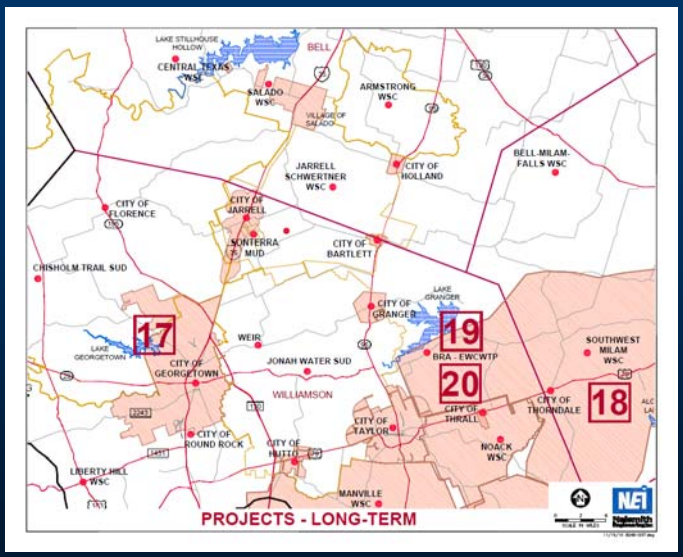
16c – Brazos River Authority Lake Granger

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	87,162	LF	$ 100.00	$ 8,716,200
Constr. - Urban Area					
	24" DR-25 C-905 WL along TX 130	18,091	LF	$ 180.00	$ 3,256,380
	24" DR-25 C-905 WL along I-35	76,665	LF	$ 180.00	$ 13,799,700
Bores & Casing					
	36" Steel Casing Pipe & Bore	2,000	LF	$ 450.00	$ 900,000
Pump Stations					
	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
	Circleville - Pump Station - (1,050 HP)	1	LS	$ 2,950,000.00	$ 2,950,000
	Bartlett - Pump Station - (665 HP)	1	LS	$ 2,250,000.00	$ 2,250,000
	Holland - Pump Station - (1,375 HP)	1	LS	$ 3,350,000.00	$ 3,350,000
Chlorination/Chloramines					
	Chloramine Disinfection	4	LS	$ 80,000.00	$ 320,000
Ground/Elevated Storage Tanks					
	GST - 500,000 gal	4	LS	$ 500,000.00	$ 2,000,000
Appurtenances					
	24" Gate Valves	73	EA	$ 15,000.00	$ 1,091,508
	4" air release valve	18	EA	$ 10,000.00	$ 181,918
	Master meter (@ Tie-In)	4	EA	$ 15,000.00	$ 60,000
				Subtotal	$ 40,275,706
				Contingency 15%	$ 6,041,356
				Estimated Construction Cost	$ 46,317,062
				Engineering - Planning, Final Design, Construction Management (12%)	$ 5,789,633
				Surveying (5%)	$ 2,315,853
				Geotechnical Engineering(3%)	$ 1,389,512
				On-Site Construction Inspection & Contract Admin (7%)	$ 3,242,194
				Total Estimated Construction & Engineering Related Costs	$ 59,054,254
				Right-of-Way, Easement & Land Acquisition	$ 1,561,304
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 1,389,512
				TOTAL PROJECT COSTS	$ 62,005,070
				PROJECT PLANNING COSTS	$ 62,000,000

Projects: Long-Term (> 10 yrs)

- Chisholm Trail SUD - 17
- BRA / Regional - 18, 19
- Regional - 20

Projects: Long-Term (> 10 yrs)



Chisholm Trail SUD - Long-Term (> 10 yrs)

17 - Expand Lake Georgetown Northside WTP
(partner with City of Georgetown)

Brazos River Authority/Regional – Long-Term (> 10 yrs)

18 - Carrizo-Wilcox Aquifer Development

19 - Expand Lake Granger WTP

Regional – Long-Term (> 10 yrs)

20 - Aquifer Storage & Recovery

The following is from the 2011 Brazos G Regional Water Plan:

"As an alternative or complement to using blended Trinity Aquifer and Lake Granger water, the Trinity Aquifer could be used for aquifer storage and recover (ASR). Treated surface water could be stored in the Trinity Aquifer during times of low demand or high flows and recovered for use at a later date. Pending further study ASR is not included as an option in Phase 1 at this time."

- TWDB staff will provide input to the project team in the coming weeks regarding ASR in the eastern Williamson County area.

Future Schedule, Meeting Dates & Meeting Locations

STEERING COMMITTEE:

December 15, 2010 - Final Report Presentation
1:30 at the Jonah Water SUD Office

Many thanks to Bill Brown and Jonah Water SUD for hosting these Steering Committee Meetings!!

Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322

- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414

Bell/Williamson Regional Water Supply Facility Plan

For Portions of Bell and Williamson Counties, Texas

Steering Committee Meeting

Jonah Water SUD
4050 FM 1660, Hutto, Texas 78634

December 16, 2010

Introductions

- JSWSC (Project Administrator)
  - Sonny Kretzschmar – Board Member
  - Sheila Cunningham – General Manager
- Project Participants – STEERING COMMITTEE MEMBERS
  - Armstrong WSC
  - Brazos River Authority
  - Capital Land & Livestock MUD No. 1
  - Chisholm Trail SUD
  - City of Florence
  - Jarrell Schwertner WSC
  - Jonah Water SUD
  - Sonterra MUD
  - Mr. David Meesey, Texas Water Development Board (50% of project funding)
- Acknowledgement of Guests
- Consulting Team: Naismith Engineering, Inc. (NEI) and Duff Consulting Engineers, Inc. (Duff)
  - NEI - Tom Brown, Grant Jackson, P.E., David Fusilier, P.E., Felise Canterini, E.I.T.
  - Duff – Bill Aston, P.E., Rodney Adamek, Miles Whitney, E.I.T

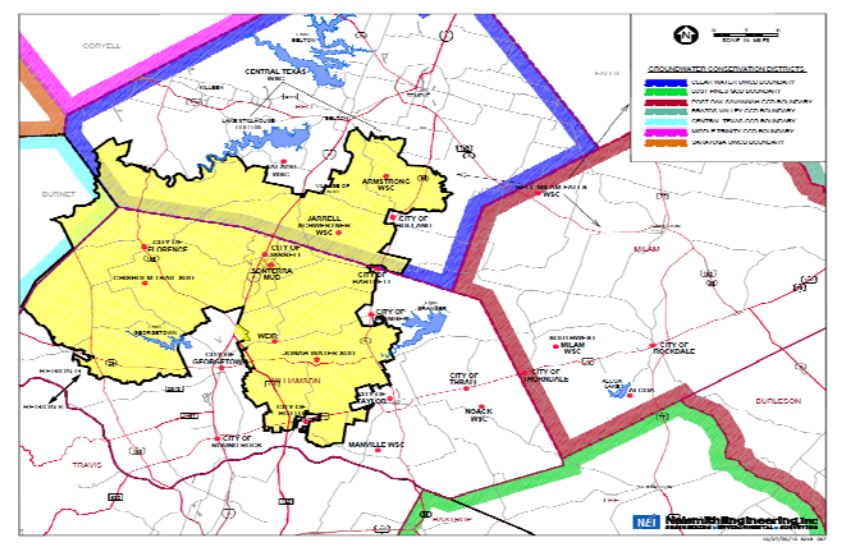
Project Purpose

- **Project Purpose:**
  - Provide the participants with a cost sharing plan to access each of their existing individual water supply sources;
  - Develop alternative means of water supply sources; and,
  - Provide alternative means of infrastructure to access and share water supply throughout the planning area.

Project Scope - Summary

- Population and Water Demand Projections
- Preliminary Evaluation of Existing Facilities
- Preliminary Evaluation of Alternative Water Treatment Plants
- Preliminary Transmission, Distribution and Interconnects within the Systems
- Wholesale and Retail Rates
- Identify Implementation Alternatives and Sources of Financing

Project Area Map



Identified Participant Water Management Strategies

- Interconnects
- Future Water Supply Projects (Wells & WTPs)
- Future Infrastructure Projects
- Immediate Projects (Now - < 5 years)
- Short-Term Projects (<10 years)
- Long-Term Projects (>10 years)

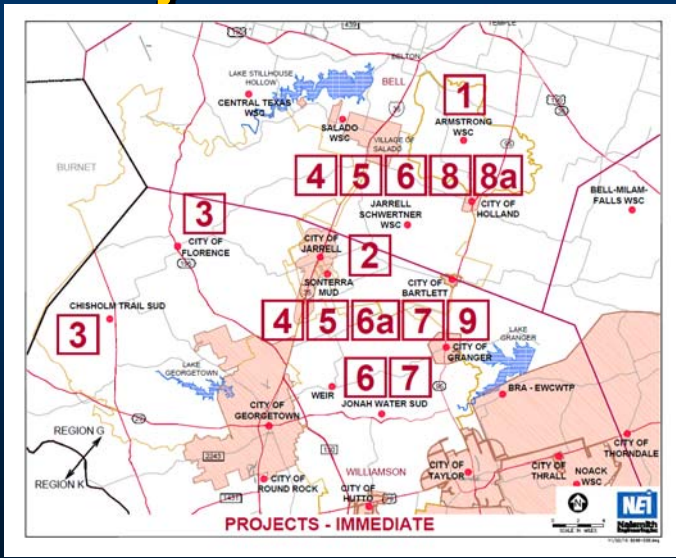
Projects: Immediate (< 5 yrs)

- **Armstrong WSC - 1**
  - New pump stations & groundwater well
- **CL & L MUD #1 - 2**
  - New groundwater wells and interconnects with JSWSC and Sonterra MUD
- **Chisholm Trail SUD - 3**
  - Interconnect with the City of Florence
- **City of Florence - 3**
  - Interconnect with Chisholm Trail SUD, and conversion to chloramine disinfection.

Projects: Immediate (< 5 yrs)

- **JSWSC - 2, 4, 5, 6, 7, 8, 8a**
  - Interconnects with Sonterra MUD, Jonah Water SUD, Capital Land and Livestock MUD No. 1, and CTWSC.
- **Jonah Water SUD - 6, 7, 8**
  - Interconnects with Sonterra MUD, JSWSC
- **Sonterra MUD - 4, 5, 6, 9**
  - Interconnects with JSWSC, Jonah Water SUD, and Capital Land and Livestock MUD No. 1

Projects: Immediate

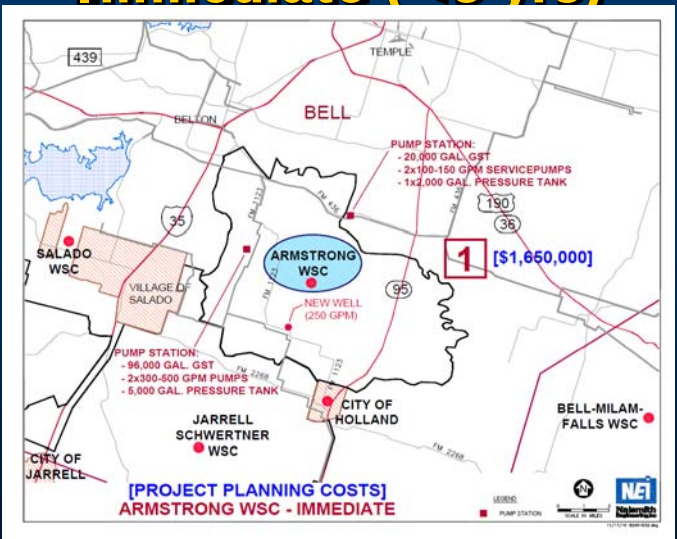


Armstrong WSC – Immediate (< 5 yrs)

1 - Multiple Connection / Supply Points with Central Texas WSC
(currently planned)

- New Water Well (@ 250 gpm)
(currently planned)

Armstrong WSC – Immediate (<5 yrs)



1 – Armstrong WSC - Immediate

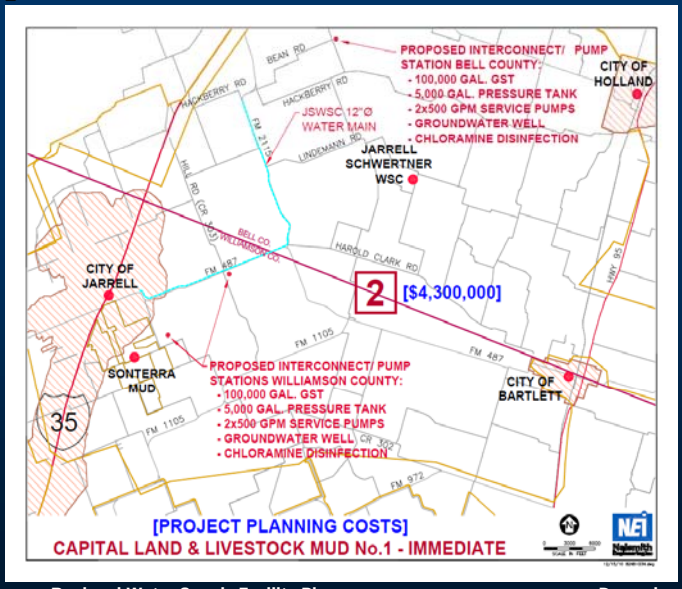
Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Groundwater Well					
	Groundwater Well	1	LS	$ 600,000.00	$ 600,000
	(includes drilling, site improvements, & TCEQ				
	approved testing/sampling)				
Pump Stations					
	Booster Pump Station (20,000 GST)	1	LS	$ 120,000.00	$ 120,000
	(includes GST/Service Pumps/Pressure Tanks)				
	Booster Pump Station (100,000 GST)	1	LS	$ 300,000.00	$ 300,000
	(includes GST/Service Pumps/Pressure Tanks)				
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 15,000.00	$ 15,000
Appurtenances					
	Major Water Line Tie-Ins (to exist. system)	3	EA	$ 2,000.00	$ 6,000
	New master meter (@ WTP Tie-In)	3	EA	$ 5,000.00	$ 15,000
				Subtotal	$ 1,071,000
				Contingency 15%	$ 160,650
				Estimated Construction Cost	$ 1,231,650
				Engineering - Planning, Final Design, Construction Management (12%)	$ 153,956
				Surveying (5%)	$ 61,583
				Geotechnical Engineering(3%)	$ 36,950
				On-Site Construction Inspection & Contract Admin (7%)	$ 86,216
				Total Estimated Construction & Engineering Related Costs	$ 1,570,354
				Right-of-Way, Easement & Land Acquisition	$ 9,757
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 36,950
				TOTAL PROJECT COSTS	$ 1,617,060
				PROJECT PLANNING COSTS	$ 1,650,000

Capital Land & Livestock MUD #1 - Immediate (< 5 yrs)

2 - 3 wells @ 250 gpm (each)
- Ground Storage
- Disinfection
- Service Pumps
- Interconnect with JSWSC

(this initial supply goes to JSWSC)

Capital Land & Livestock MUD #1



2 – Capital Land and Livestock MUD No. 1

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	8" DR-18 C-900 WL w/ ESC & Trench Safety	1,000	LF	$ 35.00	$ 35,000
Groundwater Well					
	Groundwater Well & Controls	3	LS	$ 600,000.00	$ 1,800,000
	(includes drilling, site improvements, & TCEQ				
	approved testing/sampling)				
Pump Stations					
	Booster Pump Station (100,000 GST)	3	LS	$ 300,000.00	$ 900,000
	(includes GST/Service Pumps/Pressure Tanks)				
Chlorination/Chloramines					
	Liquid Feed Chlorination	3	LS	$ 15,000.00	$ 45,000
	Liquid Feed Ammonia (liquid ammonium sulfate	3	LS	$ 15,000.00	$ 45,000
Appurtenances					
	6" Gate Valves	9	EA	$ 1,250.00	$ 11,250
	Major Water Line Tie-Ins (to exist. system)	3	EA	$ 2,000.00	$ 6,000
	Well meters	3	EA	$ 5,000.00	$ 15,000
				Subtotal	$ 2,857,250
				Contingency 15%	$ 428,588
				Estimated Construction Cost	$ 3,285,838
				Engineering - Planning, Final Design, Construction Management (12%)	$ 410,730
				Surveying (5%)	$ 164,292
				Geotechnical Engineering(3%)	$ 98,575
				On-Site Construction Inspection & Contract Admin (7%)	$ 230,009
				Total Estimated Construction & Engineering Related Costs	$ 4,189,443
				Right-of-Way, Easement & Land Acquisition	$ 9,757
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 98,575
				TOTAL PROJECT COSTS	$ 4,297,775
				PROJECT PLANNING COSTS	$ 4,300,000

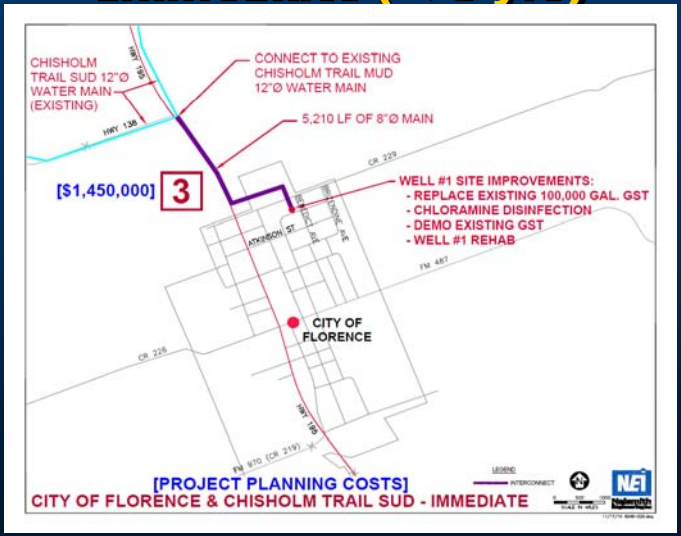
City of Florence - Immediate (< 5 yrs)

3 - Connect with Chisholm Trail SUD*:

- 5,210 LF of 8-inch water main
- 100,000 gallon Ground Storage Tank
- Water System conversion to Chloramines
- Existing well rehab

* - This will provide access to 500 ac-ft/yr of water that is currently contracted through Chisholm Trail SUD.

City of Florence - Immediate (< 5 yrs)



3 – City of Florence and Chisholm Trail Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	8" DR-18 C-900 WL w/ ESC & Trench Safety	5,210	LF	$ 35.00	$ 182,350
Pump Stations/Interconnect					
	Booster Pump Station & Controls	1	LS	$ 660,000.00	$ 660,000
	(Includes meter, SCADA, reveiving tank, control valves, Well No. 1 Replacement/Plug				
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfat	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ WTP Tie-In)	1	EA	$ 50,000.00	$ 50,000
				Subtotal	$ 936,350
				Contingency 15%	$ 140,453
				Estimated Construction Cost	$ 1,076,803
				Engineering - Planning, Final Design, Construction Management (12%)	$ 134,600
				Surveying (5%)	$ 53,840
				Geotechnical Engineering(3%)	$ 32,304
				On-Site Construction Inspection & Contract Admin (7%)	$ 75,376
				Total Estimated Construction & Engineering Related Costs	$ 1,372,923
				Right-of-Way, Easement & Land Acquisition	$ 23,921
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 32,304
				TOTAL PROJECT COSTS	$ 1,429,148
				PROJECT PLANNING COSTS	$ 1,450,000

4 – JSWSC and Sonterra MUD Emergency Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Interconnections					
	Emergency Interconnection	1	LS	$ 40,000.00	$ 40,000
				Subtotal	$ 40,000
				Contingency 15%	
				Estimated Construction Cost	
				Engineering - Planning, Final Design, Construction Management (12%)	
				Surveying (5%)	
				Geotechnical Engineering(3%)	
				On-Site Construction Inspection & Contract Admin (7%)	
				Total Estimated Construction & Engineering Related Costs	
				Right-of-Way, Easement & Land Acquisition	
				Bond Counsel & Financial Advisor Costs (3% typical)	
				TOTAL PROJECT COSTS	$ 40,000
				PROJECT PLANNING COSTS	$ 40,000

Jarrell Schwertner - WSC – Immediate (< 5 yrs)

2 - Supply from CL&L MUD No. 1

4 - Emergency Interconnect w/ Sonterra MUD

5 - Permanent Interconnect w/ Sonterra MUD

6 - Permanent Interconnect w/ Jonah WS (CR 311 Tie-in)

7 - Permanent Interconnect w/ Jonah WS (FM 1105 Tie-in)

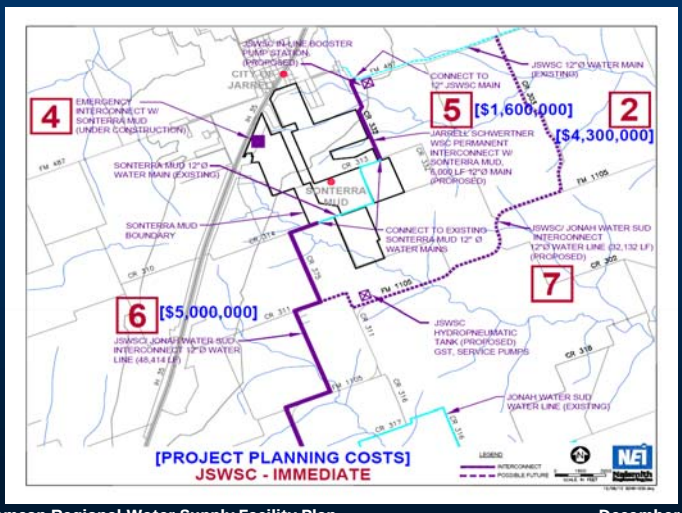
Jarrell Schwertner - WSC – Immediate (< 5 yrs)

8 - Connect to Central Texas WSC*

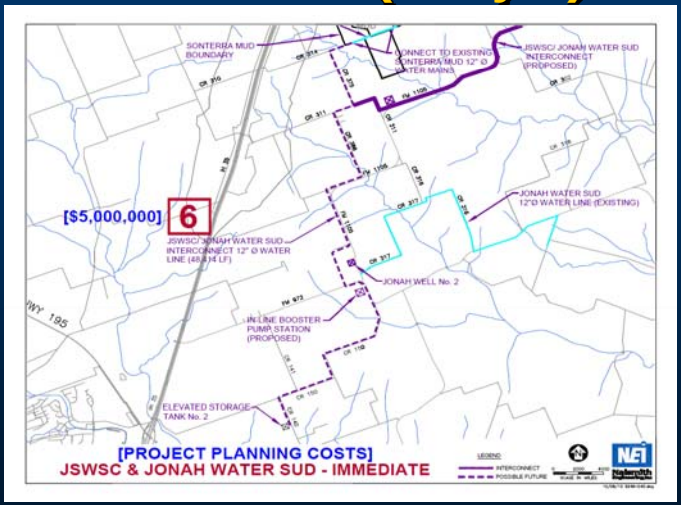
8a - Connect Prairie Dell & CR 487

*** - This will provide access to 1,000 ac-ft/yr of water that is currently contracted through BRA.**

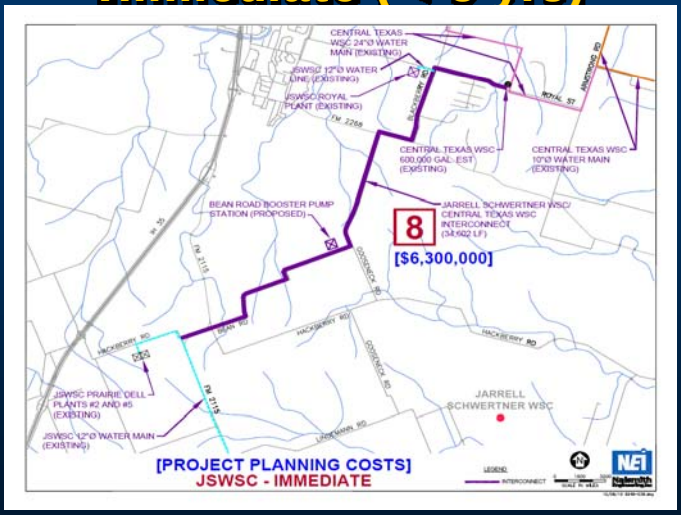
Jarrell Schwertner - WSC – Immediate (< 5 yrs)



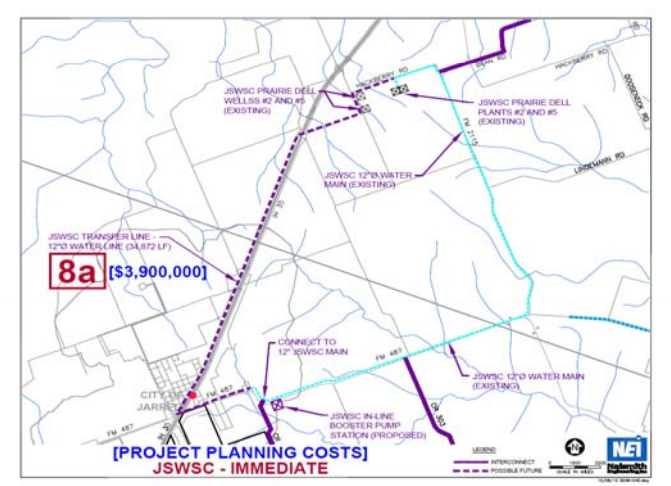
Jarrell Schwertner - WSC – Immediate (< 5 yrs)



Jarrell Schwertner - WSC – Immediate (< 5 yrs)



Jarrell Schwertner - WSC – Immediate (< 5 yrs)



5 – JSWSC and Sonterra MUD Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	6,000	LF	$ 45.00	$ 270,000
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Interconnections					
	Interconnection w/ meters & backflow preventi	1	LS	$ 120,000.00	$ 120,000
Appurtenances					
	12" Gate Valves	8	EA	$ 2,500.00	$ 20,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Minor Water Line Tie-Ins (to exist. system)	2	EA	$ 1,000.00	$ 2,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 1,022,000
				Contingency 15%	$ 153,300
				Estimated Construction Cost	$ 1,175,300
				Engineering - Planning, Final Design, Construction Management (12%)	$ 146,913
				Surveying (5%)	$ 58,765
				Geotechnical Engineering(3%)	$ 35,259
				On-Site Construction Inspection & Contract Admin (7%)	$ 82,271
				Total Estimated Construction & Engineering Related Costs	$ 1,498,508
				Right-of-Way, Easement & Land Acquisition	$ 27,548
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 35,259
				TOTAL PROJECT COSTS	$ 1,561,315
				PROJECT PLANNING COSTS	$ 1,600,000

6 – Jonah Water SUD CR 311 Tie In

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	48,414	LF	$ 45.00	$ 2,178,630
Bores & Casing					
	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
	30" Steel Casing Pipe & Bore		LF	$ 400.00	$ -
	36" Steel Casing Pipe & Bore		LF	$ 450.00	$ -
	48" Steel Casing Pipe & Bore		LF	$ 600.00	$ -
	60" Steel Casing Pipe & Bore		LF	$ 750.00	$ -
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Interconnections					
	Interconnection w/ meters & backflow preventer	2	LS	$ 120,000.00	$ 240,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	12" Gate Valves	20	EA	$ 2,500.00	$ 50,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	4" air release valve		EA	$ 10,000.00	$ -
	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 3,158,630
				Contingency 15%	$ 473,795
				Estimated Construction Cost	$ 3,632,425
				Engineering - Planning, Final Design, Construction Management (12%)	$ 454,053
				Surveying (5%)	$ 181,621
				Geotechnical Engineering(3%)	$ 108,973
				On-Site Construction Inspection & Contract Admin (7%)	$ 254,270
				Total Estimated Construction & Engineering Related Costs	$ 4,631,341
				Right-of-Way, Easement & Land Acquisition	$ 222,287
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 108,973
				TOTAL PROJECT COSTS	$ 4,962,600
				PROJECT PLANNING COSTS	$ 5,000,000

7 – JSWSC and Jonah Water SUD Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	32,132	LF	$ 45.00	$ 1,445,940
Bores & Casing					
	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Interconnections					
	Interconnection w/ meters & backflow preventer	1	LS	$ 120,000.00	$ 120,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	12" Gate Valves	15	EA	$ 2,500.00	$ 37,500
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	4" air release valve		EA	$ 10,000.00	$ -
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 2,289,440
				Contingency 15%	$ 343,416
				Estimated Construction Cost	$ 2,632,856
				Engineering - Planning, Final Design, Construction Management (12%)	$ 329,107
				Surveying (5%)	$ 131,643
				Geotechnical Engineering(3%)	$ 78,986
				On-Site Construction Inspection & Contract Admin (7%)	$ 184,300
				Total Estimated Construction & Engineering Related Costs	$ 3,356,891
				Right-of-Way, Easement & Land Acquisition	$ 147,530
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 78,986
				TOTAL PROJECT COSTS	$ 3,583,407
				PROJECT PLANNING COSTS	$ 3,600,000

8 – JSWSC and CTWSC Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	18" DR-18 C-900 WL w/ ESC & Trench Safety	34,602	LF	$ 75.00	$ 2,595,150
Bores & Casing					
	30" Steel Casing Pipe & Bore	160	LF	$ 400.00	$ 64,000
Pump Stations					
	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Appurtenances					
	18" Gate Valves	16	EA	$ 8,000.00	$ 128,000
	4" air release valve	2	EA	$ 10,000.00	$ 20,000
	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
	Major Water Line Tie-Ins (to exist. system)	4	EA	$ 2,000.00	$ 8,000
	New master meter (@ WTP Tie-In)	1	EA	$ 15,000.00	$ 15,000
				Subtotal	$ 4,074,150
				Contingency 15%	$ 611,123
				Estimated Construction Cost	$ 4,685,273
				Engineering - Planning, Final Design, Construction Management (12%)	$ 585,659
				Surveying (5%)	$ 234,264
				Geotechnical Engineering(3%)	$ 140,558
				On-Site Construction Inspection & Contract Admin (7%)	$ 327,969
				Total Estimated Construction & Engineering Related Costs	$ 5,973,722
				Right-of-Way, Easement & Land Acquisition	$ 158,871
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 140,558
				TOTAL PROJECT COSTS	$ 6,273,151
				PROJECT PLANNING COSTS	$ 6,300,000

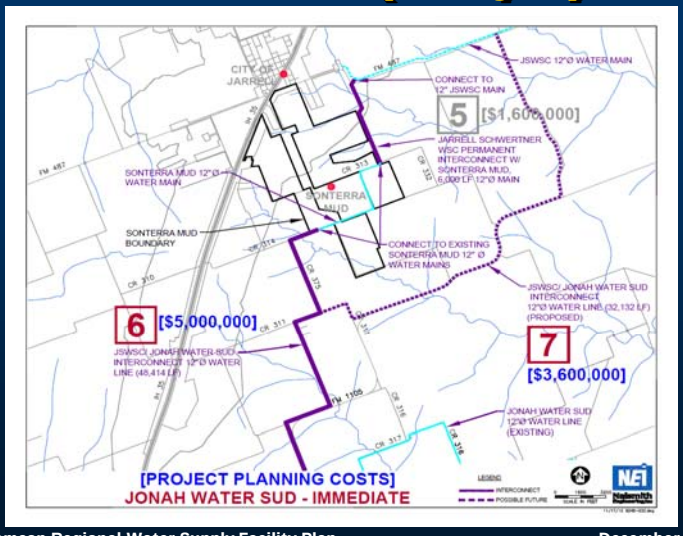
8a – Prairie Dell/FM 487 Interconnect

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	34,872	LF	$ 45.00	$ 1,569,240
Bores & Casing					
	20" Steel Casing Pipe & Bore	800	LF	$ 300.00	$ 240,000
Pump Stations					
	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
Appurtenances					
	12" Gate Valves	10	EA	$ 2,500.00	$ 25,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 2,454,240
				Contingency 15%	$ 368,136
				Estimated Construction Cost	$ 2,822,376
				Engineering - Planning, Final Design, Construction Management (12%)	$ 352,797
				Surveying (5%)	$ 141,119
				Geotechnical Engineering(3%)	$ 84,671
				On-Site Construction Inspection & Contract Admin (7%)	$ 197,566
				Total Estimated Construction & Engineering Related Costs	$ 3,598,529
				Right-of-Way, Easement & Land Acquisition	$ 160,110
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 107,956
				TOTAL PROJECT COSTS	$ 3,866,595
				PROJECT PLANNING COSTS	$ 3,900,000

Jonah Water SUD - Immediate (< 5 yrs)

6 - Permanent Interconnect w/ JSWSC
(via Sonterra MUD)

Jonah Water SUD - Immediate (< 5 yrs)



Sonterra MUD - Immediate (< 5 yrs)

4 - Emergency Interconnect w/ JSWSC

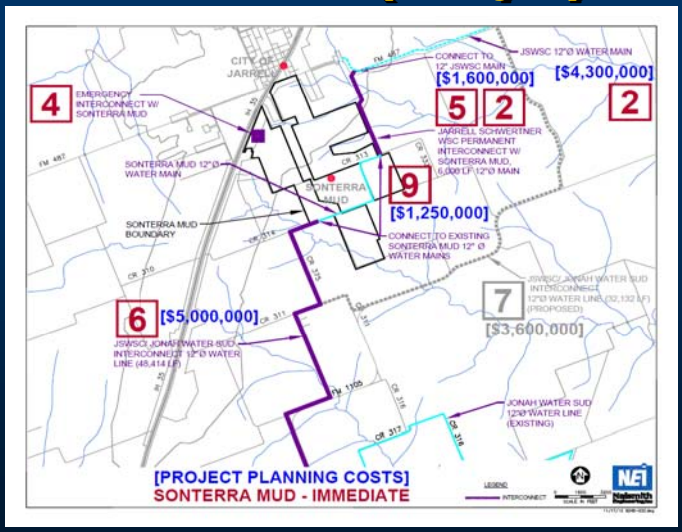
5 - Permanent Interconnect w/ JSWSC

6 - Permanent Interconnect w/ Jonah Water SUD

(allows pass through from JSWSC to Jonah WS)

9 - New Water Well (250 gpm)

Sonterra MUD - Immediate (< 5 yrs)



Bell / Williamson Regional Water Supply Facility Plan December 16, 2010

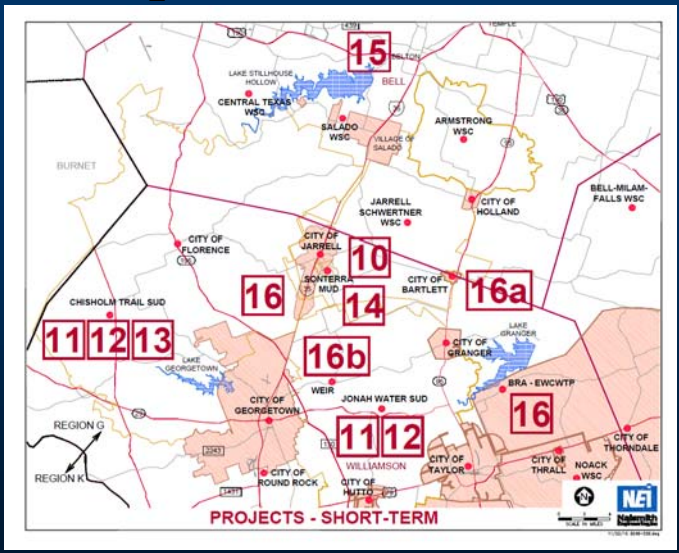
9 – Sonterra MUD Groundwater Well

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$ 30.00	$ 150,000
Groundwater Well					
	Groundwater Well & Controls	1	LS	$ 600,000.00	$ 600,000
	(includes drilling, site improvements, & TCEQ approved testing/sampling)				
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 15,000.00	$ 15,000
Appurtenances					
	6" Gate Valves	8	EA	$ 1,250.00	$ 10,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 810,000
				Contingency 15%	$ 121,500
				Estimated Construction Cost	$ 931,500
				Engineering - Planning, Final Design, Construction Management (12%)	$ 116,438
				Surveying (5%)	$ 46,575
				Geotechnical Engineering(3%)	$ 27,945
				On-Site Construction Inspection & Contract Admin (7%)	$ 65,205
				Total Estimated Construction & Engineering Related Costs	$ 1,187,663
				Right-of-Way, Easement & Land Acquisition	$ 24,105
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 27,945
				TOTAL PROJECT COSTS	$ 1,239,712
				PROJECT PLANNING COSTS	$ 1,250,000

Projects: Short-Term (< 10 yrs)

- **CL&L MUD #1 - 10**
  (ground storage & service pumps)
- **Chisholm Trail SUD - 11, 12, 13**
  (new WTP, Interconnect w/ Jonah Water SUD, Ronald Reagan – Ph. 4 water line)
- **Jonah Water SUD - 11, 12**
- **Sonterra MUD - 14**
  (elevated storage tank)
- **BRA - 15, 16**
  (L. Belton / L. Stillhouse Hollow Interconnect, L. Granger Augment.)

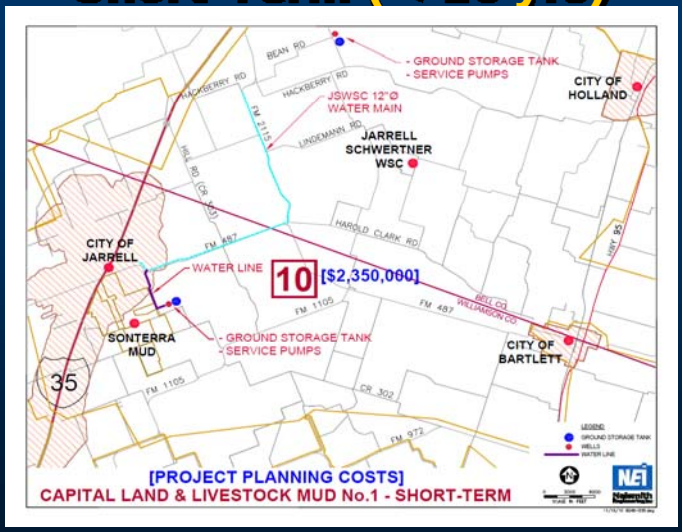
Projects: Short-Term



Capital Land & Livestock MUD #1 - Short-Term (< 10 yrs)

10 - 300,000 gallon GST & Service Pumps

Capital Land & Livestock MUD #1 - Short-Term (< 10 yrs)



10 – CL&L MUD No. 1 Booster Pump Station

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$ 30.00	$ 150,000
Pump Stations					
	Booster Pump Station - 900 gpm	2	LS	$ 500,000.00	$ 1,000,000
	Booster Pump Station - 1,500 gpm		LS	$ 800,000.00	$ -
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Ground/Elevated Storage Tanks					
	GST - 300,000 gal	1	LS	$ 300,000.00	$ 300,000
Appurtenances					
	6" Gate Valves	4	EA	$ 1,250.00	$ 5,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ Tie-In)	2	EA	$ 10,000.00	$ 20,000
				Subtotal	$ 1,525,000
				Contingency 15%	$ 228,750
				Estimated Construction Cost	$ 1,753,750
				Engineering - Planning, Final Design, Construction Management (12%)	$ 219,219
				Surveying (5%)	$ 87,688
				Geotechnical Engineering(3%)	$ 52,613
				On-Site Construction Inspection & Contract Admin (7%)	$ 122,763
				Total Estimated Construction & Engineering Related Costs	$ 2,236,031
				Right-of-Way, Easement & Land Acquisition	$ 24,105
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 52,613
				TOTAL PROJECT COSTS	$ 2,312,748
				PROJECT PLANNING COSTS	$ 2,350,000

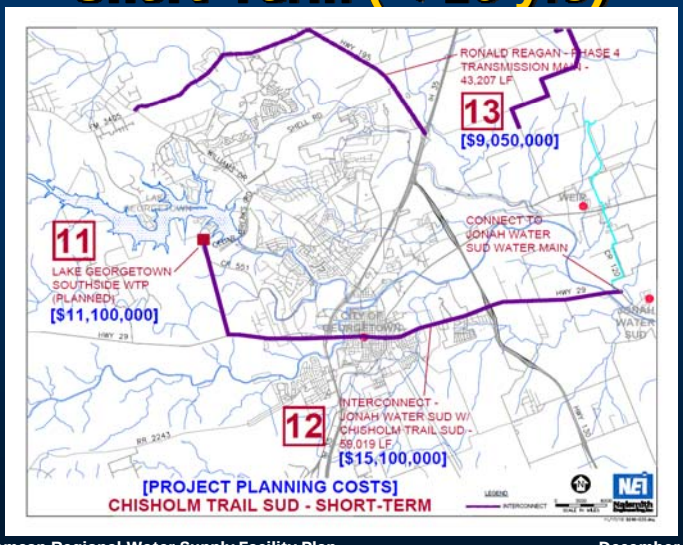
Chisholm Trail SUD - Short-Term (< 10 yrs)

11 - Construct Lake Georgetown Southside WTP
(partner with Jonah Water SUD)

12 - Permanent Interconnect w/ Jonah Water SUD

13 - Ronald Reagan Phase 4 Transmission Main

Chisholm Trail SUD - Short-Term (< 10 yrs)



11 – Chisholm Trail SUD Lake GT WTP

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	4.0 MGD Membrane WTP	1	LS	$ 3,000,000.00	$ 3,000,000
	Ground Storage - 1,000,000 gal	1	LS	$ 1,000,000.00	$ 1,000,000
	Service Pumps & Bldg	1	LS	$ 400,000.00	$ 400,000
	Pressure Tank - 5,000 gallons	1	LS	$ 50,000.00	$ 50,000
	Disinfection / Chemicals	1	LS	$ 350,000.00	$ 350,000
	Electrical	1	LS	$ 250,000.00	$ 250,000
	Site Improvements	1	LS	$ 200,000.00	$ 200,000
	Raw Water Pump Station	1	LS	$ 1,000,000.00	$ 1,000,000
	Sludge Processing & Storage	1	LS	$ 500,000.00	$ 500,000
	Office Bldg	1	LS	$ 250,000.00	$ 250,000
	SWPPP	1	LS	$ 50,000.00	$ 50,000
				Subtotal	$ 7,050,000
				Contingency 15%	$ 1,057,500
				Estimated Construction Cost	$ 8,107,500
				Engineering - Planning, Final Design, Construction Management (12%)	$ 1,013,438
				Surveying (5%)	$ 405,375
				Geotechnical Engineering(3%)	$ 243,225
				On-Site Construction Inspection & Contract Admin (7%)	$ 567,525
				Total Estimated Construction & Engineering Related Costs	$ 10,337,063
				Right-of-Way, Easement & Land Acquisition	$ 500,000
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 243,225
				TOTAL PROJECT COSTS	$ 11,080,288
				PROJECT PLANNING COSTS	$ 11,100,000

12 – Chisholm Trail SUD and Jonah Water SUD

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Urban Area					
	18" DR-25 C-905 WL w/ ESC & Trench Safety	33,019	LF	$ 105.00	$ 3,466,995
	18" DR-25 C-905 WL (through Georgetown)	26,000	LF	$ 150.00	$ 3,900,000
Bores & Casing					
	30" Steel Casing Pipe & Bore	1,000	LF	$ 400.00	$ 400,000
Pump Stations					
	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 60,000.00	$ 60,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 60,000.00	$ 60,000
Ground/Elevated Storage Tanks					
	GST - 500,000 gal	1	LS	$ 500,000.00	$ 500,000
Appurtenances					
	18" Gate Valves	30	EA	$ 8,000.00	$ 240,000
	24" Gate Valves		EA	$ 15,000.00	$ -
	4" air release valve	4	EA	$ 10,000.00	$ 40,000
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 5,000.00	$ 10,000
	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 9,886,995
				Contingency 15%	$ 1,483,049
				Estimated Construction Cost	$ 11,370,044
				Engineering - Planning, Final Design, Construction Management (12%)	$ 1,421,256
				Surveying (5%)	$ 568,502
				Geotechnical Engineering(3%)	$ 341,101
				On-Site Construction Inspection & Contract Admin (7%)	$ 795,903
				Total Estimated Construction & Engineering Related Costs	$ 14,496,806
				Right-of-Way, Easement & Land Acquisition	$ 272,126
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 341,101
				TOTAL PROJECT COSTS	$ 15,110,034
				PROJECT PLANNING COSTS	$ 15,100,000

13 – Chisholm Trail SUD Ronald Reagan Phase 4

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	43,207	LF	$ 100.00	$ 4,320,700
Bores & Casing					
	30" Steel Casing Pipe & Bore	400	LF	$ 400.00	$ 160,000
Pump Stations					
	Booster Pump Station - 3,000 gpm	1	LS	$ 1,000,000.00	$ 1,000,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 30,000.00	$ 30,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 30,000.00	$ 30,000
Appurtenances					
	24" Gate Valves	22	EA	$ 15,000.00	$ 330,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000
				Subtotal	$ 5,890,700
				Contingency 15%	$ 883,605
				Estimated Construction Cost	$ 6,774,305
				Engineering - Planning, Final Design, Construction Management (12%)	$ 846,788
				Surveying (5%)	$ 338,715
				Geotechnical Engineering(3%)	$ 203,229
				On-Site Construction Inspection & Contract Admin (7%)	$ 474,201
				Total Estimated Construction & Engineering Related Costs	$ 8,637,239
				Right-of-Way, Easement & Land Acquisition	$ 199,527
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 203,229
				TOTAL PROJECT COSTS	$ 9,039,995
				PROJECT PLANNING COSTS	$ 9,050,000

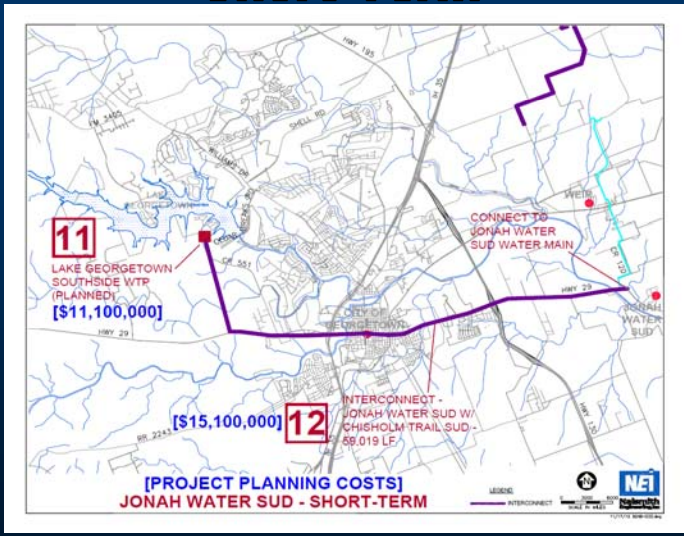
Jonah Water SUD - Short-Term

11 - Construct Lake Georgetown Southside WTP
(partner w/ Chisholm Trail SUD)

12 - Permanent Interconnect w/ Chisholm Trail SUD

[These projects will allow access to 2,439 ac-ft of existing contracted raw water.]

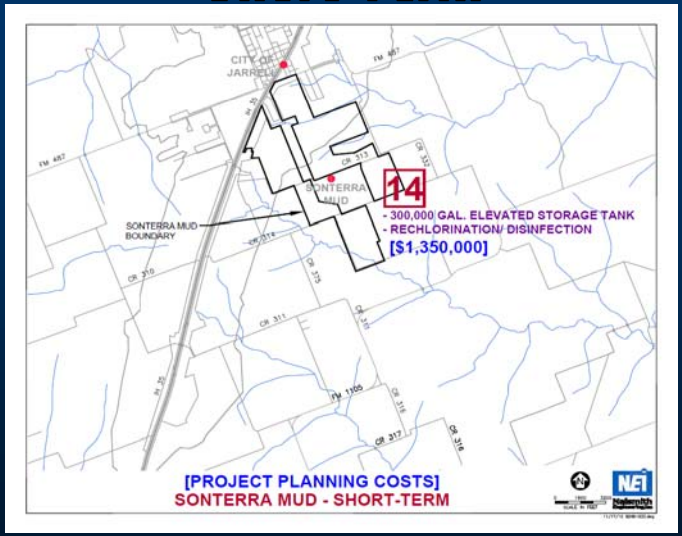
Jonah Water SUD - Short-Term



Sonterra MUD - Short-Term

14 - 300,000 Elevated Storage Tank

Sonterra MUD - Short-Term



14 – Sonterra MUD Elevated Storage Tank

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$ 45.00	$ 22,500
Constr. - Urban Area					
	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$ 65.00	$ 32,500
Bores & Casing					
	20" Steel Casing Pipe & Bore	80	LF	$ 300.00	$ 24,000
Chlorination/Chloramines					
	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
	Liquid Feed Ammonia (liquid ammonium sulfate	1	LS	$ 20,000.00	$ 20,000
Ground/Elevated Storage Tanks					
	EST - 300,000 gal	1	LS	$ 750,000.00	$ 750,000
Appurtenances					
	12" Gate Valves	6	EA	$ 2,500.00	$ 15,000
	2" air release valve	1	EA	$ 3,000.00	$ 3,000
	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
				Subtotal	$ 891,000
				Contingency 15%	$ 133,650
				Estimated Construction Cost	$ 1,024,650
				Engineering - Planning, Final Design, Construction Management (12%)	$ 128,081
				Surveying (5%)	$ 51,233
				Geotechnical Engineering(3%)	$ 30,740
				On-Site Construction Inspection & Contract Admin (7%)	$ 71,726
				Total Estimated Construction & Engineering Related Costs	$ 1,306,429
				Right-of-Way, Easement & Land Acquisition	$ 5,739
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 30,740
				TOTAL PROJECT COSTS	$ 1,342,907
				PROJECT PLANNING COSTS	$ 1,350,000

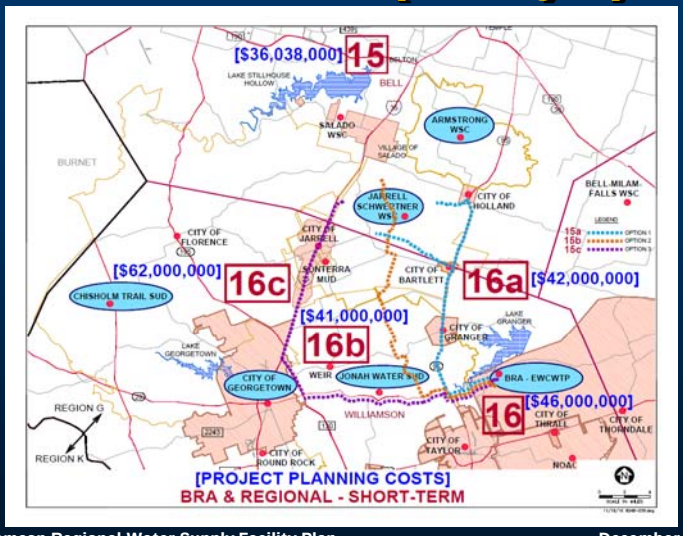
Brazos River Authority & Regional – Short-Term (< 10 yrs)

15 - Interconnection of Lake Belton & Lake Stillhouse Hollow
(project is currently planned)

16 - Interim Supply from Lake Granger WTP
(using Williamson County groundwater wells)

16a, 16b, 16c - Regional Transmission Mains from L. Granger WTP

Brazos River Authority & Regional – Short-Term (< 10 yrs)



Bell / Williamson Regional Water Supply Facility Plan December 16, 2010

15 – Brazos River Authority Lake Belton Lake Stillhouse Hollow Connection

2011 Region G Water Plan Cost: $36,038,000

16 – Brazos River Authority Lake Granger Supply

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	8" DR-18 C-900 WL w/ ESC & Trench Safety	30,000	LF	$ 35.00	$ 1,050,000
	18" DR-25 C-905 WL w/ ESC & Trench Safety	10,000	LF	$ 75.00	$ 750,000
Groundwater Well					
	Test Wells & Evaluation	2	LS	$ 300,000.00	$ 600,000
	Groundwater Well	6	LS	$ 750,000.00	$ 4,500,000
	(includes drilling, site improvements, & TCEQ approved testing/sampling)				
Pump Stations					
	Booster Pump Station - 5,000 gpm	1	LS	$ 3,000,000.00	$ 3,000,000
Treatment					
	Cooling Towers	1	LS	$ 2,000,000.00	$ 2,000,000
	Dissolved Solids	1	LS	$ 7,200,000.00	$ 7,200,000
Chlorination/Chloramines					
	Chloramine Disinfection	1	LS	$ 250,000.00	$ 250,000
Ground/Elevated Storage Tanks					
	GST - 3,600,000 gal	1	LS	$ 3,600,000.00	$ 3,600,000
	GST - 7,200,000 gal	1	LS	$ 7,200,000.00	$ 7,200,000
Appurtenances					
	8" Gate Valves	30	EA	$ 1,500.00	$ 45,000
	18" Gate Valves	10	EA	$ 8,000.00	$ 80,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Master meter (@ Tie-In)	1	EA	$ 15,000.00	$ 15,000
	Well Meters	6	EA	$ 3,000.00	$ 18,000
				Subtotal	$ 30,314,000
				Contingency 15%	$ 4,547,100
				Estimated Construction Cost	$ 34,861,100
				Engineering - Planning, Final Design, Construction Management (12%)	$ 4,357,638
				Surveying (5%)	$ 1,743,055
				Geotechnical Engineering(3%)	$ 1,045,833
				On-Site Construction Inspection & Contract Admin (7%)	$ 2,440,277
				Total Estimated Construction & Engineering Related Costs	$ 44,447,903
				Right-of-Way, Easement & Land Acquisition	$ 204,316
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 1,045,833
				TOTAL PROJECT COSTS	$ 45,698,051
				PROJECT PLANNING COSTS	$ 46,000,000

16a – Brazos River Authority Lake Granger

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	16" DR-25 C-905 WL w/ ESC & Trench Safety	58,198	LF	$ 65.00	$ 3,782,870
	24" DR-25 C-905 WL w/ ESC & Trench Safety	99,877	LF	$ 100.00	$ 9,987,700
Constr. - Urban Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	12,000	LF	$ 150.00	$ 1,800,000
Bores & Casing					
	20" Steel Casing Pipe & Bore	200	LF	$ 300.00	$ 60,000
	36" Steel Casing Pipe & Bore	1,000	LF	$ 450.00	$ 450,000
Pump Stations					
	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
	Circleville - Pump Station - (1,200 HP)	1	LS	$ 3,100,000.00	$ 3,100,000
	Bartlett - Pump Station - (375 HP)	1	LS	$ 1,700,000.00	$ 1,700,000
	Holland - Pump Station - (370 HP)	1	LS	$ 1,700,000.00	$ 1,700,000
Chlorination/Chloramines					
	Chloramine Disinfection	4	LS	$ 80,000.00	$ 320,000
Ground/Elevated Storage Tanks					
	GST - 300,000 gal	2	LS	$ 300,000.00	$ 600,000
	GST - 500,000 gal	2	LS	$ 500,000.00	$ 1,000,000
Appurtenances					
	16" Gate Valves	20	EA	$ 6,000.00	$ 120,000
	24" Gate Valves	68	EA	$ 15,000.00	$ 1,020,450
	4" air release valve	17	EA	$ 10,000.00	$ 170,075
	Master meter (@ Tie-In)	4	EA	$ 15,000.00	$ 60,000
				Subtotal	$ 27,271,095
				Contingency 15%	$ 4,090,664
				Estimated Construction Cost	$ 31,361,759
				Engineering - Planning, Final Design, Construction Management (12%)	$ 3,920,220
				Surveying (5%)	$ 1,568,088
				Geotechnical Engineering(3%)	$ 940,853
				On-Site Construction Inspection & Contract Admin (7%)	$ 2,195,323
				Total Estimated Construction & Engineering Related Costs	$ 39,986,243
				Right-of-Way, Easement & Land Acquisition	$ 900,253
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 940,853
				TOTAL PROJECT COSTS	$ 41,827,348
				PROJECT PLANNING COSTS	$ 42,000,000

16b – Brazos River Authority Lake Granger

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	156,414	LF	$ 100.00	$ 15,641,400
Bores & Casing					
	36" Steel Casing Pipe & Bore	500	LF	$ 450.00	$ 225,000
Pump Stations					
	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
	Circleville - Pump Station - (1,100 HP)	1	LS	$ 3,000,000.00	$ 3,000,000
	Mid-Way - Pump Station - (1,300 HP)	1	LS	$ 3,300,000.00	$ 3,300,000
Chlorination/Chloramines					
	Chloramine Disinfection	3	LS	$ 80,000.00	$ 240,000
Ground/Elevated Storage Tanks					
	GST - 500,000 gal	3	LS	$ 500,000.00	$ 1,500,000
Appurtenances					
	24" Gate Valves	63	EA	$ 15,000.00	$ 938,484
	4" air release valve	12	EA	$ 10,000.00	$ 120,000
	Master meter (@ Tie-In)	3	EA	$ 15,000.00	$ 45,000
				Subtotal	$ 26,409,884
				Contingency 15%	$ 3,961,483
				Estimated Construction Cost	$ 30,371,367
				Engineering - Planning, Final Design, Construction Management (12%)	$ 3,796,421
				Surveying (5%)	$ 1,518,568
				Geotechnical Engineering(3%)	$ 911,141
				On-Site Construction Inspection & Contract Admin (7%)	$ 2,125,996
				Total Estimated Construction & Engineering Related Costs	$ 38,723,492
				Right-of-Way, Easement & Land Acquisition	$ 745,702
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 1,161,705
				TOTAL PROJECT COSTS	$ 40,630,900
				PROJECT PLANNING COSTS	$ 41,000,000

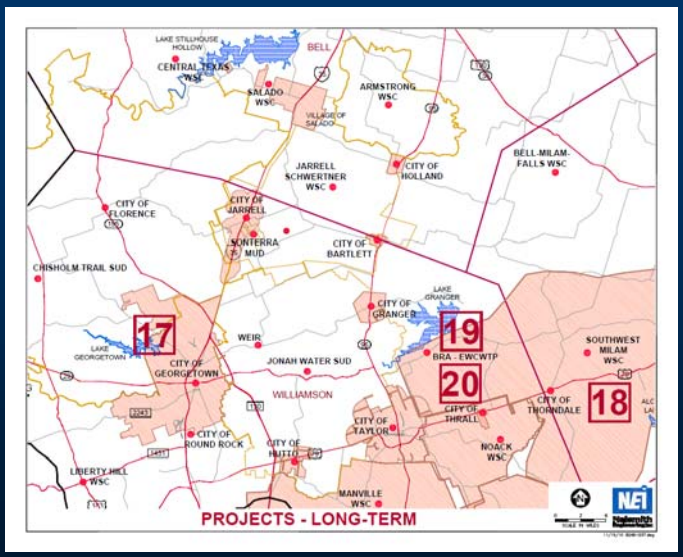
16c – Brazos River Authority Lake Granger

Item	Improvement Description	Quantity	Unit	Unit Price	Total Cost
COST SUMMARY					
Constr. - Rural Area					
	24" DR-25 C-905 WL w/ ESC & Trench Safety	87,162	LF	$ 100.00	$ 8,716,200
Constr. - Urban Area					
	24" DR-25 C-905 WL along TX 130	18,091	LF	$ 180.00	$ 3,256,380
	24" DR-25 C-905 WL along I-35	76,665	LF	$ 180.00	$ 13,799,700
Bores & Casing					
	36" Steel Casing Pipe & Bore	2,000	LF	$ 450.00	$ 900,000
Pump Stations					
	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
	Circleville - Pump Station - (1,050 HP)	1	LS	$ 2,950,000.00	$ 2,950,000
	Bartlett - Pump Station - (665 HP)	1	LS	$ 2,250,000.00	$ 2,250,000
	Holland - Pump Station - (1,375 HP)	1	LS	$ 3,350,000.00	$ 3,350,000
Chlorination/Chloramines					
	Chloramine Disinfection	4	LS	$ 80,000.00	$ 320,000
Ground/Elevated Storage Tanks					
	GST - 500,000 gal	4	LS	$ 500,000.00	$ 2,000,000
Appurtenances					
	24" Gate Valves	73	EA	$ 15,000.00	$ 1,091,508
	4" air release valve	18	EA	$ 10,000.00	$ 181,918
	Master meter (@ Tie-In)	4	EA	$ 15,000.00	$ 60,000
				Subtotal	$ 40,275,706
				Contingency 15%	$ 6,041,356
				Estimated Construction Cost	$ 46,317,062
				Engineering - Planning, Final Design, Construction Management (12%)	$ 5,789,633
				Surveying (5%)	$ 2,315,853
				Geotechnical Engineering(3%)	$ 1,389,512
				On-Site Construction Inspection & Contract Admin (7%)	$ 3,242,194
				Total Estimated Construction & Engineering Related Costs	$ 59,054,254
				Right-of-Way, Easement & Land Acquisition	$ 1,561,304
				Bond Counsel & Financial Advisor Costs (3% typical)	$ 1,389,512
				TOTAL PROJECT COSTS	$ 62,005,070
				PROJECT PLANNING COSTS	$ 62,000,000

Projects: Long-Term (> 10 yrs)

- Chisholm Trail SUD - 17
- BRA / Regional - 18, 19
- Regional - 20

Projects: Long-Term (> 10 yrs)



Chisholm Trail SUD - Long-Term (> 10 yrs)

17 - Expand Lake Georgetown Northside WTP
(partner with City of Georgetown)

Brazos River Authority/Regional – Long-Term (> 10 yrs)

18 - Carrizo-Wilcox Aquifer Development

19 - Expand Lake Granger WTP

Regional – Long-Term (> 10 yrs)

20 - Aquifer Storage & Recovery

The following is from the 2011 Brazos G Regional Water Plan:

"As an alternative or complement to using blended Trinity Aquifer and Lake Granger water, the Trinity Aquifer could be used for aquifer storage and recover (ASR). Treated surface water could be stored in the Trinity Aquifer during times of low demand or high flows and recovered for use at a later date. Pending further study ASR is not included as an option in Phase 1 at this time."

- TWDB staff will provide input to the project team in the coming weeks regarding ASR in the eastern Williamson County area.

Funding Sources

- The Following Funding Sources Were Analyzed for the Proposed Projects:
  - United States Department of Agriculture-Rural Development
  - State Participation Program
  - Development Fund (D-Fund 2)
  - Water Infrastructure Fund (WIF)
  - State Revolving Fund

Funding Sources

<u>United States Department of Agriculture-Rural Development (RD):</u>

- Eligible Applicants:
  - Political Subdivisions
  - Water Supply Corporations
- Types of Projects:
  - Water and Wastewater Projects

Funding Sources

- **Repayment Terms:**
  - **Max. Term is 40 Years;**
  - **Interest Rate are set by USDA and based on applicants income.**

USDA

Year	Principal	Interest (4%)	Total	Usage/ Year (MG)	Cost/ 1,000
2011	$75,000.00	$108,500.00	$183,500.00	91.25	$2.01
2012	$75,000.00	$115,500.00	$190,500.00	95.81	$1.99
2013	$75,000.00	$112,500.00	$187,500.00	100.60	$1.86
2014	$75,000.00	$109,500.00	$184,500.00	105.63	$1.75
2015	$75,000.00	$106,500.00	$181,500.00	110.91	$1.64
2016	$75,000.00	$103,500.00	$178,500.00	116.46	$1.53
2017	$75,000.00	$100,500.00	$175,500.00	122.28	$1.44
2018	$75,000.00	$97,500.00	$172,500.00	128.40	$1.34
2019	$75,000.00	$94,500.00	$169,500.00	134.82	$1.26
2020	$75,000.00	$91,500.00	$166,500.00	141.56	$1.18
2021	$75,000.00	$88,500.00	$163,500.00	148.64	$1.10
2022	$75,000.00	$85,500.00	$160,500.00	156.07	$1.03
2023	$75,000.00	$82,500.00	$157,500.00	163.87	$0.96
2024	$75,000.00	$79,500.00	$154,500.00	172.07	$0.90
2025	$75,000.00	$76,500.00	$151,500.00	180.67	$0.84
2026	$75,000.00	$73,500.00	$148,500.00	189.70	$0.78
2027	$75,000.00	$70,500.00	$145,500.00	199.19	$0.73
2028	$75,000.00	$67,500.00	$142,500.00	209.15	$0.68
2029	$75,000.00	$64,500.00	$139,500.00	219.60	$0.64
2030	$75,000.00	$61,500.00	$136,500.00	230.58	$0.59
2031	$75,000.00	$58,500.00	$133,500.00	242.11	$0.55
2032	$75,000.00	$55,500.00	$130,500.00	254.22	$0.51
2033	$75,000.00	$52,500.00	$127,500.00	266.93	$0.48
2034	$75,000.00	$49,500.00	$124,500.00	280.28	$0.44
2035	$75,000.00	$46,500.00	$121,500.00	294.29	$0.41
2036	$75,000.00	$43,500.00	$118,500.00	309.00	$0.38
2037	$75,000.00	$40,500.00	$115,500.00	324.46	$0.36
2038	$75,000.00	$37,500.00	$112,500.00	340.68	$0.33
2039	$75,000.00	$34,500.00	$109,500.00	357.71	$0.31
2040	$75,000.00	$31,500.00	$106,500.00	375.60	$0.28
2041	$75,000.00	$28,500.00	$103,500.00	394.38	$0.26
2042	$75,000.00	$25,500.00	$100,500.00	414.10	$0.24
2043	$75,000.00	$22,500.00	$97,500.00	434.80	$0.22
2044	$75,000.00	$19,500.00	$94,500.00	456.54	$0.21
2045	$75,000.00	$16,500.00	$91,500.00	479.37	$0.19
2046	$75,000.00	$13,500.00	$88,500.00	503.34	$0.18
2047	$75,000.00	$10,500.00	$85,500.00	528.50	$0.16
2048	$75,000.00	$7,500.00	$82,500.00	554.93	$0.15
2049	$75,000.00	$4,500.00	$79,500.00	582.67	$0.14
2050	$75,000.00	$1,500.00	$76,500.00	611.81	$0.13
	$3,000,000.00	$2,390,000.00	$5,390,000.00		

Funding Sources

State Participation Program:

- Eligible applicants are political subdivisions of the state, and Water Supply Corporations
- Intent of the program is to allow for optimization of regional projects
- Allows the TWDB to assume a temporary ownership interest in a regional project
- TWDB may acquire ownership interest in the water rights or an interest in the property and treatment and distribution works

Funding Sources

- Types of Projects:
  - New water supply projects
    - TWDB will fund up to 80% of the costs;
    - The applicant will finance at least 20% of the costs;
    - At least 20% of the total capacity of the proposed project will serve existing needs.

Funding Sources

- Other Regional Projects:
  - TWDB can fund up to 50% of costs;
  - Applicant will finance 50% of total project costs (Can be from other TWDB programs)
  - At least 50% of the total capacity of the proposed project will serve existing needs.

Funding Sources

- Repayment Terms:
  - Max. Term is 34 Years;
  - Interest Rate based on cost of funds to TWDB;
  - TWDB and applicant develop a Master Agreement defining the scope of the project;
  - TWDB will accept a pledge of tax and/or revenue pledge or contract revenue pledge.

State Participation

Year	Interest	Principal	Total	Interest	Principal	Deferred Interest	Usage/ Year (MG)	Cost/1,000 w/State Participation	Cost/1,000 w/o State Participation
2011	$ 95,197	$ 120,000	$ 215,197	$ -	$ -	$ 95,197	91.25	$ -	$ 2.36
2012	$ 96,810	$ 120,000	$ 216,810	$ -	$ -	$ 96,810	95.81	$ -	$ 2.26
2013	$ 92,661	$ 120,000	$ 212,661	$ 18,532	$ -	$ 74,129	100.60	$ 0.18	$ 2.11
2014	$ 88,512	$ 120,000	$ 208,512	$ 17,702	$ -	$ 70,810	105.63	$ 0.17	$ 1.97
2015	$ 84,363	$ 120,000	$ 204,363	$ 25,309	$ -	$ 59,054	110.91	$ 0.23	$ 1.84
2016	$ 80,214	$ 120,000	$ 200,214	$ 32,086	$ -	$ 48,128	116.46	$ 0.28	$ 1.72
2017	$ 76,065	$ 120,000	$ 196,065	$ 41,836	$ -	$ 34,229	122.28	$ 0.34	$ 1.60
2018	$ 71,916	$ 120,000	$ 191,916	$ 50,341	$ -	$ 21,575	128.40	$ 0.39	$ 1.49
2019	$ 67,767	$ 120,000	$ 187,767	$ 57,602	$ -	$ 10,165	134.82	$ 0.43	$ 1.39
2020	$ 63,618	$ 120,000	$ 183,618	$ 63,618	$ -	$ -	141.56	$ 0.45	$ 1.30
2021	$ 59,469	$ 120,000	$ 179,469	$ 59,469	$ -	$ -	148.64	$ 0.40	$ 1.21
2022	$ 55,320	$ 120,000	$ 175,320	$ 55,320	$ -	$ -	156.07	$ 0.35	$ 1.12
2023	$ 51,171	$ 120,000	$ 171,171	$ 124,042	$ -	$ (72,871)	163.87	$ 0.76	$ 1.04
2024	$ 47,022	$ 120,000	$ 167,022	$ 119,893	$ -	$ (72,871)	172.07	$ 0.70	$ 0.97
2025	$ 42,873	$ 120,000	$ 162,873	$ 115,744	$ -	$ (72,871)	180.67	$ 0.64	$ 0.90
2026	$ 38,724	$ 120,000	$ 158,724	$ 111,595	$ -	$ (72,871)	189.70	$ 0.59	$ 0.84
2027	$ 34,575	$ 120,000	$ 154,575	$ 107,446	$ -	$ (72,871)	199.19	$ 0.54	$ 0.78
2028	$ 30,426	$ 120,000	$ 150,426	$ 103,297	$ -	$ (72,871)	209.15	$ 0.49	$ 0.72
2029	$ 26,277	$ 120,000	$ 146,277	$ 99,148	$ -	$ (72,871)	219.60	$ 0.45	$ 0.67
2030	$ 22,128	$ 120,000	$ 142,128	$ 22,128	$ -		230.58	$ 0.10	$ 0.62
2031	$ 17,979	$ 120,000	$ 137,979	$ 17,979	$ 200,000		242.11	$ 0.90	$ 0.57
2032	$ 13,830	$ 120,000	$ 133,830	$ 13,380	$ 200,000		254.22	$ 0.84	$ 0.53
2033	$ 9,681	$ 120,000	$ 129,681	$ 9,681	$ 200,000		266.93	$ 0.79	$ 0.49
2034	$ 5,532	$ 120,000	$ 125,532	$ 5,532	$ 200,000		280.28	$ 0.73	$ 0.45
2035	$ 2,766	$ 120,000	$ 122,766	$ 2,766	$ 200,000		294.29	$ 0.69	$ 0.42
2036					$ 200,000		309.00	$ 0.65	$ -
2037					$ 200,000		324.46	$ 0.62	$ -
2038					$ 200,000		340.68	$ 0.59	$ -
2039					$ 200,000		357.71	$ 0.56	$ -
2040					$ 200,000		375.60	$ 0.53	$ -
2041					$ 200,000		394.38	$ 0.51	$ -
2042					$ 200,000		414.10	$ 0.48	$ -
2043					$ 200,000		434.80	$ 0.46	$ -
2044					$ 200,000		456.54	$ 0.44	$ -
2045					$ 200,000		479.37	$ 0.42	$ -
Total	$ 1,274,896	$ 3,000,000	$ 4,274,896	$ 1,274,446	$ 3,000,000				

Funding Sources

Water Development Fund (D-Fund 2):

- Eligible Applicants:
  - Political subdivisions of the state, WSC's and SUD's
- Types of Projects:
  - Local or Regional projects;
  - Water projects including financing for planning, design, acquiring, improving, or constructing water improvements;
  - Acquisition of water rights;

Funding Sources

- **Repayment Terms:**
  - Up to a 30 year term;
  - Interest rates set at 35 basis points above TWDB borrowing costs;
  - TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation and contract revenue pledges

Development Fund

Year	Principal	Interest (4.61%)	Total	Usage/ Year (MG)	Cost/ 1,000
2011	$120,000.00	$124,009.00	$244,009.00	91.25	$2.67
2012	$120,000.00	$130,002.00	$250,002.00	95.81	$2.61
2013	$120,000.00	$124,470.00	$244,470.00	100.60	$2.43
2014	$120,000.00	$118,938.00	$238,938.00	105.63	$2.26
2015	$120,000.00	$113,406.00	$233,406.00	110.91	$2.10
2016	$120,000.00	$107,874.00	$227,874.00	116.46	$1.96
2017	$120,000.00	$102,342.00	$222,342.00	122.28	$1.82
2018	$120,000.00	$96,810.00	$216,810.00	128.40	$1.69
2019	$120,000.00	$91,278.00	$211,278.00	134.82	$1.57
2020	$120,000.00	$85,746.00	$205,746.00	141.56	$1.45
2021	$120,000.00	$80,214.00	$200,214.00	148.64	$1.35
2022	$120,000.00	$74,682.00	$194,682.00	156.07	$1.25
2023	$120,000.00	$69,150.00	$189,150.00	163.87	$1.15
2024	$120,000.00	$63,618.00	$183,618.00	172.07	$1.07
2025	$120,000.00	$58,086.00	$178,086.00	180.67	$0.99
2026	$120,000.00	$52,554.00	$172,554.00	189.70	$0.91
2027	$120,000.00	$47,022.00	$167,022.00	199.19	$0.84
2028	$120,000.00	$41,490.00	$161,490.00	209.15	$0.77
2029	$120,000.00	$35,958.00	$155,958.00	219.60	$0.71
2030	$120,000.00	$30,426.00	$150,426.00	230.58	$0.65
2031	$120,000.00	$24,894.00	$144,894.00	242.11	$0.60
2032	$120,000.00	$19,362.00	$139,362.00	254.22	$0.55
2033	$120,000.00	$13,830.00	$133,830.00	266.93	$0.50
2034	$120,000.00	$8,298.00	$128,298.00	280.28	$0.46
2035	$120,000.00	$2,766.00	$122,766.00	294.29	$0.42
	$3,000,000.00	$1,717,225.00	$4,717,225.00		

Funding Sources

Water Infrastructure Fund:

- Eligible Applicants:
  - Political subdivisions of the state, WSC's and SUD's
  - Funding availability subject to Texas Legislature approval
- Types of Projects:
  - Projects identified in the Texas Water Plan

Funding Sources

- Repayment Terms:
  - Max. of 20 years
  - Interest rate set 2% below the TWDB cost of funds;
  - If a project has a long lead time funds for planning, design, permitting, and other up-front costs. Applicant may defer all interest and principal payments for up to 10 years or until the end of construction, whichever is sooner.
  - Interest is not accrued during this period;
  - TWDB will accept general obligation bonds, tax and/or revenue bonds, tax and revenue certificates of obligation and contract revenue pledges

Water Infrastructure Fund

Year	Principal	Interest (2.15%)	Total	Usage/ Year (MG)	Cost/ 1,000
2011	$150,000.00	$57,512.50	$207,512.50	91.25	$2.27
2012	$150,000.00	$59,662.50	$209,662.50	95.81	$2.19
2013	$150,000.00	$56,437.50	$206,437.50	100.60	$2.05
2014	$150,000.00	$53,212.50	$203,212.50	105.63	$1.92
2015	$150,000.00	$49,987.50	$199,987.50	110.91	$1.80
2016	$150,000.00	$46,762.50	$196,762.50	116.46	$1.69
2017	$150,000.00	$43,537.50	$193,537.50	122.28	$1.58
2018	$150,000.00	$40,312.50	$190,312.50	128.40	$1.48
2019	$150,000.00	$37,087.50	$187,087.50	134.82	$1.39
2020	$150,000.00	$33,862.50	$183,862.50	141.56	$1.30
2021	$150,000.00	$30,637.50	$180,637.50	148.64	$1.22
2022	$150,000.00	$27,412.50	$177,412.50	156.07	$1.14
2023	$150,000.00	$24,187.50	$174,187.50	163.87	$1.06
2024	$150,000.00	$20,962.50	$170,962.50	172.07	$0.99
2025	$150,000.00	$17,737.50	$167,737.50	180.67	$0.93
2026	$150,000.00	$14,512.50	$164,512.50	189.70	$0.87
2027	$150,000.00	$11,287.50	$161,287.50	199.19	$0.81
2028	$150,000.00	$8,062.50	$158,062.50	209.15	$0.76
2029	$150,000.00	$4,837.50	$154,837.50	219.60	$0.71
2030	$150,000.00	$1,612.50	$151,612.50	230.58	$0.66
	$3,000,000.00	$639,625.00	$3,639,625.00		

Funding Sources

Drinking Water State Revolving Fund (DWSRF):

- **Eligible Applicants:**
  - Political subdivisions of the state, WSC's and SUD's, Privately owned utilities, non-community public water supply systems, and state agencies.
  - Must go through a ranking process and be invited to submit an application.
- **Types of Projects:**
  - Planning, design and constructing projects to upgrade, or replace water supply infrastructure, correct deficiencies that violate the Safe Drinking Water Act standards, to consolidate water supplies, and to purchase capacity in water systems.

Funding Sources

- **Repayment Terms:**
  - 20 years for "mainstream" applicants and 30 years for "disadvantaged communities";
  - Mainstream funds offer a fixed interest rate of 1.25% below market rate;
  - Disadvantaged communities offer a fixed interest rate of 1.25% below market rate; and 70% loan forgiveness if MHI is < or = to 75% of the State MHI;
  - 100% loan forgiveness if MHI is <or= to 60% of the State MHI;

State Revolving Fund

Year	Principal	Interest (3.75%)	Total	Usage/ Year (MG)	Cost/ 1,000
2011	$150,000.00	$100,312.50	$250,312.50	91.25	$2.74
2012	$150,000.00	$104,062.50	$254,062.50	95.81	$2.65
2013	$150,000.00	$98,437.50	$248,437.50	100.60	$2.47
2014	$150,000.00	$92,812.50	$242,812.50	105.63	$2.30
2015	$150,000.00	$87,187.50	$237,187.50	110.91	$2.14
2016	$150,000.00	$81,562.50	$231,562.50	116.46	$1.99
2017	$150,000.00	$75,937.50	$225,937.50	122.28	$1.85
2018	$150,000.00	$70,312.50	$220,312.50	128.40	$1.72
2019	$150,000.00	$64,687.50	$214,687.50	134.82	$1.59
2020	$150,000.00	$59,062.50	$209,062.50	141.56	$1.48
2021	$150,000.00	$53,437.50	$203,437.50	148.64	$1.37
2022	$150,000.00	$47,812.50	$197,812.50	156.07	$1.27
2023	$150,000.00	$42,187.50	$192,187.50	163.87	$1.17
2024	$150,000.00	$36,562.50	$186,562.50	172.07	$1.08
2025	$150,000.00	$30,937.50	$180,937.50	180.67	$1.00
2026	$150,000.00	$25,312.50	$175,312.50	189.70	$0.92
2027	$150,000.00	$19,687.50	$169,687.50	199.19	$0.85
2028	$150,000.00	$14,062.50	$164,062.50	209.15	$0.78
2029	$150,000.00	$8,437.50	$158,437.50	219.60	$0.72
2030	$150,000.00	$2,812.50	$152,812.50	230.58	$0.66
	$3,000,000.00	$1,115,625.00	$4,115,625.00		

Cost Comparison

Year	Water Infrastructure Fund Cost/ 1,000	State Revolving Fund Cost/ 1,000	USDA Cost/ 1,000	Development Fund Cost/ 1,000	State Participation Cost/1,000
2011	$2.27	$2.74	$2.01	$2.67	$ -
2012	$2.19	$2.65	$1.99	$2.61	$ -
2013	$2.05	$2.47	$1.86	$2.43	$0.18
2014	$1.92	$2.30	$1.75	$2.26	$0.17
2015	$1.80	$2.14	$1.64	$2.10	$0.23
2016	$1.69	$1.99	$1.53	$1.96	$0.28
2017	$1.58	$1.85	$1.44	$1.82	$0.34
2018	$1.48	$1.72	$1.34	$1.69	$0.39
2019	$1.39	$1.59	$1.26	$1.57	$0.43
2020	$1.30	$1.48	$1.18	$1.45	$0.45
2021	$1.22	$1.37	$1.10	$1.35	$0.40
2022	$1.14	$1.27	$1.03	$1.25	$0.35
2023	$1.06	$1.17	$0.96	$1.15	$0.76
2024	$0.99	$1.08	$0.90	$1.07	$0.70
2025	$0.93	$1.00	$0.84	$0.99	$0.64
2026	$0.87	$0.92	$0.78	$0.91	$0.59
2027	$0.81	$0.85	$0.73	$0.84	$0.54
2028	$0.76	$0.78	$0.68	$0.77	$0.49
2029	$0.71	$0.72	$0.64	$0.71	$0.45
2030	$0.66	$0.66	$0.59	$0.65	$0.10
2031	$ -	$ -	$0.55	$0.60	$0.90
2032	$ -	$ -	$0.51	$0.55	$0.84
2033	$ -	$ -	$0.48	$0.50	$0.79
2034	$ -	$ -	$0.44	$0.46	$0.73
2035	$ -	$ -	$0.41	$0.42	$0.69
2036	$ -	$ -	$0.38	$ -	$0.65
2037	$ -	$ -	$0.36	$ -	$0.62
2038	$ -	$ -	$0.33	$ -	$0.59
2039	$ -	$ -	$0.31	$ -	$0.56
2040	$ -	$ -	$0.28	$ -	$0.53
2041	$ -	$ -	$0.26	$ -	$0.51
2042	$ -	$ -	$0.24	$ -	$0.48
2043	$ -	$ -	$0.22	$ -	$0.46
2044	$ -	$ -	$0.21	$ -	$0.44
2045	$ -	$ -	$0.19	$ -	$0.42
2046	$ -	$ -	$0.18	$ -	$ -
2047	$ -	$ -	$0.16	$ -	$ -
2048	$ -	$ -	$0.15	$ -	$ -
2049	$ -	$ -	$0.14	$ -	$ -
2050	$ -	$ -	$0.13	$ -	$ -

Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322

- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414

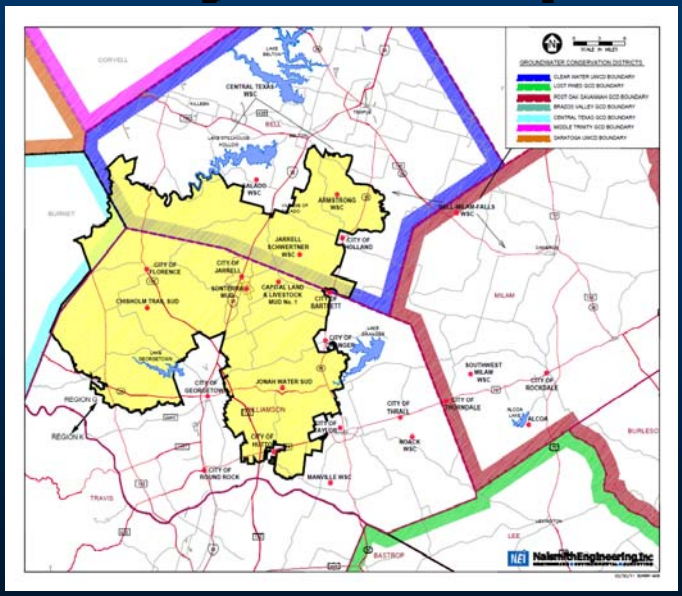
Introductions

- JSWSC (Project Administrator)
  - Mark Harbin – President
  - Sonny Kretzschmar – Board Member
  - Sheila Cunningham – General Manager
- Project Participants – STEERING COMMITTEE MEMBERS
  - Armstrong WSC
  - Brazos River Authority
  - Capital Land & Livestock MUD No. 1
  - Chisholm Trail SUD
  - City of Florence
  - Jarrell Schwertner WSC
  - Jonah Water SUD
  - Sonterra MUD
  - Mr. David Meesey, Texas Water Development Board (50% of project funding)
- Acknowledgement of Guests
- Thank You to Our Host Mr. Bill Brown / Jonah Water SUD

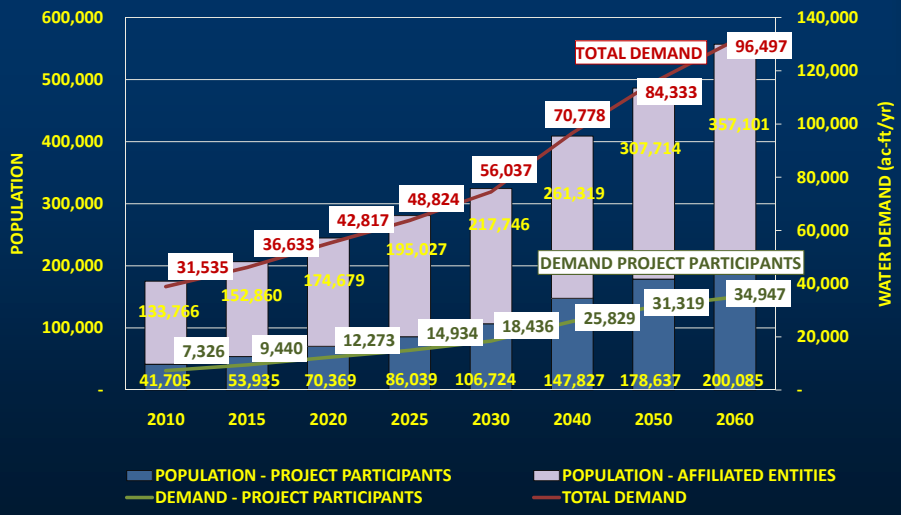
Project Purpose

- **Project Purpose:**
  - Provide the participants with a cost sharing plan to access each of their existing individual water supply sources;
  - Develop alternative means of water supply sources; and,
  - Provide alternative means of infrastructure to access and share water supply throughout the planning area.

Project Area Map



Population Projections and Water Demands for Project Area



Groundwater Available

- **Managed Available Groundwater (MAG):**
  - Amount of Groundwater Available during Drought of Record
  - Based on Desired Future Conditions
  - Goal: Maintain Desired Future Conditions
  - Considered to be "sustainable" a withdrawal
  - Source: TWDB
- **Based on:**
  - Water System's "Footprint"
  - Managed Available Groundwater
  - Aquifers: Trinity, Edwards – Balcones Fault Zone

Demand vs. Supply

- **Demand**
  - Population Projections – from Region G Plan or Project Participant
  - Per Capita Water Usage – from Region G Plan or Neighboring Water System
  - Demand = Population x Per Capita Usage
- **Supply**
  - Sustainable Yield – based on MAG #'s & system footprint
  - "Current Yield" – based on recent, past pumping records
  - Includes Surface WTP Capacities
  - Includes Water Supply Contracts

Surplus/Deficit – Contracted SW & "Managed Available Groundwater"

("Drought of Record")

System	2010	2030	2060
	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	551	443	373
Capital L&L MUD #1	125	(2,816)	(9,332)
Chisholm Trail SUD	9,787	6,268	(669)
City of Florence	(226)	183	1
JSWSC	(555)	(1,160)	(2,240)
Jonah Water SUD	(6)	2,176	(736)
Sonterra MUD	(286)	(3,116)	(3,049)
Total	9,390	1,978	(15,652)

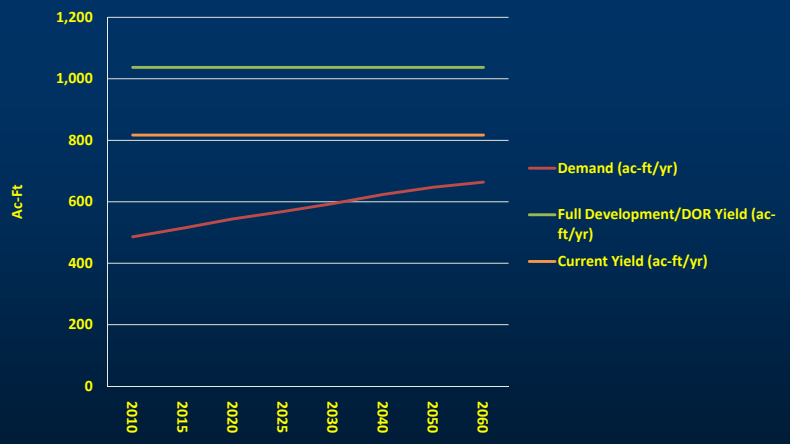
1. Demand/Supply are annual average based on estimated population growth and average per capita water usage.

Surplus/Deficit – Contracted SW & Current Well Pumping Capacity ("Current Yield")

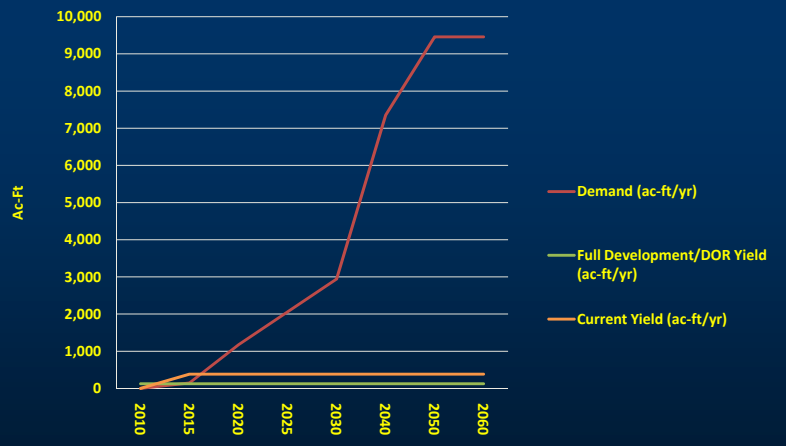
System	2010	2030	2060
	ac-ft/yr	ac-ft/yr	ac-ft/yr
Armstrong WSC	331	223	153
Capital L&L MUD #1	(0)	(2,558)	(9,074)
Chisholm Trail SUD	4,440	921	(6,016)
City of Florence	(12)	397	215
JSWSC	(201)	194	(886)
Jonah Water SUD	1,828	3,139	1,098
Sonterra MUD	437	(2,393)	(2,326)
Total	6,823	(77)	(16,836)

1. Demand/Supply are annual average based on estimated population growth and average per capita water usage.

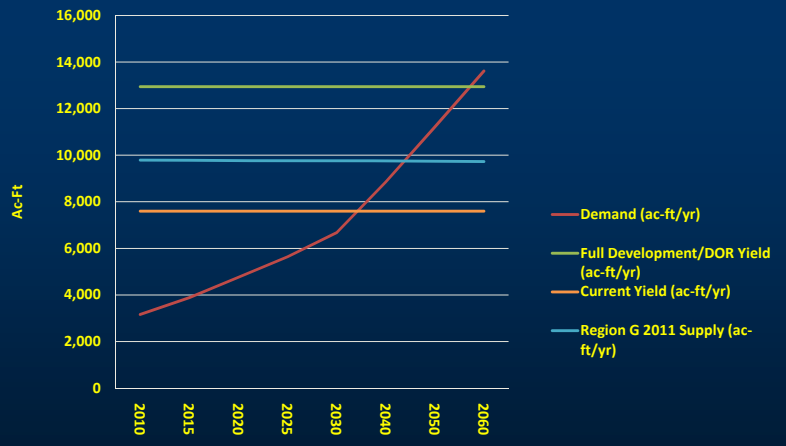
Armstrong WSC Water Supply Surplus/Deficit



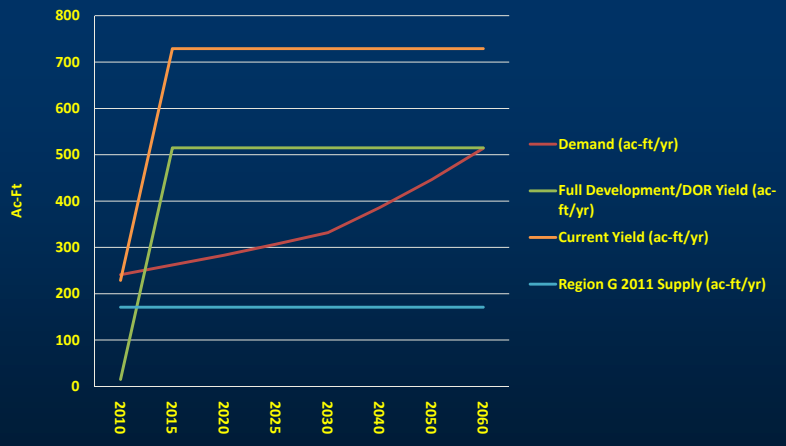
Capital Land & Livestock MUD No. 1
Water Supply Surplus/Deficit



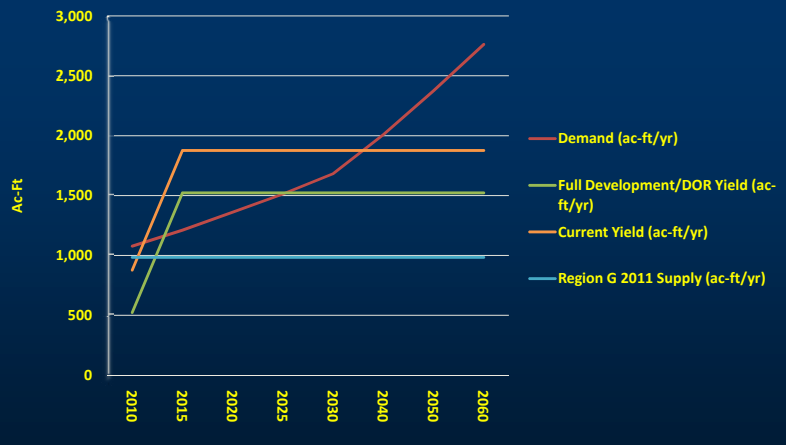
Chisholm Trail SUD
Water Supply Surplus/Deficit



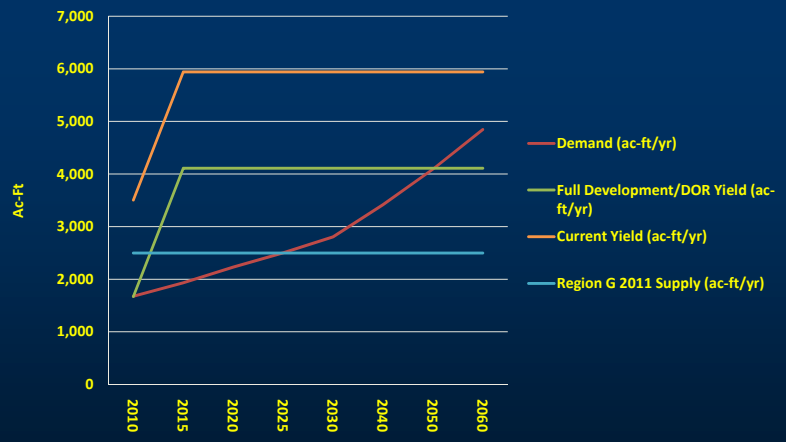
City of Florence
Water Supply Surplus/Deficit



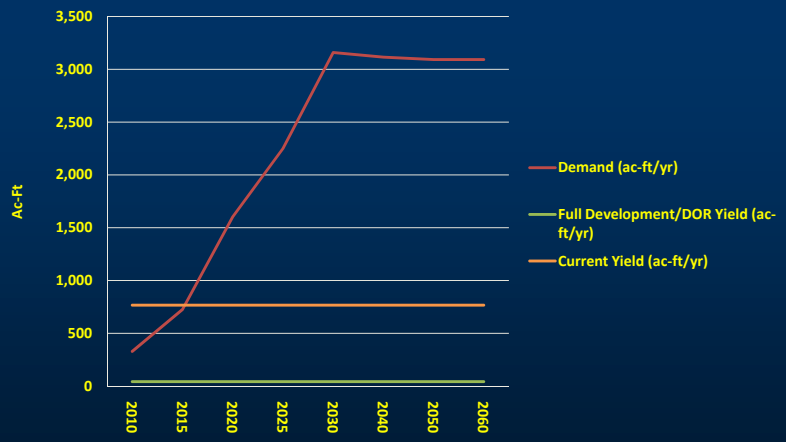
Jarrell Schwertner WSC
Water Supply Surplus/Deficit



Jonah Water SUD
Water Supply Surplus/Deficit



Sonterra MUD
Water Supply Surplus/Deficit



Identified Project Participant Water Management Strategies

- Interconnects
- Future Water Supply Projects (Wells & WTPs)
- Future Infrastructure Projects
- Immediate Projects (Now - < 5 years)
- Short-Term Projects (<10 years)
- Long-Term Projects (>10 years)
- Regional Projects

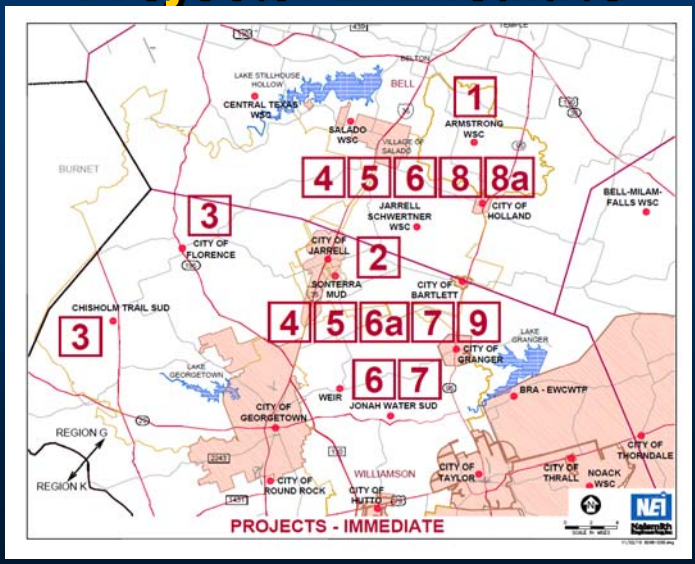
Projects: Immediate (< 5 yrs)

- Armstrong WSC - 1
  - New pump stations & groundwater well
- CL & L MUD #1 - 2
  - New groundwater wells and interconnects with JSWSC and Sonterra MUD
- Chisholm Trail SUD - 3
  - Interconnect with the City of Florence
- City of Florence - 3
  - Interconnect with Chisholm Trail SUD, and conversion to chloramine disinfection.

Projects: Immediate (< 5 yrs)

- **JSWSC - 2, 4, 5, 6, 7, 8, 8a**
  - Interconnects with Sonterra MUD, Jonah Water SUD, Capital Land and Livestock MUD No. 1, and CTWSC.
- **Jonah Water SUD - 6, 7, 8**
  - Interconnects with Sonterra MUD, JSWSC
- **Sonterra MUD - 4, 5, 6, 9**
  - Interconnects with JSWSC, Jonah Water SUD, and Capital Land and Livestock MUD No. 1

Projects: Immediate

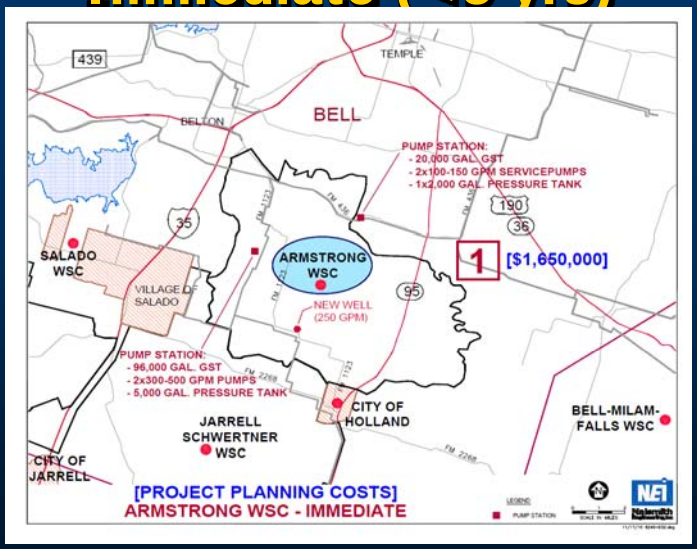


Armstrong WSC – Immediate (< 5 yrs)

1 - Multiple Connection/Supply Points with Central Texas WSC (currently planned)

- New Water Well (@ 250 gpm) (currently planned)

Armstrong WSC – Immediate (<5 yrs)



1 – Armstrong WSC - Immediate

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Groundwater Well				
1	Groundwater Well (includes drilling, site improvements, & TCEQ approved testing/sampling)	1	LS	$ 600,000.00	$ 600,000
	Pump Stations				
2	Booster Pump Station (20,000 GST) (includes GST/Service Pumps/Pressure Tanks)	1	LS	$ 120,000.00	$ 120,000
3	Booster Pump Station (100,000 GST) (includes GST/Service Pumps/Pressure Tanks)	1	LS	$ 300,000.00	$ 300,000
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 15,000.00	$ 15,000
	Appurtenances				
6	Major Water Line Tie-Ins (to exist. system)	3	EA	$ 2,000.00	$ 6,000
7	New master meter (@ WTP Tie-In)	3	EA	$ 5,000.00	$ 15,000

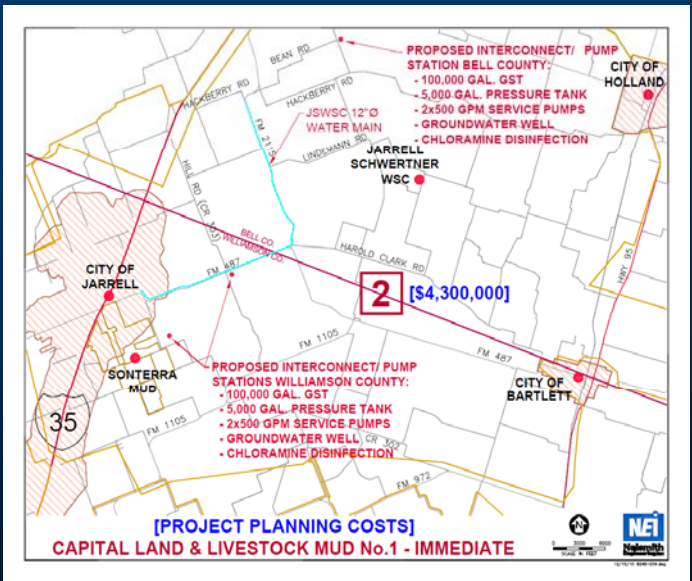
Construction Cost	**$ 1,071,000**
Contingency	**$ 160,650**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 332,546**
Bond Counsel & Financial Advisor Costs	**$ 36,950**
Right-of-Way, Easement & Land Acquisition	**$ 9,757**
TOTAL PROJECT COSTS	**$ 1,610,902**
PROJECT PLANNING COSTS	**$ 1,611,000**

Capital Land & Livestock MUD #1 - Immediate (< 5 yrs)

2 - 3 wells @ 250 gpm (each)
- Ground Storage
- Disinfection
- Service Pumps
- Interconnect with JSWSC

(this initial supply goes to JSWSC)

Capital Land & Livestock MUD #1 –



2 – Capital Land and Livestock MUD No. 1 Immediate

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	8" DR-18 C-900 WL w/ ESC & Trench Safety	1,000	LF	$ 35.00	$ 35,000
	Groundwater Well				
2	Groundwater Well & Controls (includes drilling, site improvements, & TCEQ approved testing/sampling)	3	LS	$ 600,000.00	$ 1,800,000
	Pump Stations				
3	Booster Pump Station (100,000 GST) (includes GST/Service Pumps/Pressure Tanks)	3	LS	$ 300,000.00	$ 900,000
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	3	LS	$ 15,000.00	$ 45,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	3	LS	$ 15,000.00	$ 45,000
	Appurtenances				
6	6" Gate Valves	9	EA	$ 1,250.00	$ 11,250
7	Major Water Line Tie-Ins (to exist. system)	3	EA	$ 2,000.00	$ 6,000
8	Well meters	3	EA	$ 5,000.00	$ 15,000

Construction Cost $	**2,857,250**
Contingency $	**428,588**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**887,176**
Bond Counsel & Financial Advisor Costs $	**98,575**
Right-of-Way, Easement & Land Acquisition $	**9,757**
TOTAL PROJECT COSTS $	**4,281,345**
PROJECT PLANNING COSTS $	**4,300,000**

City of Florence - Immediate (< 5 yrs)

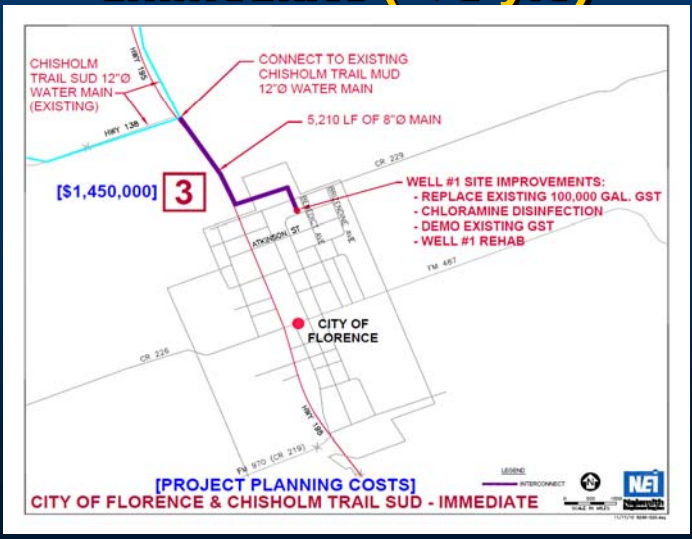
City of Florence

3 - Connect with Chisholm Trail SUD*:

- 5,210 LF of 8-inch water main
- 100,000 gallon Ground Storage Tank
- Water System conversion to Chloramines
- Existing well rehab

* - This will provide access to 500 ac-ft/yr of water that is currently contracted through Chisholm Trail SUD.

City of Florence - Immediate (< 5 yrs)



3 – City of Florence and Chisholm Trail Interconnect

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
1	8" DR-18 C-900 WL w/ ESC & Trench Safety	5,210	LF	$ 35.00	$ 182,350
	Pump Stations/Interconnect				
2	Booster Pump Station & Controls (Includes meter, SCADA, receiving tank, control valves, Well No. 1 Replacement/Plug existing well)	1	LS	$ 660,000.00	$ 660,000
	Chlorination/Chloramines				
3	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
4	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Appurtenances				
5	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
6	New master meter (@ WTP Tie-In)	1	EA	$ 50,000.00	$ 50,000

Construction Cost	**$ 936,350**
Contingency	**$ 140,453**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 290,737**
Bond Counsel & Financial Advisor Costs	**$ 32,304**
Right-of-Way, Easement & Land Acquisition	**$ 23,921**
TOTAL PROJECT COSTS	**$ 1,423,764**
PROJECT PLANNING COSTS	**$ 1,450,000**

4 – JSWSC and Sonterra MUD Emergency Interconnect

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Interconnections				
1	Emergency Interconnection	1	LS	$ 40,000.00	$ 40,000

Construction Cost	**$ 40,000**
Contingency	**$ -**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ -**
Bond Counsel & Financial Advisor Costs	**$ -**
Right-of-Way, Easement & Land Acquisition	**$ -**
TOTAL PROJECT COSTS	**$ 40,000**
PROJECT PLANNING COSTS	**$ 40,000**

Jarrell Schwertner - WSC – Immediate (< 5 yrs)

2 - Supply from CL&L MUD No. 1

4 - Emergency Interconnect w/ Sonterra MUD

5 - Permanent Interconnect w/ Sonterra MUD

6 - Permanent Interconnect w/ Jonah WS
(CR 311 Tie-in)

7 - Permanent Interconnect w/ Jonah WS
(FM 1105 Tie-in)

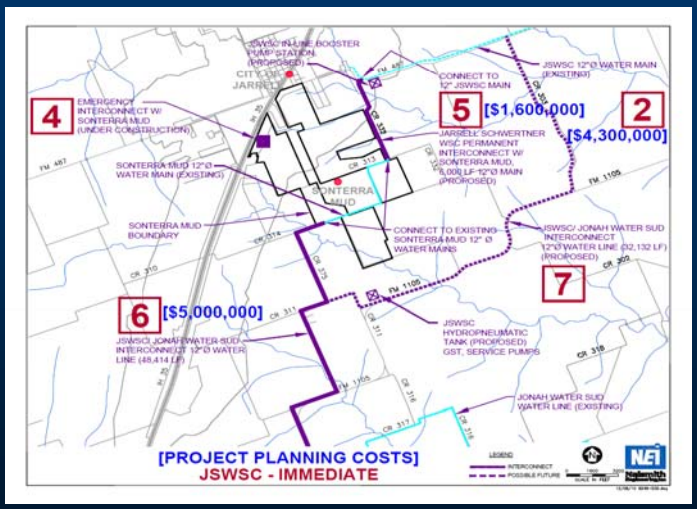
Jarrell Schwertner - WSC – Immediate (< 5 yrs)

8 - Connect to Central Texas WSC*

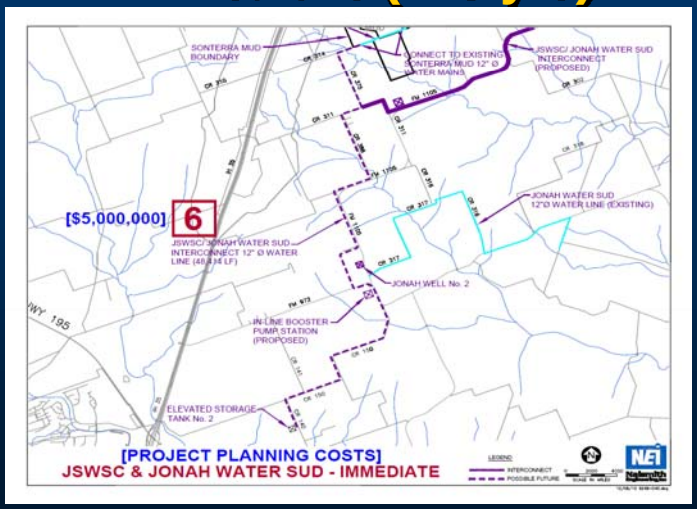
8a - Connect Prairie Dell & CR 487

* - This will provide access to 1,000 ac-ft/yr of water that is currently contracted through BRA.

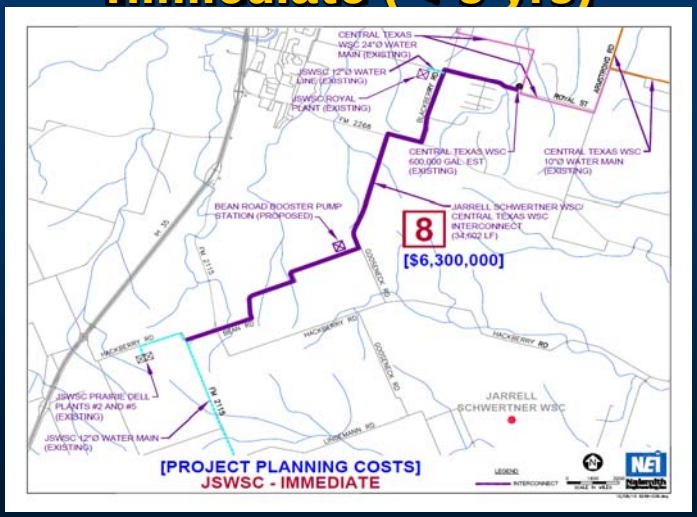
Jarrell Schwertner - WSC – Immediate (< 5 yrs)



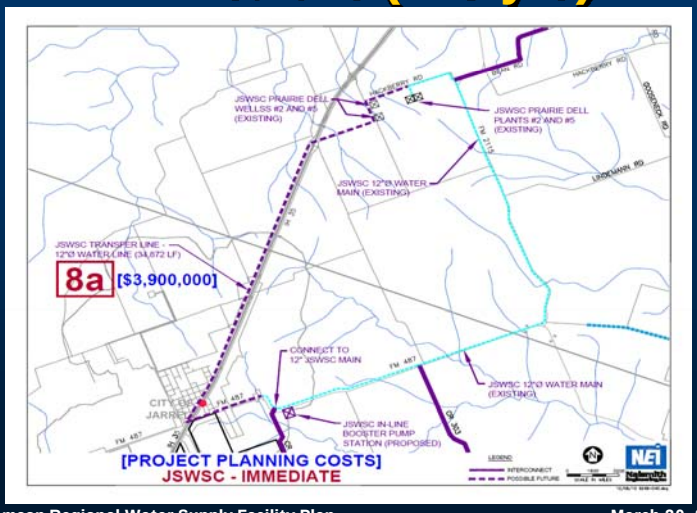
Jarrell Schwertner - WSC – Immediate (< 5 yrs)



Jarrell Schwertner - WSC – Immediate (< 5 yrs)



Jarrell Schwertner - WSC – Immediate (< 5 yrs)



5 – JSWSC and Sonterra MUD Interconnect

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	6,000	LF	$ 45.00	$ 270,000
	Pump Stations				
2	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Interconnections				
3	Interconnection w/ meters & backflow preventers	1	LS	$ 120,000.00	$ 120,000
	Appurtenances				
4	12" Gate Valves	8	EA	$ 2,500.00	$ 20,000
5	2" air release valve	2	EA	$ 3,000.00	$ 6,000
6	Minor Water Line Tie-Ins (to exist. system)	2	EA	$ 1,000.00	$ 2,000
7	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000

Construction Cost	**$ 1,022,000**
Contingency	**$ 153,300**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 317,331**
Bond Counsel & Financial Advisor Costs	**$ 35,259**
Right-of-Way, Easement & Land Acquisition	**$ 27,548**
TOTAL PROJECT COSTS	**$ 1,555,438**
PROJECT PLANNING COSTS	**$ 1,560,000**

6 – Jonah Water SUD CR 311 Tie In

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	48,414	LF	$ 45.00	$ 2,178,630
	Bores & Casing				
2	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
	Pump Stations				
3	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Interconnections				
4	Interconnection w/ meters & backflow preventers	2	LS	$ 120,000.00	$ 240,000
	Chlorination/Chloramines				
5	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Appurtenances				
7	12" Gate Valves	20	EA	$ 2,500.00	$ 50,000
8	2" air release valve	2	EA	$ 3,000.00	$ 6,000
9	4" air release valve		EA	$ 10,000.00	$ -
10	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
11	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000

Construction Cost	**$ 3,158,630**
Contingency	**$ 473,795**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 980,755**
Bond Counsel & Financial Advisor Costs	**$ 108,973**
Right-of-Way, Easement & Land Acquisition	**$ 222,287**
TOTAL PROJECT COSTS	**$ 4,944,438**
PROJECT PLANNING COSTS	**$ 5,000,000**

7 – JSWSC and Jonah Water SUD Interconnect

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	32,132	LF	$ 45.00	$ 1,445,940
	Bores & Casing				
2	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
	Pump Stations				
3	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Interconnections				
4	Interconnection w/ meters & backflow preventers	1	LS	$ 120,000.00	$ 120,000
	Chlorination/Chloramines				
5	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Appurtenances				
7	12" Gate Valves	15	EA	$ 2,500.00	$ 37,500
8	2" air release valve	2	EA	$ 3,000.00	$ 6,000
9	4" air release valve		EA	$ 10,000.00	$ -
10	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
11	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000

Construction Cost $	**2,289,440**
Contingency $	**343,416**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**710,871**
Bond Counsel & Financial Advisor Costs $	**78,986**
Right-of-Way, Easement & Land Acquisition $	**160,110**
TOTAL PROJECT COSTS $	**3,582,823**
PROJECT PLANNING COSTS $	**3,600,000**

8 – JSWSC and CTWSC Interconnect

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	18" DR-18 C-900 WL w/ ESC & Trench Safety	34,602	LF	$ 75.00	$ 2,595,150
	Bores & Casing				
2	30" Steel Casing Pipe & Bore	160	LF	$ 400.00	$ 64,000
	Pump Stations				
3	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Appurtenances				
6	18" Gate Valves	16	EA	$ 8,000.00	$ 128,000
7	4" air release valve	2	EA	$ 10,000.00	$ 20,000
8	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
9	Major Water Line Tie-Ins (to exist. system)	4	EA	$ 2,000.00	$ 8,000
10	New master meter (@ WTP Tie-In)	1	EA	$ 15,000.00	$ 15,000

Construction Cost $	**4,074,150**
Contingency $	**611,123**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**1,265,024**
Bond Counsel & Financial Advisor Costs $	**140,558**
Right-of-Way, Easement & Land Acquisition $	**158,871**
TOTAL PROJECT COSTS $	**6,249,725**
PROJECT PLANNING COSTS $	**6,300,000**

8a – Prairie Dell/FM 487 Interconnect

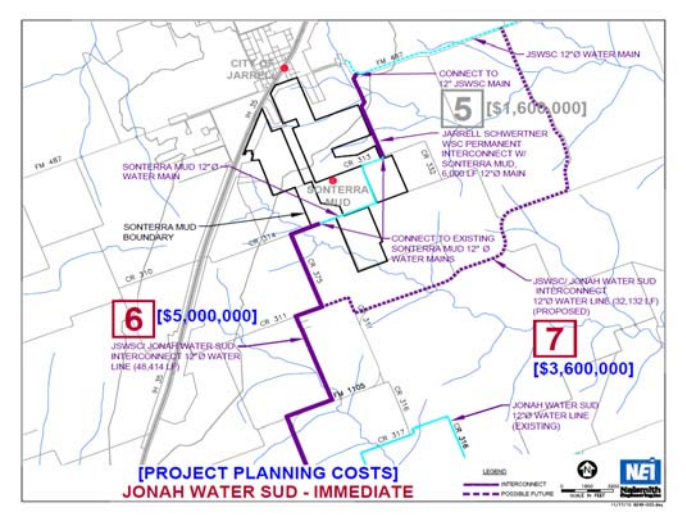
Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	34,872	LF	$ 45.00	$ 1,569,240
	Bores & Casing				
2	20" Steel Casing Pipe & Bore	800	LF	$ 300.00	$ 240,000
	Pump Stations				
3	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Appurtenances				
4	12" Gate Valves	10	EA	$ 2,500.00	$ 25,000
5	2" air release valve	2	EA	$ 3,000.00	$ 6,000
6	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
7	New master meter (@ Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$ 2,454,240**
Contingency	**$ 368,136**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 762,042**
Bond Counsel & Financial Advisor Costs	**$ 84,671**
Right-of-Way, Easement & Land Acquisition	**$ 160,110**
TOTAL PROJECT COSTS	**$ 3,829,199**
PROJECT PLANNING COSTS	**$ 3,900,000**

Jonah Water SUD - Immediate (< 5 yrs)

6 - Permanent Interconnect w/ JSWSC (via Sonterra MUD)

Jonah Water SUD - Immediate (< 5 yrs)



Sonterra MUD - Immediate (< 5 yrs)

4 - Emergency Interconnect w/ JSWSC

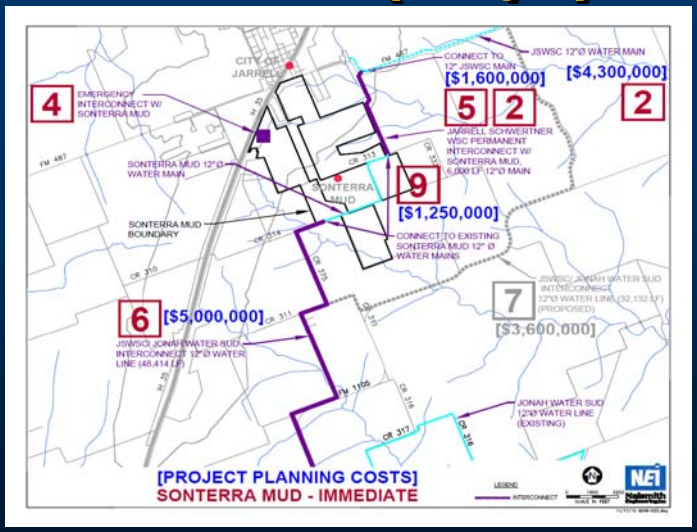
5 - Permanent Interconnect w/ JSWSC

6 - Permanent Interconnect w/ Jonah Water SUD

(allows pass through from JSWSC to Jonah WS)

9 - New Water Well (250 gpm)

Sonterra MUD - Immediate (< 5 yrs)



9 – Sonterra MUD Groundwater Well

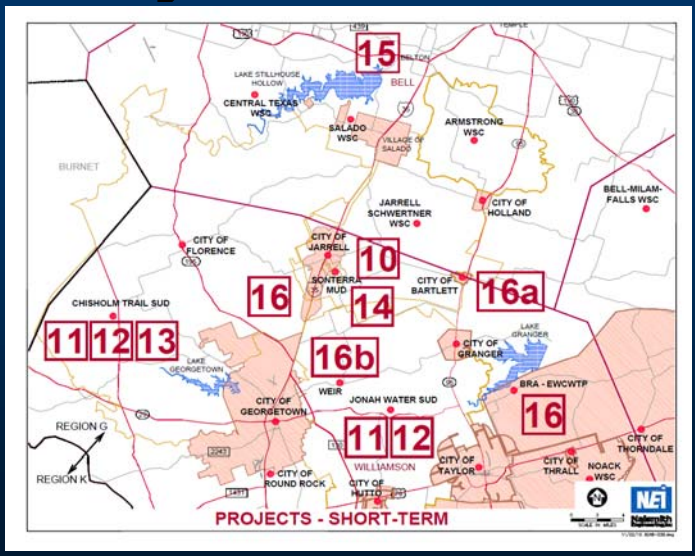
Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$ 30.00	$ 150,000
	Groundwater Well				
2	Groundwater Well & Controls (includes drilling, site improvements, & TCEQ approved testing/sampling)	1	LS	$ 600,000.00	$ 600,000
	Chlorination/Chloramines				
3	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
4	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 15,000.00	$ 15,000
	Appurtenances				
5	6" Gate Valves	8	EA	$ 1,250.00	$ 10,000
6	2" air release valve	2	EA	$ 3,000.00	$ 6,000
7	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
8	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
9	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$ 810,000**
Contingency	**$ 121,500**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 251,505**
Bond Counsel & Financial Advisor Costs	**$ 27,945**
Right-of-Way, Easement & Land Acquisition	**$ 24,105**
TOTAL PROJECT COSTS	**$ 1,235,055**
PROJECT PLANNING COSTS	**$ 1,250,000**

Projects: Short-Term (< 10 yrs)

- **CL&L MUD #1 - 10**
  (ground storage & service pumps)
- **Chisholm Trail SUD - 11, 12, 13**
  (new WTP, Interconnect w/ Jonah Water SUD, Ronald Reagan – Ph. 4 water line)
- **Jonah Water SUD - 11, 12**
- **Sonterra MUD - 14**
  (elevated storage tank)
- **BRA - 15, 16**
  (L. Belton/L. Stillhouse Hollow Interconnect, L. Granger Augment.)

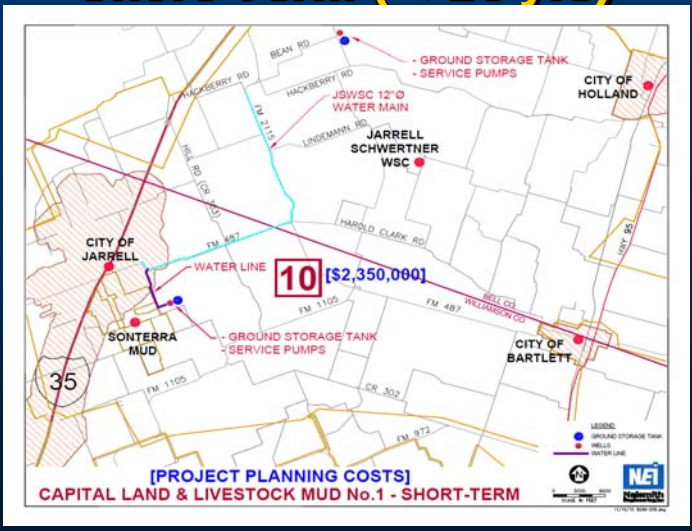
Projects: Short-Term



Capital Land & Livestock MUD #1 - Short-Term (< 10 yrs)

10 - 300,000 gallon GST & Service Pumps

Capital Land & Livestock MUD #1 - Short-Term (< 10 yrs)



10 – CL&L MUD No. 1 Booster Pump Station and GST

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$ 30.00	$ 150,000
	Pump Stations				
2	Booster Pump Station - 900 gpm	2	LS	$ 500,000.00	$ 1,000,000
3	Booster Pump Station - 1,500 gpm		LS	$ 800,000.00	$ -
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Ground/Elevated Storage Tanks				
6	GST - 300,000 gal	1	LS	$ 300,000.00	$ 300,000
	Appurtenances				
7	6" Gate Valves	4	EA	$ 1,250.00	$ 5,000
8	2" air release valve	2	EA	$ 3,000.00	$ 6,000
9	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
10	New master meter (@ Tie-In)	2	EA	$ 10,000.00	$ 20,000

Construction Cost $	**1,525,000**
Contingency $	**228,750**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**473,513**
Bond Counsel & Financial Advisor Costs $	**52,613**
Right-of-Way, Easement & Land Acquisition $	**24,105**
TOTAL PROJECT COSTS $	**2,303,980**
PROJECT PLANNING COSTS $	**2,350,000**

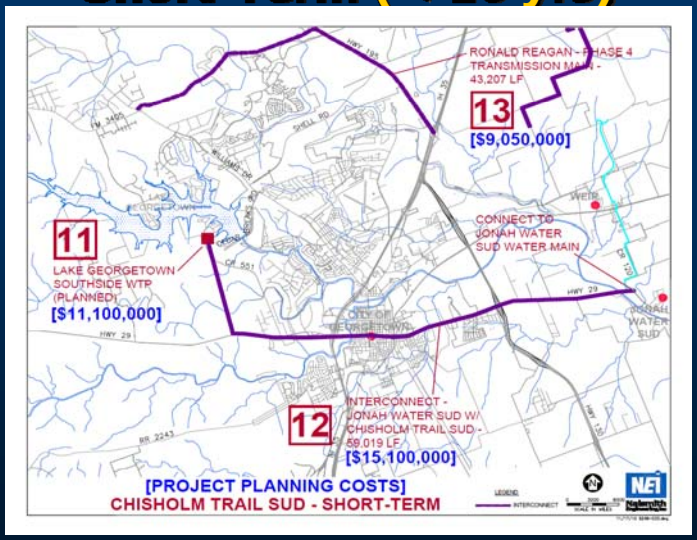
Chisholm Trail SUD - Short-Term (< 10 yrs)

11 - Construct Lake Georgetown Southside WTP
(partner with Jonah Water SUD)

12 - Permanent Interconnect w/ Jonah Water SUD

13 - Ronald Reagan Phase 4 Transmission Main

Chisholm Trail SUD - Short-Term (< 10 yrs)



11 – Chisholm Trail SUD Lake GT WTP

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	4.0 MGD Membrane WTP	1	LS	$ 3,000,000.00	$ 3,000,000
2	Ground Storage - 1,000,000 gal	1	LS	$ 1,000,000.00	$ 1,000,000
3	Service Pumps & Bldg	1	LS	$ 400,000.00	$ 400,000
4	Pressure Tank - 5,000 gallons	1	LS	$ 50,000.00	$ 50,000
5	Disinfection / Chemicals	1	LS	$ 350,000.00	$ 350,000
6	Electrical	1	LS	$ 250,000.00	$ 250,000
7	Site Improvements	1	LS	$ 200,000.00	$ 200,000
8	Raw Water Pump Station	1	LS	$ 1,000,000.00	$ 1,000,000
9	Sludge Processing & Storage	1	LS	$ 500,000.00	$ 500,000
10	Office Bldg	1	LS	$ 250,000.00	$ 250,000
11	SWPPP	1	LS	$ 50,000.00	$ 50,000

Construction Cost	**$ 7,050,000**
Contingency	**$ 1,057,500**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 2,189,025**
Bond Counsel & Financial Advisor Costs	**$ 243,225**
Right-of-Way, Easement & Land Acquisition	**$ 500,000**
TOTAL PROJECT COSTS	**$ 11,039,750**
PROJECT PLANNING COSTS	**$ 11,100,000**

12 – Chisholm Trail SUD and Jonah Water SUD Interconnect

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Urban Area				
1	18" DR-25 C-905 WL w/ ESC & Trench Safety	33,019	LF	$ 105.00	$ 3,466,995
2	18" DR-25 C-905 WL (through Georgetown)	26,000	LF	$ 150.00	$ 3,900,000
	Bores & Casing				
3	30" Steel Casing Pipe & Bore	1,000	LF	$ 400.00	$ 400,000
	Pump Stations				
4	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
	Chlorination/Chloramines				
5	Liquid Feed Chlorination	1	LS	$ 60,000.00	$ 60,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 60,000.00	$ 60,000
	Ground/Elevated Storage Tanks				
7	GST - 500,000 gal	1	LS	$ 500,000.00	$ 500,000
	Appurtenances				
8	18" Gate Valves	30	EA	$ 8,000.00	$ 240,000
9	24" Gate Valves		EA	$ 15,000.00	$ -
10	4" air release valve	4	EA	$ 10,000.00	$ 40,000
11	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
12	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 5,000.00	$ 10,000
13	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$ 9,886,995**
Contingency	**$ 1,483,049**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 3,069,912**
Bond Counsel & Financial Advisor Costs	**$ 341,101**
Right-of-Way, Easement & Land Acquisition	**$ 272,126**
TOTAL PROJECT COSTS	**$ 15,053,183**
PROJECT PLANNING COSTS	**$ 15,100,000**

13 – Chisholm Trail SUD Ronald Reagan Phase 4

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	24" DR-25 C-905 WL w/ ESC & Trench Safety	43,207	LF	$ 100.00	$ 4,320,700
	Bores & Casing				
2	30" Steel Casing Pipe & Bore	400	LF	$ 400.00	$ 160,000
	Pump Stations				
3	Booster Pump Station - 3,000 gpm	1	LS	$ 1,000,000.00	$ 1,000,000
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	1	LS	$ 30,000.00	$ 30,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 30,000.00	$ 30,000
	Appurtenances				
6	24" Gate Valves	22	EA	$ 15,000.00	$ 330,000
7	2" air release valve	2	EA	$ 3,000.00	$ 6,000
8	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
9	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$ 5,890,700**
Contingency	**$ 883,605**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 1,829,062**
Bond Counsel & Financial Advisor Costs	**$ 203,229**
Right-of-Way, Easement & Land Acquisition	**$ 199,527**
TOTAL PROJECT COSTS	**$ 9,006,124**
PROJECT PLANNING COSTS	**$ 9,050,000**

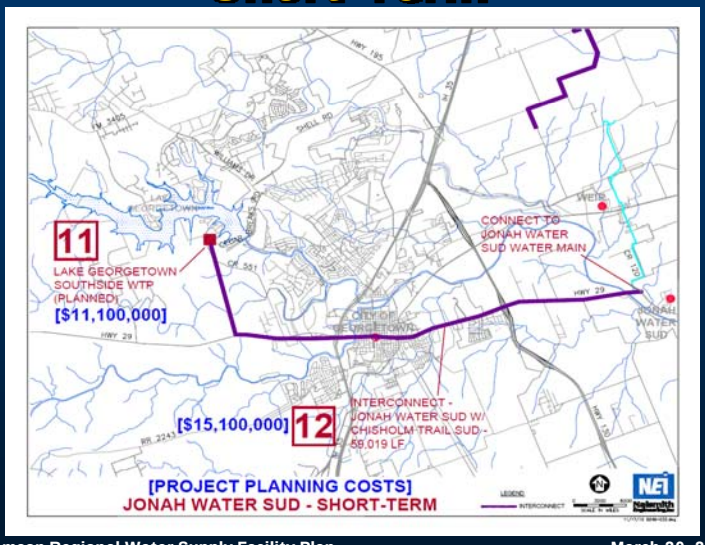
Jonah Water SUD - Short-Term

11 - Construct Lake Georgetown Southside WTP
(partner w/ Chisholm Trail SUD)

12 - Permanent Interconnect w/ Chisholm Trail SUD

[These projects will allow access to 2,439 ac-ft of existing contracted raw water.]

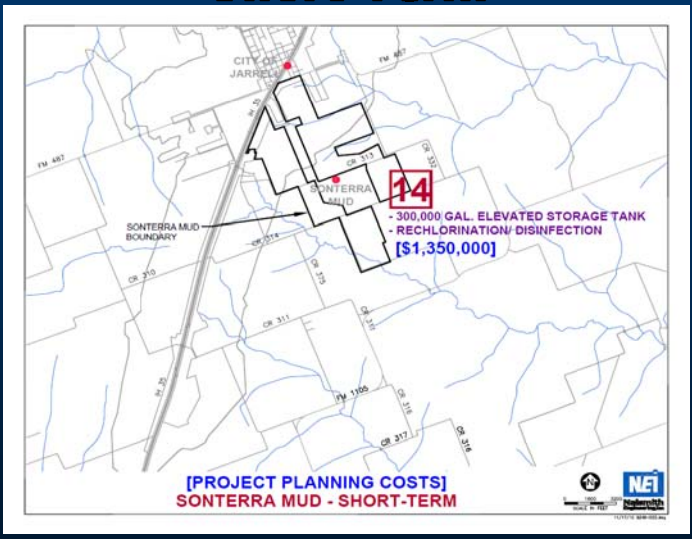
Jonah Water SUD - Short-Term



Sonterra MUD - Short-Term

14 - 300,000 Elevated Storage Tank

Sonterra MUD - Short-Term



14 – Sonterra MUD Elevated Storage Tank

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$ 45.00	$ 22,500
2	Constr. - Urban Area				
3	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$ 65.00	$ 32,500
	Bores & Casing				
4	20" Steel Casing Pipe & Bore	80	LF	$ 300.00	$ 24,000
	Chlorination/Chloramines				
5	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Ground/Elevated Storage Tanks				
7	EST - 300,000 gal	1	LS	$ 750,000.00	$ 750,000
	Appurtenances				
8	12" Gate Valves	6	EA	$ 2,500.00	$ 15,000
9	2" air release valve	1	EA	$ 3,000.00	$ 3,000
10	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
11	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000

Construction Cost	**$ 891,000**
Contingency	**$ 133,650**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ 276,656**
Bond Counsel & Financial Advisor Costs	**$ 30,740**
Right-of-Way, Easement & Land Acquisition	**$ 5,739**
TOTAL PROJECT COSTS	**$ 1,337,784**
PROJECT PLANNING COSTS	**$ 1,350,000**

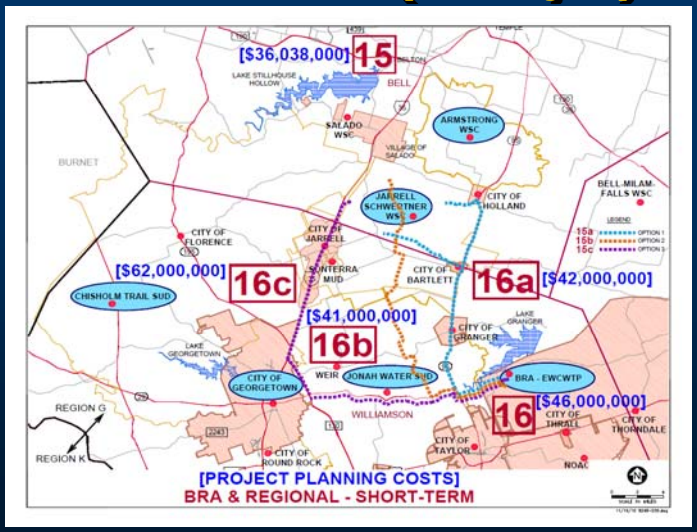
Brazos River Authority & Regional – Short-Term (< 10 yrs)

15 - Interconnection of Lake Belton & Lake Stillhouse Hollow (project is currently planned)

16 - Interim Supply from Lake Granger WTP (using Williamson County groundwater wells)

16a, 16b, 16c - Regional Transmission Mains from L. Granger WTP

Brazos River Authority & Regional – Short-Term (< 10 yrs)



15 – Brazos River Authority Lake Belton Lake Stillhouse Hollow Connection

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Interconnections				
1	Emergency Interconnection	1	LS	$ 36,038,000.00	$ 36,038,000
				Construction Cost	**$ 36,038,000**
				Contingency	**$ -**
				Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$ -**
				Bond Counsel & Financial Advisor Costs	**$ -**
				Right-of-Way, Easement & Land Acquisition	**$ -**
				TOTAL PROJECT COSTS	**$ 36,038,000**
				PROJECT PLANNING COSTS	**$ 36,038,000**

16 – Brazos River Authority L. Granger Augmentation

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	8" DR-18 C-900 WL w/ ESC & Trench Safety	30,000	LF	$ 35.00	$ 1,050,000
2	18" DR-25 C-905 WL w/ ESC & Trench Safety	10,000	LF	$ 75.00	$ 750,000
	Groundwater Well				
3	Test Wells & Evaluation	2	LS	$ 300,000.00	$ 600,000
4	Groundwater Well (includes drilling, site improvements, & TCEQ approved testing/sampling)	6	LS	$ 750,000.00	$ 4,500,000
	Pump Stations				
6	Booster Pump Station - 5,000 gpm	1	LS	$ 3,000,000.00	$ 3,000,000
	Treatment				
7	Cooling Towers	1	LS	$ 2,000,000.00	$ 2,000,000
8	Dissolved Solids	1	LS	$ 7,200,000.00	$ 7,200,000
	Chlorination/Chloramines				
9	Chloramine Disinfection	1	LS	$ 250,000.00	$ 250,000
	Ground/Elevated Storage Tanks				
10	GST - 3,600,000 gal	1	LS	$ 3,600,000.00	$ 3,600,000
11	GST - 7,200,000 gal	1	LS	$ 7,200,000.00	$ 7,200,000
	Appurtenances				
	8" Gate Valves	30	EA	$ 1,500.00	$ 45,000
	18" Gate Valves	10	EA	$ 8,000.00	$ 80,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Master meter (@ Tie-In)	1	EA	$ 15,000.00	$ 15,000
	Well Meters	6	EA	$ 3,000.00	$ 18,000

Construction Cost $	**30,314,000**
Contingency $	**4,547,100**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**9,412,497**
Bond Counsel & Financial Advisor Costs $	**1,045,833**
Right-of-Way, Easement & Land Acquisition $	**204,316**
TOTAL PROJECT COSTS $	**45,523,746**
PROJECT PLANNING COSTS $	**45,600,000**

16a – Brazos River Authority Lake Granger Transmission Main Route 1

Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	16" DR-25 C-905 WL w/ ESC & Trench Safety	58,198	LF	$ 65.00	$ 3,782,870
2	24" DR-25 C-905 WL w/ ESC & Trench Safety	99,877	LF	$ 100.00	$ 9,987,700
	Constr. - Urban Area				
3	24" DR-25 C-905 WL w/ ESC & Trench Safety	12,000	LF	$ 150.00	$ 1,800,000
	Bores & Casing				
4	20" Steel Casing Pipe & Bore	200	LF	$ 300.00	$ 60,000
5	36" Steel Casing Pipe & Bore	1,000	LF	$ 450.00	$ 450,000
	Pump Stations				
6	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
7	Circleville - Pump Station - (1,200 HP)	1	LS	$ 3,100,000.00	$ 3,100,000
8	Bartlett - Pump Station - (375 HP)	1	LS	$ 1,700,000.00	$ 1,700,000
9	Holland - Pump Station - (370 HP)	1	LS	$ 1,700,000.00	$ 1,700,000
	Chlorination/Chloramines				
10	Chloramine Disinfection	4	LS	$ 80,000.00	$ 320,000
	Ground/Elevated Storage Tanks				
11	GST - 300,000 gal	2	LS	$ 300,000.00	$ 600,000
12	GST - 500,000 gal	2	LS	$ 500,000.00	$ 1,000,000
	Appurtenances				
13	16" Gate Valves	20	EA	$ 6,000.00	$ 120,000
14	24" Gate Valves	68	EA	$ 15,000.00	$ 1,020,450
15	4" air release valve	17	EA	$ 10,000.00	$ 170,075
16	Master meter (@ Tie-In)	4	EA	$ 15,000.00	$ 60,000

Construction Cost $	**27,271,095**
Contingency $	**4,090,664**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**8,467,675**
Bond Counsel & Financial Advisor Costs $	**940,853**
Right-of-Way, Easement & Land Acquisition $	**900,253**
TOTAL PROJECT COSTS $	**41,670,540**
PROJECT PLANNING COSTS $	**41,700,000**

16b – Brazos River Authority Lake Granger Transmission Main Route 2

Item Nor	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	24" DR-25 C-905 WL w/ ESC & Trench Safety	156,414	LF	$ 100.00	$ 15,641,400
	Bores & Casing				
2	36" Steel Casing Pipe & Bore	500	LF	$ 450.00	$ 225,000
	Pump Stations				
3	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
4	Circleville - Pump Station - (1,100 HP)	1	LS	$ 3,000,000.00	$ 3,000,000
5	Mid-Way - Pump Station - (1,300 HP)	1	LS	$ 3,300,000.00	$ 3,300,000
	Chlorination/Chloramines				
6	Chloramine Disinfection	3	LS	$ 80,000.00	$ 240,000
	Ground/Elevated Storage Tanks				
7	GST - 500,000 gal	3	LS	$ 500,000.00	$ 1,500,000
	Appurtenances				
8	24" Gate Valves	63	EA	$ 15,000.00	$ 938,484
9	4" air release valve	12	EA	$ 10,000.00	$ 120,000
10	Master meter (@ Tie-In)	3	EA	$ 15,000.00	$ 45,000

Construction Cost $	**26,409,884**
Contingency $	**3,961,483**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**8,200,269**
Bond Counsel & Financial Advisor Costs $	**911,141**
Right-of-Way, Easement & Land Acquisition $	**745,702**
TOTAL PROJECT COSTS $	**40,228,479**
PROJECT PLANNING COSTS $	**40,300,000**

16c – Brazos River Authority Lake Granger Transmission Main Route 3

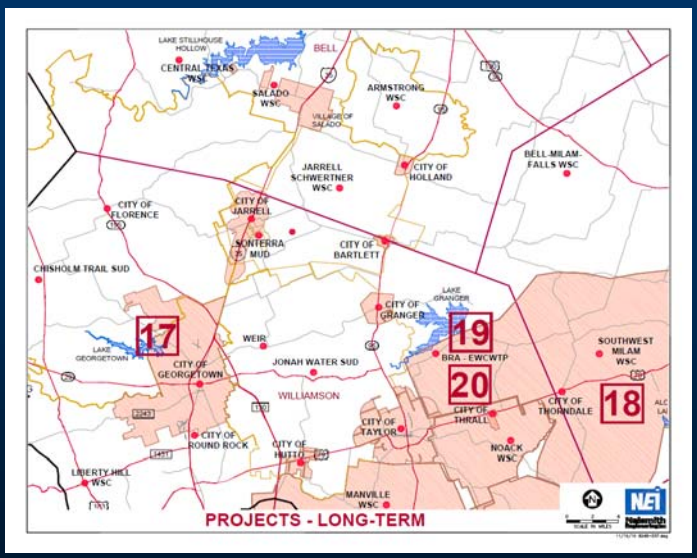
Item No	Description	Estimated Quantity	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	24" DR-25 C-905 WL w/ ESC & Trench Safety	87,162	LF	$ 100.00	$ 8,716,200
	Constr. - Urban Area				
2	24" DR-25 C-905 WL along TX 130	18,091	LF	$ 180.00	$ 3,256,380
3	24" DR-25 C-905 WL along I-35	76,665	LF	$ 180.00	$ 13,799,700
	Bores & Casing				
4	36" Steel Casing Pipe & Bore	2,000	LF	$ 450.00	$ 900,000
	Pump Stations				
5	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
6	Circleville - Pump Station - (1,050 HP)	1	LS	$ 2,950,000.00	$ 2,950,000
7	Bartlett - Pump Station - (665 HP)	1	LS	$ 2,250,000.00	$ 2,250,000
8	Holland - Pump Station - (1,375 HP)	1	LS	$ 3,350,000.00	$ 3,350,000
	Chlorination/Chloramines				
9	Chloramine Disinfection	4	LS	$ 80,000.00	$ 320,000
	Ground/Elevated Storage Tanks				
10	GST - 500,000 gal	4	LS	$ 500,000.00	$ 2,000,000
	Appurtenances				
11	24" Gate Valves	73	EA	$ 15,000.00	$ 1,091,508
	4" air release valve	18	EA	$ 10,000.00	$ 181,918
12	Master meter (@ Tie-In)	4	EA	$ 15,000.00	$ 60,000

Construction Cost $	**40,275,706**
Contingency $	**6,041,356**
Engineering, Surveying, Environmental, Construction, Inspection/Admin $	**12,505,607**
Bond Counsel & Financial Advisor Costs $	**1,389,512**
Right-of-Way, Easement & Land Acquisition $	**1,561,304**
TOTAL PROJECT COSTS $	**61,773,484**
PROJECT PLANNING COSTS $	**61,800,000**

Projects: Long-Term (> 10 yrs)

- Chisholm Trail SUD - 17
- BRA/Regional - 18, 19
- Regional - 20

Projects: Long-Term (> 10 yrs)



Chisholm Trail SUD - Long-Term (> 10 yrs)

17 - Expand Lake Georgetown Northside WTP
(partner with City of Georgetown)

Brazos River Authority/Regional – Long-Term (> 10 yrs)

18 - Carrizo-Wilcox Aquifer Development

19 - Expand Lake Granger WTP

Regional – Long-Term (> 10 yrs)

20 - Aquifer Storage & Recovery

The following is from the 2011 Brazos G Regional Water Plan:

"As an alternative or complement to using blended Trinity Aquifer and Lake Granger water, the Trinity Aquifer could be used for aquifer storage and recover (ASR). Treated surface water could be stored in the Trinity Aquifer during times of low demand or high flows and recovered for use at a later date. Pending further study ASR is not included as an option in Phase 1 at this time."

- **TWDB staff will provide input to the project team in the coming weeks regarding ASR in the eastern Williamson County area.**

Funding Sources

- **The Following Funding Sources Were Analyzed for the Proposed Projects:**
  - **United States Department of Agriculture-Rural Development**
  - **State Participation Program**
  - **Development Fund (D-Fund 2)**
  - **Water Infrastructure Fund (WIF)**
  - **State Revolving Fund**

Cost Comparison

Year	Water Infrastructure Fund Cost/ 1,000	State Revolving Fund Cost/ 1,000	USDA Cost/ 1,000	Development Fund Cost/ 1,000	State Participation Cost/1,000
2011	$2.27	$2.74	$2.01	$2.67	$ -
2012	$2.19	$2.65	$1.99	$2.61	$ -
2013	$2.05	$2.47	$1.86	$2.43	$0.18
2014	$1.92	$2.30	$1.75	$2.26	$0.17
2015	$1.80	$2.14	$1.64	$2.10	$0.23
2016	$1.69	$1.99	$1.53	$1.96	$0.28
2017	$1.58	$1.85	$1.44	$1.82	$0.34
2018	$1.48	$1.72	$1.34	$1.69	$0.39
2019	$1.39	$1.59	$1.26	$1.57	$0.43
2020	$1.30	$1.48	$1.18	$1.45	$0.45
2021	$1.22	$1.37	$1.10	$1.35	$0.40
2022	$1.14	$1.27	$1.03	$1.25	$0.35
2023	$1.06	$1.17	$0.96	$1.15	$0.76
2024	$0.99	$1.08	$0.90	$1.07	$0.70
2025	$0.93	$1.00	$0.84	$0.99	$0.64
2026	$0.87	$0.92	$0.78	$0.91	$0.59
2027	$0.81	$0.85	$0.73	$0.84	$0.54
2028	$0.76	$0.78	$0.68	$0.77	$0.49
2029	$0.71	$0.72	$0.64	$0.71	$0.45
2030	$0.66	$0.66	$0.59	$0.65	$0.10
2031	$ -	$ -	$0.55	$0.60	$0.90
2032	$ -	$ -	$0.51	$0.55	$0.84
2033	$ -	$ -	$0.48	$0.50	$0.79
2034	$ -	$ -	$0.44	$0.46	$0.73
2035	$ -	$ -	$0.41	$0.42	$0.69
2036	$ -	$ -	$0.38	$ -	$0.65
2037	$ -	$ -	$0.36	$ -	$0.62
2038	$ -	$ -	$0.33	$ -	$0.59
2039	$ -	$ -	$0.31	$ -	$0.56
2040	$ -	$ -	$0.28	$ -	$0.53
2041	$ -	$ -	$0.26	$ -	$0.51
2042	$ -	$ -	$0.24	$ -	$0.48
2043	$ -	$ -	$0.22	$ -	$0.46
2044	$ -	$ -	$0.21	$ -	$0.44
2045	$ -	$ -	$0.19	$ -	$0.42
2046	$ -	$ -	$0.18	$ -	$ -
2047	$ -	$ -	$0.16	$ -	$ -
2048	$ -	$ -	$0.15	$ -	$ -
2049	$ -	$ -	$0.14	$ -	$ -
2050	$ -	$ -	$0.13	$ -	$ -

Conclusions

- **Short-Term:**
  - **Water available**
  - **Needs to be moved around Details on the administration of this**
- **Long-Term:**
  - **Supply must be “enhanced”**

Recommendations

- **Short-Term:**
  - Infrastructure projects capable of moving water across the project area.
- **Long-Term:**
  - Water supply projects capable of increasing the water supply across the project area.

Questions & Comments

- **Naismith Engineering:**
  - Tom Brown
  - Grant A. Jackson, P.E.
  - David B. Fusilier, P.E.
  - Felise Canterini, E.I.T.

  NEI – Austin Office: (512) 708-9322
- **Duff Consulting Engineers:**
  - Bill Aston, P.E.
  - Rodney Adamek
  - Miles Whitney, E.I.T.

  Duff – Waco Office: (254) 756-5414

Appendix B - Meeting Sign-In Sheets

Regional Water Planning Group

September 16th, 2009

ATTENDEES

NAME	ORGANIZATION	PHONE	EMAIL
Mel Hanks	City of Jarrell		cmanager@cityofjarrell.com
Bob Whitson	Central Texas		
Lee Kelley	Central Texas	698-2779	CTWSCgm@EMBARQMAIL.com
Troy Clawson	City Jarrell	648-4276	
Joni Mace	City Granger	595-1995	dtmace@netzero.net
Kat Montgomery	City Granger	512 569-5324	
Mae Smith	City Holland Mayor	254-657-2460	
Mike Robinson	Baker-Aicklen INC.	512-244 9620	MRobinson@Baker-Aicklen.com
Sam Joner	Joner-Heroy & Assoc	512/989-2200	samj@joner-heroy.com
Dennis Perz	Native Plant Society of TX	5128643828	GTPECANS@THEGATEWAY.NET
Tom Madden	JSWSC CL+L MUA	254-534-0496	tmadden@cllnet.com
Thomas Faske	City of Jarrell	512-630-7624	
Charles Ashby	Ashby RE	512-746-2000	charles@AshbyRE.com
C Sledge	Sledge Eng.	484-2932	casey@sledge.biz

Regional Water Planning Group

September 16th, 2009

ATTENDEES

NAME	ORGANIZATION	PHONE	EMAIL
Sheila Cunningham	JSWSC	512-746-2114	sheila@jswatersupply.com
Tim Brown	Bell County	254-933-5102	TIM.BROWN@CO.BELL.TX.U
Kodi Sawin	Sawin Group	512-627-9604	kodisawin@gmail.com
James F Caigill	Armstrong WSC	254-657-2429	
Miles Whitney	Duff Eng.	254 756 5414	Miles.whitney@duffengineering.
Bill Brown	Jonah Water SUD	512-759-1036	
DAVID MESSY	TWDB	512-936-0852	
Ron Freeman	Somerset MUD	512-451-6689	rfreeman@freeman andcorbett.com
Mike Elliott	Elliott Properties	512-452-2553	MIKE@ELLIOTTPROPERTIESINC.CO
DAVID FUSILIER	NAISMITH Engineering	512-708-9322	dfusilier@naismith-engineer.com
Troy Bradshaw	Jarrell Town Center	254-289-0241	TJBradshaw@Earthlink.net
Delores Goode	CTSUD	254-793-3103	delores@ctsud.org
Jennifer McKnight	CTSUD	254-793-3103	jennifermcknight@ctsud.or
JUDY PARKER	CLWCD	254-289-4510	

NAME	ORGANIZATION	PHONE	EMAIL
David Collinsworth	Brazos River Auth	254.761.3165	davidc@brazos.org
CHARLES STEGER	Steger Bizzell	512 930 9412	chsteger@stegerbizzell.com
Andy Bilger	Senterra		
Glenn Dishong	CITY OF GEORGETOWN	512-930-2574	
BOB LANFORD	LANFORD EQUIP	512 385-2800	bob@lanfordequipment.com
JEFF STOCKTON	STOCKTON RE	(512)635-1133	jpstockton@AOL.COM
MILTON RISTER		512 863-0922	MILTONRISTER@gmail.COM
CHARLIE SCHNABEL	MANVILLE WSC	512 940-5858	CASCO@ONR.COM
Mary Condon	City of Florence	2547932490	smcondon@texascarvedstone.com
HORACE GRACE	Clearwater Dist	254-9330120	LAWNBARB@AOL.com
Bill Dee	City of Florence	254-793-4016	bdee@florencetex.com
STEVE KALLMAN	SD KALLMAN, L.P.	512:218-4404	STEVE@SDKALLMAN.COM
Valerie Covey	Williamson County	512-943-3370	comm3@wilco.org
SCOTT MURRAH	CITY OF GRANGER	254-260-9085	smurrah@municipal-llc.com
David Dunn	HDR Engineering	512-912-5136	david.dunn@hdrinc.com
Jennifer Williams		512-863-5258	randj5333@verizon.net

NAME	ORGANIZATION	PHONE	EMAIL
John Fisher	Bell Co Pct 4	254-290-7305	johnfishor@hot.rr.com
Pam Oakes	JJWSC	254-338-6562	poakes@tbcinternational.com
Cheryl Maxwell	Clearwater UWCD	254-933-0120	cmaxwell@ectcog.org

Regional Water Planning Group

March 11, 2010

ATTENDEES

Name	Organization	Phone	Email
Pat Reilly	Cross County WSC	512-658-9789	Reilly Patrick @ ATT.NET
Jason Jones	Jones-Heroy	512-556-2200	jasonj@jones-heroy.com
Andy Bilyeu	Santerra MUD		
DAVID MOORE	TWDB		
Jennifer McKnight	CTSUD		
Bill Brown	South Water Sud		
Sheila Cunningham	JSWSC	512-746-2114	sheila@jswatersupply.com

Regional Water Planning Group

March 11, 2010

ATTENDEES

Name	Organization	Phone	Email
James Cargill	Armstrong WSC	254-657-2429	
Tom Madden	CLL MUD	2545273342	tmadden@cllnet.com
Kodi Sawin	Sawin Group	512.627.9604	kodi.sawin@sawingroup.com
Rodney Adamek	Duff Eng	254-756-5414	rodney@duffengineering.com
Miles Whitsey	Duff Eng.	"	miles.whitsey@duffengineering.com
Grant A. Jackson	Naismith Engr.	(800)677-2831	gjackson@naismith-engineering.com
Bill Dee	City of Florence	254-793-4016	bdee@florencetex.com
David Fusilier	Naismith Engineering	(512)708-9322	dfusilier@naismith-engineering.com
Felise Santerini	Naismith Eng	512 908 9322	fsanterini@naismith-engineering.com

SIGN-IN SHEET
BELL/WILLIAMSON REGIONAL WATER SUPPLY FACILITY PLAN
STEERING COMMITTEE MEETING
TUESDAY, June 16, 2010, 1:30 p.m.
JONAH WATER SUD

IF YOUR NAME IS ON THIS SHEET WE HAVE YOUR CONTACT INFORMATION – YOU DO NOT NEED TO COMPLETE

****Please print neatly so that we will have your correct information.****

Name	Representing	Address	Phone No.	E-Mail*
Andy Bilger	Sonterra			
Arthur White (Mayor)	City of Bartlett			
Bill Brown	Jonah Water SUD			
Bill Dee	City of Florence			
Bob Lanford	Lanford Equip.			
Bob Whiton	Central Texas			
C. Sledge	Sledge Eng.			
Charles Ashby	Ashby RE			
Charles Steger	Steger Bizzell			
Charlie Schnabel	Manville WSC			
Cheryl Maxwell	Clearwater UWCD			
David Bettinger	Duff Eng.			
David Collinsworth	Brazos River Authority			
David Dunn	HDR Engineering			
David Fusilier	Naismith Engineering			
David Meesey	TWDB			

* - contact information is requested from those individuals that would like to be included in project update e-mails

SIGN-IN SHEET
BELL/WILLIAMSON REGIONAL WATER SUPPLY FACILITY PLAN
STEERING COMMITTEE MEETING
TUESDAY, June 16, 2010, 1:30 p.m.
JONAH WATER SUD

IF YOUR NAME IS ON THIS SHEET WE HAVE YOUR CONTACT INFORMATION – YOU DO NOT NEED TO COMPLETE

****Please print neatly so that we will have your correct information.****

Name	Representing	Address	Phone No.	E-Mail*
Lee Kelley	Central Texas			
Mae Smith	City of Holland			
Mary Condon	City of Florence			
Mel Yantis	City of Jarrell			
Mike Elliott	Elliott Properties			
Mike Robinson	Baker-Aicklen Inc.			
Miles Whitney	Duff Eng.			
Milton Rister				
Pam Oakes	JSWSC			
Ron Freeman	Sonterra MUD			
Sam Jones	Jones-Heroy & Assoc.			
Scott Murrah	City of Granger			
Sheila Cunningham	JSWSC			
Sonny Kretzschmar	JSWSC			
Steve Kallman	SD Kallman LP			

SIGN-IN SHEET
BELL/WILLIAMSON REGIONAL WATER SUPPLY FACILITY PLAN
STEERING COMMITTEE MEETING
TUESDAY, June 16, 2010, 1:30 p.m.
JONAH WATER SUD

IF YOUR NAME IS ON THIS SHEET WE HAVE YOUR CONTACT INFORMATION – YOU DO NOT NEED TO COMPLETE

****Please print neatly so that we will have your correct information.****

Name	Representing	Address	Phone No.	E-Mail*
Thomas Fasre	City of Jarrell			
Tim Brown	Bell Co.			
Tom Madden	JSWSC/ CL&L MUD			
Toni Mace	City of Granger			
Troy Bradshaw	Jarrell Town Center			
Troy Clawson	City of Jarrell			
Valerie Covey	Williamson Co.			
Wm. E. Aston	Deaf Eng.			
Kevin Steglich	JSWSC			
Bruce Barton	City of Jarrell - EDC	P.O. Box ~~427~~ 28627 Georgetown	422-0995	bbarton@omniprojects.com
Dewey Hulme	City of Jarrell Mayor	P.O. Box 831	635-3809	dhulme@jarrelledc.org

Regional Water Planning Meeting

September 9, 2010

Name	Organization	
JUDY PARKER	CUWCD	
Delores Goode	Chisholm Trail SUD	
MIKE ELLIOTT	ELLIOTT PROPERTIES	
TREY BUZBEE	Brazos River Authority	
MIKE FISHER	BAKER-AICKLEN & ASSOC.	mfisher@baker-aicklen.com
Mike Robinson	Baker. Aicklen & Assoc	
PAUL E. MALLINI	CITY of FLORENCE	
Mary Condon	City of Florence (UTILITY DIR. Paul Maleny)	
FRANK T. PHELAN	JAY ENGINEERING	
Jennifer Williams	Graduate Student	
Sam Jones	Jones-Heroy & Assoc.	
John Burke	John E. Burke & Assoc.	
Sonny Kretzschmar	J-S WSC	
Mike Whitney	Duff Consulting Eng.	
DENNIS PERZ	WmCo CHAPTER NATIVE PLANT SOCIETY	
Walt Henderson	WmCo Chapter Native Plant Society	
DAVID Meesey	TWDB	
Bill Brown	Jonah Water SUD	
TOM MADDEN	CLL MUD/JSWSC/CWUCD	
[illegible]	Sonterra MUD	
Bill Gravell	Sonterra MUD	
Grant A. Jackson	Naismith Engineering, Inc.	
David Fusilier	Naismith Engineering, Inc	

Bell and Williamson County Regional Water Study
"75% Complete" Public Meeting

10-27-10

Sign-In Sheet

1. Miles Whitney Duff Eng
2. Wm. E. Aston Duff Eng.
3. Chayton Critchfield
4. Leland Gerschon
5. Debora Goode
6. Jennifer McKnight
7. PAUL E. MALLINI
8. Linda Strong
9. DAVID MEESEY
10. Ron Freeman
11.
12. Lenn Schwarz
13. Sonny Kretzschmar
14. JAMES DAVIDSON
15. TOM MASON
16. Dewey Holmes
17. DAVID Fusilier
18. Sheila Cunningham
19.
20.
21.
22.
23.
24.

Bell and Williamson County Regional Water Study
"75% Complete" Public Meeting

10-27-10

Sign-In Sheet

1. Kodi Spain
2.
3.
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16.
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22.
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24.

SIGN-IN SHEET
BELL/WILLIAMSON REGIONAL WATER SUPPLY FACILITY PLAN
PUBLIC MEETING
Wednesday, November 17, 2010
Jarrell Memorial Park Community Center
1651 CR 305, Jarrell, Texas 76537

SIGN - IN SHEET

11-17-10

Sheila Cunningham
Miles Whitney
MIKE ELLIOTT
DAVID Mersey
TOM MASON
David Fusilier

Appendix C - Individual Water System Summaries

Armstrong Water Supply

1. **System Details**

Armstrong Water Supply Corporation (PWS No. 140019, CCN 10049). Located in Bell County along Highway 95, Armstrong WSC serves approximately 2,397 people and 859 connections in and around the City of Holland. Served through surface water contracts with Central Texas Water Supply Corporation and currently working on the construction of new storage facilities as well as ground water supplies.

System/Year	2010	2015	2020	2025	2030	2040	2050	2060
Population[1]	2,397	2,550	2,712	2,851	2,997	3,181	3,299	3,385
Number of Connections	859	914	972	1,022	1,074	1,140	1,182	1,213
Demand Per Capita (gallons[2])	181	180	179	178	178	177	175	175
Demand Total (ac-ft/yr[3])	486	514	544	568	594	624	647	664
Meets TCEQ Total Storage Requirements[4]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Elevated Storage Requirements [5]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Service Pump Capacity Requirements	Y	Y	Y	Y	Y	Y	Y	Y

Notes: **1 – Based on number of connections**
2 – gpd = gal/person/day
3 – acre-feet/year
4 – 200 gallons/connection
5 – 100 gallons/connection

3. **Surface Water Treatment Plants:**

None

4. **Water Rights (acre-feet):**

None

3. **Contracts to SELL Water (acre-feet):**
   a. **Groundwater:**
      None
   b. **Surface Water:**
      None

4. **Contracts to PURCHASE Water (acre-feet):**
   a. **Raw:**
      None

b. Groundwater:
None

c. Surface Water:
Contracted with Central Texas WSC for 16,990,000 gallons a month (626 acre-feet per year).

5. Groundwater Permits (acre-feet):

a. Existing Well Permits:
Has an existing irrigation well that is permitted by the Clearwater UWCD for approximately 180-190 acre-feet/year.

b. New/Proposed Well Permits:
Armstrong Water Supply has requested a new groundwater permit from Clearwater UWCD for an additional 480 acre-feet/year.

6. Wells

a. Existing Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
Irrigation Well	Trinity	115	-

Notes: **1 – gpm = gallons per minute**

b. New/Proposed Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
Proposed Well	Trinity	250	2,500

Notes: **1 – gpm = gallons per minute**

7. Storage Summary

a. Total Storage:
0.447 MG

b. Elevated Storage:
0.265 MG * standpipes are considered elevated storage.

c. Pressure Storage:
0.016 MG

d. Ground Storage
0.182 MG

8. Interconnections:

a. Existing Interconnections

Entity	Location	PSI
Central Texas WSC	Armstrong School	70
Central Texas WSC	Standpipe	70
Central Texas WSC	436 & 1123	100
Central Texas WSC	Cross Country	60
Central Texas WSC	Wilson Valley	70
Central Texas WSC	Northum	60
Central Texas WSC	Sulfur Wells P/S	60
Central Texas WSC	UPS	75

9. Rate/Billing Information:

a. Flat Rate: $35.00

b. Cost per each additional volumetric increase:

Additional Gallons	Cost per Unit
Each additional 1,000 gallons	$3.95

Capital Land and Livestock MUD No. 1

1. **System Details**

Capital Land and Livestock MUD No. 1 has a service area that generally covers approximately 12, 000 acres in both Bell and Williamson Counties. Currently the MUD does not have any service connections nor municipal water supply infrastructure.

System/Year	2010	2015	2020	2025	2030	2040	2050	2060
Population[1]	0	750	6,000	10,500	15,000	37,500	48,240	48,240
Number of Connections	0	250	2,000	3,500	5,000	12,500	16,080	16,080
Demand Per Capita (gallons[2])	0	175	175	175	175	175	175	175
Demand Total (ac-ft/yr[3])	0	147	1,176	2,058	2,941	7,351	9,457	9,457
Meets TCEQ Total Storage Requirements[4]	N	N	N	N	N	N	N	N
Meets TCEQ Elevated Storage Requirements [5]	N	N	N	N	N	N	N	N
Meets TCEQ Service Pump Capacity Requirements	N	N	N	N	N	N	N	N

Notes: 1 – Based on number of connections
2 – gpd = gal/person/day
3 – acre-feet/year
4 – 200 gallons/connection
5 – 100 gallons/connection

3. **Surface Water Treatment Plants:**

None

4. **Water Rights (acre-feet):**

None

3. **Contracts to SELL Water (acre-feet):**
   a. **Groundwater:**
      None
   b. **Surface Water:**
      None

4. **Contracts to PURCHASE Water (acre-feet):**
   a. **Raw:** None
   b. **Groundwater:** None
   c. **Surface Water:** None

5. **Groundwater Permits (acre-feet):**
   a. **Existing Well Permits:**
   None.
   New/Proposed Well Permits:
   None
6. **Wells**
   a. Existing Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
-	-	-	-

Notes: **1 – gpm = gallons per minute**

b. New/Proposed Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
CLL Well 1	Edwards	500 (estimated)	
CLL Well 2	Edwards	500 (estimated)	
CLL Well 3	Edwards	500 (estimated)	

Notes: **1 – gpm = gallons per minute**

7. **Storage Summary**
   a. **Total Storage:**
   None
   b. **Elevated Storage:**
   None
   c. **Pressure Storage:**
   None
   d. **Ground Storage**
   None

8. **Interconnections:**
   a. **Existing Interconnections**
   None
9. **Rate/Billing Information:**
   a. **Flat Rate:** None
   b. **Cost per each additional volumetric increase:**

Additional Gallons	Cost per Unit
-	-

Chisholm Trail SUD

1. **System Details**

Chisholm Trail SUD (PWS No. 2460043, CCN 11590) serves a large portion of the project area covering portions of Williamson, Bell and Burnet Counties from just north of Liberty Hill past the Bell County line and bounded by Highway 183 on the West and I-35 to the east. Currently Chisholm Trail SUD serves approximately 19,846 people and over 6,572 connections. Chisholm Trail SUD is a tax-exempt, public body exempt from property taxes and sales tax. The District does not have the authority to levy taxes, and must operate only on revenues and fees generated from the water and wastewater services.

System/Year	2010	2015	2020	2025	2030	2040	2050	2060
Population[1]	19,846	24,124	29,323	34,478	40,539	52,672	65,837	79,946
Number of Connections	6,572	7,988	9,710	11,417	13,424	17,441	21,800	26,472
Demand Per Capita (gallons[2]**)**	142	144	145	146	146	147	150	152
Demand Total (ac-ft/yr[3]**)**	3,157	3,891	4,763	5,639	6,630	8,673	11,062	13,612
Meets TCEQ Total Storage Requirements[4]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Elevated Storage Requirements [5]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Service Pump Capacity Requirements		Y	Y	Y	Y	**N**	**N**	**N**

Notes:
1 – Based on number of connections
2 – gpd = gal/person/day
3 – acre-feet/year
4 – 200 gallons/connection
5 – 100 gallons/connection

3. **Surface Water Treatment Plants:**

Chisholm Trail has an existing contract with the City of Georgetown to co-own a portion of the Lake Granger Water Treatment Plant. This co-ownership provides Chisholm Trail with 4.09 MGD of treated water out of the Lake Granger WTP. The proposed expansion at the Lake Granger Water Treatment Plant will provide Chisholm Trail with a total of 9.59 MGD of treated water.

4. **Water Rights (acre-feet):**

None

3. **Contracts to SELL Water (acre-feet):**

   a. **Groundwater:**

   Liberty Hill WSC = combined with surface water provides 100,000 gallons/day

b. Surface Water:
Liberty Hill WSC = see note above

4. Contracts to PURCHASE Water (acre-feet):

a. Raw:
BRA = 6,340 acre-feet/year (Lake Georgetown)
BRA = 4,760 acre-feet/year (Lake Stillhouse Hollow)

b. Groundwater:
None

c. Surface Water:
City of Georgetown (Lake Granger Water Treatment Plant) = 4.36 MGD

5. Groundwater Permits (acre-feet):

a. Existing Well Permits:
None.

New/Proposed Well Permits:
None

6. Wells

a. Existing Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
Domel 1	Edwards North BFZ	1,800	200
Domel 2	Edwards North BFZ	900	220
Irvine	Edwards North BFZ	130	180
Schneider	Edwards North BFZ	220	440

Notes: **1 – gpm = gallons per minute**

b. New/Proposed Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
-			
-			
-			
-			

Notes: **1 – gpm = gallons per minute**

7. Storage Summary

a. Total Storage:
7.8 MG

b. Elevated Storage:
4.25 MG

c. Pressure Storage:

0.016 MG

d. Ground Storage

3.534 MG

8. Interconnections:

a. Existing Interconnections

Entity	Location	PSI
City of Georgetown		
City of Georgetown		
Liberty Hill WSC		

9. Rate/Billing Information:

a. Flat Rate: $2.50 per 1,000 gallons (0-10,000 gallons)

b. Cost per each additional volumetric increase:

Additional Gallons	Cost per Unit
10,001-20,000	$3.50
20,001-35,000	$3.75
35,001-50,000	$5.00
50,001-60,000	$7.00
60,001 +	$7.50

City of Florence

1. **System Details**

The City of Florence (PWS No. 2400065, CCN 13175) is located in Williamson County east of I-35 on Highway 195 and FM 487. The City currently serves approximately 1,364 residents and of the City and surrounding community and a total of 452 connections.

System/Year	2010	2015	2020	2025	2030	2040	2050	2060
Population[1]	1,364	1,492	1,632	1,784	1,951	2,298	2,675	3,079
Number of Connections	452	467	540	591	646	761	886	1,020
Demand Per Capita (gallons[2])	158	157	155	154	154	152	150	149
Demand Total (ac-ft/yr[3])	241	262	283	307	332	386	446	514
Meets TCEQ Total Storage Requirements[4]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Elevated Storage Requirements [5]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Service Pump Capacity Requirements	Y	Y	Y	Y	Y	Y	Y	Y

Notes:
1 – Based on number of connections
2 – gpd = gal/person/day
3 – acre-feet/year
4 – 200 gallons/connection
5 – 100 gallons/connection

3. **Surface Water Treatment Plants:**

None.

4. **Water Rights (acre-feet):**

None.

3. **Contracts to SELL Water (acre-feet):**

   a. **Groundwater:**
   The City of Florence serves seven (7) Chisholm Trail SUD customers.

   b. **Surface Water:**
   None.

4. **Contracts to PURCHASE Water (acre-feet):**

   a. **Raw:**
   None.

b. Groundwater:
None

c. Surface Water:
The City of Florence has contracted with Chisholm Trail SUD for 500 acre-feet per year of Treated water. At this time the City does not have access to this water.

5. Groundwater Permits (acre-feet):

a. Existing Well Permits:
None.

New/Proposed Well Permits:
None

6. Wells

a. Existing Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
Well 1	Trinity	93	596
Well 2	Trinity	35	665
Well 3	Trinity	45	598
Well 4	Trinity	108	697

Notes: **1 – gpm = gallons per minute**

b. New/Proposed Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
-			

Notes: **1 – gpm = gallons per minute**

7. Storage Summary

a. Total Storage:
0.60 MG

b. Elevated Storage:
0.15 MG

c. Pressure Storage:
None

d. Ground Storage
0.35 MG

8. Interconnections:

a. Existing Interconnections

Entity	Location	PSI
None		

b. Proposed Interconnections

The City is currently working on a new water line project to construct an 8-inch interconnection with Chisholm Trail. This new interconnections would provide the City with an additional 100 gallons per minute. The City has an existing inter-local agreement with Chisholm Trail SUD for 500 acre-feet per year of raw water (310 gallons per minute). This contract is for $30,000 a year.

9. Rate/Billing Information:

a. Flat Rate:

Inside the City Limits = $28.00 for a 5/8-inch meter for the first 2,000 gallons.
Outside the City Limits = $42.00 for a 5/8-inch meter for the first 2,000 gallons.

b. Cost per each additional volumetric increase:

Additional Gallons	Cost per Unit
2,001-5,000	$2.00
5,001-10,000	$2.25
10,001-20,000	$2.75
20,001-30,000	$3.50
30,001-45,000	$4.50
45,001-60,000	$5.50
60,001 +	$6.50

Jarrell Schwertner Water Supply Corporation

1. **System Details**

Jarrell Schwertner Water Supply Corporation (PWS No. 2460011, CCN 10002) is located along the I-35 corridor in both Bell and Williamson Counties and stretches from Theon to West of Jarrell to East of Salado to West of Holland to West of Bartlett. The Water Supply Corporation serves approximately 5,313 residents of both Williamson and Bell Counties with 1,759 connections throughout their service area. The Jarrell-Schwertner WSC is a member-owned non-profit corporation. As such, it is governed by a Board of Directors that is made up of nine member-elected residents who serve three-year terms.

System/Year	2010	2015	2020	2025	2030	2040	2050	2060
Population[1]	5,313	6,005	6,787	7,587	8,482	10,246	12,114	14,091
Number of Connections	1,759	1,988	2,247	2,512	2,809	3,393	4,011	4,666
Demand Per Capita (gallons[2]**)**	181	180	179	178	178	177	175	175
Demand Total (ac-ft/yr[3]**)**	1,077	1,211	1,361	1,513	1,682	2,009	2,375	2,762
Meets TCEQ Total Storage Requirements[4]	Y	Y	Y	Y	Y	**N**	**N**	**N**
Meets TCEQ Elevated Storage Requirements [5]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Service Pump Capacity Requirements	Y	Y	**N**	**N**	**N**	**N**	**N**	**N**

Notes: **1 – Based on number of connections**
2 – gpd = gal/person/day
3 – acre-feet/year
4 – 200 gallons/connection
5 – 100 gallons/connection

3. **Surface Water Treatment Plants:**

None.

4. **Water Rights (acre-feet):**

Contracted with BRA for 1,000 acre-feet/year out of Lake Belton; however, at this time JSWSC does not have access to this water.

3. **Contracts to SELL Water (acre-feet):**

   a. **Groundwater:**
   None

   b. **Surface Water:**
   None.

4. **Contracts to PURCHASE Water (acre-feet):**
   a. **Raw:**
   1,000 acre-feet per year from BRA (Lake Belton).
   b. **Groundwater:**
   Proposed 7 year contract with Salado for $1.55 per 1,000 gallons with the following take or pay flat fees:
   Minimum take or pay 2 million gallons for two years = $3,100
   Minimum take or pay 2.5 million gallons for two years = $3,875
   Minimum take or pay 3 million gallons for two years = $4,650
   c. **Surface Water:**
   Contracted with Central Texas WSC for 50,000 gallons per month = $2.02 per 1,000 gallons.

5. **Groundwater Permits (acre-feet):**
   a. **Existing Well Permits:**
   None.
   New/Proposed Well Permits:
   None

6. **Wells**

a. Existing Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
Town Well 1	Edwards Limestone	180	367
Prairie Dell 2	Edwards Limestone	270	275
Goode Well 4	Edwards Limestone	130	357
Prairie Dell 5	Edwards Limestone	160	251
South Well 6	Edwards Limestone	150	430
South Remote	Edwards Limestone	150	453
Prairie Dell 8	Edwards Limestone	215	500

Notes: **1 – gpm = gallons per minute**

b. New/Proposed Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
-			

Notes: **1 – gpm = gallons per minute**

7. **Storage Summary**
   a. **Total Storage:**
   0.601 MG
   b. **Elevated Storage:**
   0.583 MG * standpipes are considered elevated storage.

c. Pressure Storage:
0.018 MG

d. Ground Storage
None

8. Interconnections:

a. Existing Interconnections

Entity	Location	PSI
Sonterra MUD	Sonterra Blvd East of I-35	

b. Proposed Interconnections
JSWSC is working a future interconnects with Salado WSC to be located at the intersection of Royal Road and Blackberry Lane just east of Salado.

9. Rate/Billing Information:

a. Flat Rate:
$38.00.

b. Cost per each additional volumetric increase:

Additional Gallons	Cost per Unit
0-2,000	$1.00
2,001-4,000	$1.00
4,001-6,000	$2.25
6,001-8,000	$4.25
8,001-10,000	$4.25
10,001-20,000	$4.25
20,001-30,000	$4.25
30,001-50,000	$5.25
50,001 +	$6.50

Jonah Water SUD

1. **System Details**

Jonah Water SUD (PWS No. 2460022, CCN 5110000) is located in Williamson County and serves the third largest portion of the project area. Located west of I-35 to just east of Highway 95 Jonah covers from the City of Hutto north to boundary of the Jarrell Schwertner Water Supply Corporation. Johan Water SUD currently serves approximately 10,685 residents and approximately 3,538 connections throughout their service area.

System/Year	2010	2015	2020	2025	2030	2040	2050	2060
Population[1]	10,685	12,194	13,915	15,718	17,755	21,930	26,472	31,344
Number of Connections	3,538	4,038	4,608	5,205	5,879	7,262	8,766	10,379
Demand Per Capita (gallons[2])	140	142	143	142	142	141	139	138
Demand Total (ac-ft/yr[3])	1,676	1,940	2,229	2,500	2,824	3,464	4,122	4,845
Meets TCEQ Total Storage Requirements[4]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Elevated Storage Requirements [5]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Service Pump Capacity Requirements	Y	Y	N	N	N	N	N	N

Notes: **1 – Based on number of connections**
2 – gpd = gal/person/day
3 – acre-feet/year
4 – 200 gallons/connection
5 – 100 gallons/connection

3. **Surface Water Treatment Plants:**

None.

4. **Water Rights (acre-feet):**

Jonah Water SUD is contracted with BRA for delivery of 2,439 acre-feet of water. However at this time there is no infrastructure available for delivery.

3. **Contracts to SELL Water (acre-feet):**
   a. **Groundwater:**
      None
   b. **Surface Water:**
      None.

4. **Contracts to PURCHASE Water (acre-feet):**
   a. **Raw:**
      None.

b. Groundwater:

None.

c. Surface Water:

Jonah Water SUD is contracted with BRA under a "needs met" contract for an annual average firm pumping capacity of 1,500 gallons per minute. This is equal to a very conservative annual average flow of 1,209 acre-feet per year. The annual average is equal to half of the firm pumping capacity.

5. Groundwater Permits (acre-feet):

a. Existing Well Permits:

None.

New/Proposed Well Permits:

None

6. Wells

a. Existing Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
Well 1	Edwards	235	-
Well 2	Edwards	225	-
Well 3	-	-	-
Well 4	Edwards	600	-
Well 5	Edwards	240	-
Well 6	Edwards	250	-
Well 7	Edwards	300	-
Well 8	Edwards	290	-
Well 9	-	-	-
Well 10	Edwards	400	-

Notes: **1 – gpm = gallons per minute**

b. New/Proposed Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
-			

Notes: **1 – gpm = gallons per minute**

7. Storage Summary

a. Total Storage:

4.417 MG

b. Elevated Storage:

3.032 MG * standpipes are considered elevated storage.

c. Pressure Storage:
0.0460 MG

d. Ground Storage
1.385 MG

8. Interconnections:

a. Existing Interconnections

Entity	Location	PSI
-		

b. Proposed Interconnections

9. Rate/Billing Information:

a. Flat Rate:
$28.00.

b. Cost per each additional volumetric increase:

Additional Gallons	Cost per Unit
0-15,000	$2.83
15,001-30,000	$4.23
30,001-50,000	$5.63
50,001 +	$7.01

Sonterra MUD

1. **System Details**

Sonterra MUD (PWS No. 2460157, CCN No. P1337) is located south of the City of Jarrell in Williamson County just east of I-35. Currently, Sonterra MUD serves approximately 2,100 people and approximately 695 connections. The Sonterra Municipal Utility District (MUD) is a political entity created to serve the water and wastewater requirements of a defined area near Jarrell, Texas. The MUD has the power to levy taxes to support its operations and facilities and is generally responsible for preserving the value of properties within its boundaries.

System/Year	2010	2015	2020	2025	2030	2040	2050	2060
Population[1]	2,100	4,583	10,000	14,142	20,000	20,000	20,000	20,000
Number of Connections	695	1,518	3,311	4,683	6,623	6,623	6,623	6,623
Demand Per Capita (gallons[2])	140	142	143	142	142	141	139	138
Demand Total (ac-ft/yr[3])	329	726	1,602	2,250	3,159	3,114	3,092	3,092
Meets TCEQ Total Storage Requirements[4]	N	N	N	N	N	N	N	N
Meets TCEQ Elevated Storage Requirements [5]	Y	Y	Y	Y	Y	Y	Y	Y
Meets TCEQ Service Pump Capacity Requirements	Y	N	N	N	N	N	N	N

Notes: **1 – Based on number of connections**
2 – gpd = gal/person/day
3 – acre-feet/year
4 – 200 gallons/connection
5 – 100 gallons/connection

3. **Surface Water Treatment Plants:**

None.

4. **Water Rights (acre-feet):**

None.

3. **Contracts to SELL Water (acre-feet):**

a. **Groundwater:**
None

b. **Surface Water:**
None.

4. **Contracts to PURCHASE Water (acre-feet):**
   a. **Raw:**
      None.
   b. **Groundwater:**
      None.
   c. **Surface Water:**
      None

5. **Groundwater Permits (acre-feet):**
   a. **Existing Well Permits:**
      None.
   b. **New/Proposed Well Permits:**
      None

6. **Wells**

a. Existing Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
Well 1	Edwards	75	525
Well 2	Edwards	690	505
Well 3	Edwards	120	520

Notes: **1 – gpm = gallons per minute**

b. New/Proposed Wells

Well Name	Aquifer	Normal Pump Rate (gpm[1])	Depth (feet)
-			
-			
-			
-			

Notes: **1 – gpm = gallons per minute**

7. **Storage Summary**
   a. **Total Storage:**
      0.350 MG
   b. **Elevated Storage:**
      None
   c. **Pressure Storage:**
      0.015 MG
   d. **Ground Storage**
      None

8. **Interconnections:**
   a. **Existing Interconnections**
      None.
   b. **Proposed Interconnections**
      Proposed interconnection with Jarrell Schwertner Water Supply Corporation just east of I-35 at Sonterra Blvd.

9. **Rate/Billing Information:**
   a. **Flat Rate:** $35.00

   b. **Cost per each additional volumetric increase:**

Additional Gallons	Cost per Unit
0-10,000	$3.25
10,001-15,000	$3.25
+15,001	$3.25
-	-

Appendix D – Project Cost Estimates

Bell/Williamson Regional Water Supply Facility Plan
Water System Improvements
Engineer's Estimate of Probable Construction Costs

Project No. -	**1**
Project Name -	**Armstrong WSC Distribution System Improvements**
Entity Served -	**Armstrong WSC**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Groundwater Well				
1	Groundwater Well (includes drilling, site improvements, & TCEQ approved testing/sampling)	1	LS	$ 600,000.00	$ 600,000
	Pump Stations				
2	Booster Pump Station (20,000 GST) (includes GST/Service Pumps/Pressure Tanks)	1	LS	$ 120,000.00	$ 120,000
3	Booster Pump Station (100,000 GST) (includes GST/Service Pumps/Pressure Tanks)	1	LS	$ 300,000.00	$ 300,000
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 15,000.00	$ 15,000
	Appurtenances				
6	Major Water Line Tie-Ins (to exist. system)	3	EA	$ 2,000.00	$ 6,000
7	New master meter (@ WTP Tie-In)	3	EA	$ 5,000.00	$ 15,000

Construction Cost	**$**	**1,071,000**
Contingency	**$**	**160,650**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**332,546**
Bond Counsel & Financial Advisor Costs	**$**	**36,950**
Right-of-Way, Easement & Land Acquisition	**$**	**9,757**
TOTAL PROJECT COSTS	**$**	**1,610,902**
TOTAL PROJECT PLANNING COSTS	**$**	**1,611,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**140,454**
ANNUAL O&M COSTS[2]	**$**	**30,791**
ANNUAL ENERGY COSTS[3]	**$**	**27,937**
TOTAL ANNUAL COSTS	**$**	**199,183**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Bell/Williamson Regional Water Supply Facility Plan
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Project No. -	**2**
Project Name -	**CL&L MUD No. 1 - Immediate**
Entity Served -	**CL&L MUD No. 1**
Project Type -	**Immediate**

Item	Description	Estimated	Unit		Unit Cost		Total Cost
	Constr. - Rural Area						
1	8" DR-18 C-900 WL w/ ESC & Trench Safety	1,000	LF	$	35.00	$	35,000
	Groundwater Well						
2	Groundwater Well & Controls (includes drilling, site improvements, & TCEQ approved testing/sampling)	3	LS	$	600,000.00	$	1,800,000
	Pump Stations						
3	Booster Pump Station (100,000 GST) (includes GST/Service Pumps/Pressure Tanks)	3	LS	$	300,000.00	$	900,000
	Chlorination/Chloramines						
4	Liquid Feed Chlorination	3	LS	$	15,000.00	$	45,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	3	LS	$	15,000.00	$	45,000
	Appurtenances						
6	6" Gate Valves	9	EA	$	1,250.00	$	11,250
7	Major Water Line Tie-Ins (to exist. system)	3	EA	$	2,000.00	$	6,000
8	Well meters	3	EA	$	5,000.00	$	15,000

Construction Cost	**$**	**2,857,250**
Contingency	**$**	**428,588**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**887,176**
Bond Counsel & Financial Advisor Costs	**$**	**98,575**
Right-of-Way, Easement & Land Acquisition	**$**	**9,757**
TOTAL PROJECT COSTS	**$**	**4,281,345**
TOTAL PROJECT PLANNING COSTS	**$**	**4,300,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**374,894**
ANNUAL O&M COSTS[2]	**$**	**82,146**
ANNUAL ENERGY COSTS[3]	**$**	**86,458**
TOTAL ANNUAL COSTS	**$**	**543,498**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Bell/Williamson Regional Water Supply Facility Plan
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Project No. -	**3**
Project Name -	**City of Florence/Chisholm Trail SUD Interconnect**
Entity Served -	**City of Florence**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit		Unit Cost		Total Cost
1	8" DR-18 C-900 WL w/ ESC & Trench Safety	5,210	LF	$	35.00	$	182,350
	Pump Stations/Interconnect						
2	Booster Pump Station & Controls No. 1 Replacement/Plug existing well)	1	LS	$	660,000.00	$	660,000
	Chlorination/Chloramines						
3	Liquid Feed Chlorination	1	LS	$	20,000.00	$	20,000
4	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$	20,000.00	$	20,000
	Appurtenances						
5	Major Water Line Tie-Ins (to exist. system)	2	EA	$	2,000.00	$	4,000
6	New master meter (@ WTP Tie-In)	1	EA	$	50,000.00	$	50,000

Construction Cost	**$**	**936,350**
Contingency	**$**	**140,453**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**290,737**
Bond Counsel & Financial Advisor Costs	**$**	**32,304**
Right-of-Way, Easement & Land Acquisition	**$**	**23,921**
TOTAL PROJECT COSTS	**$**	**1,423,764**
TOTAL PROJECT PLANNING COSTS	**$**	**1,450,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**126,418**
ANNUAL O&M COSTS[2]	**$**	**26,920**
ANNUAL ENERGY COSTS[3]	**$**	**7,646**
TOTAL ANNUAL COSTS	**$**	**160,984**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Bell/Williamson Regional Water Supply Facility Plan
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Project No. -	**4**
Project Name -	**JSWSC/Sonterra MUD Emergency Tie-In**
Entity Served -	**JSWSC & Sonterra MUD**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Interconnections				
1	Emergency Interconnection	1	LS	$ 40,000.00	$ 40,000

Construction Cost	**$**	**40,000**
Contingency	**$**	**6,000**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**12,420**
Bond Counsel & Financial Advisor Costs	**$**	**1,380**
Right-of-Way, Easement & Land Acquisition	**$**	**-**
TOTAL PROJECT COSTS	**$**	**59,800**
TOTAL PROJECT PLANNING COSTS	**$**	**60,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**5,231**
ANNUAL O&M COSTS[2]	**$**	**460**
ANNUAL ENERGY COSTS[3]	**$**	**784**
TOTAL ANNUAL COSTS	**$**	**6,475**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Bell/Williamson Regional Water Supply Facility Plan
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Project No. -	**5**
Project Name -	**JSWSC/Sonterra MUD Interconnect**
Entity Served -	**JSWSC & Sonterra MUD**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	6,000	LF	$ 45.00	$ 270,000
	Pump Stations				
2	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Interconnections				
3	Interconnection w/ meters & backflow preventers	1	LS	$ 120,000.00	$ 120,000
	Appurtenances				
4	12" Gate Valves	8	EA	$ 2,500.00	$ 20,000
5	2" air release valve	2	EA	$ 3,000.00	$ 6,000
6	Minor Water Line Tie-Ins (to exist. system)	2	EA	$ 1,000.00	$ 2,000
7	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000

Construction Cost		**$1,022,000**
Contingency	**$**	**153,300**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**317,331**
Bond Counsel & Financial Advisor Costs	**$**	**35,259**
Right-of-Way, Easement & Land Acquisition	**$**	**27,548**
TOTAL PROJECT COSTS		**$1,555,438**
TOTAL PROJECT PLANNING COSTS	**$**	**1,560,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**136,008**
ANNUAL O&M COSTS[2]	**$**	**24,975**
ANNUAL ENERGY COSTS[3]	**$**	**18,527**
TOTAL ANNUAL COSTS	**$**	**179,510**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.125% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Bell/Williamson Regional Water Supply Facility Plan
Water System Improvements
Engineer's Estimate of Probable Construction Costs

Project No. -	**6**
Project Name -	**Jonah Water SUD EST #2/CR 311 Tie-In**
Entity Served -	**Jonah Water SUD/JSWSC/Sonterra MUD**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	48,414	LF	$ 45.00	$ 2,178,630
	Bores & Casing				
2	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
	Pump Stations				
3	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Interconnections				
4	Interconnection w/ meters & backflow preventers	2	LS	$ 120,000.00	$ 240,000
	Chlorination/Chloramines				
5	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Appurtenances				
7	12" Gate Valves	20	EA	$ 2,500.00	$ 50,000
8	2" air release valve	2	EA	$ 3,000.00	$ 6,000
9	4" air release valve		EA	$ 10,000.00	$ -
10	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
11	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000

Construction Cost	**$**	**3,158,630**
Contingency	**$**	**473,795**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**980,755**
Bond Counsel & Financial Advisor Costs	**$**	**108,973**
Right-of-Way, Easement & Land Acquisition	**$**	**222,287**
TOTAL PROJECT COSTS	**$**	**4,944,438**
TOTAL PROJECT PLANNING COSTS	**$**	**5,000,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**435,923**
ANNUAL O&M COSTS[2]	**$**	**52,670**
ANNUAL ENERGY COSTS[3]	**$**	**18,527**
TOTAL ANNUAL COSTS	**$**	**507,120**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1.45% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**7**
Project Name -	**JSWSC / Jonah Water SUD FM 1105 Tie-In**
Entity Served -	**Jonah Water SUD/JSWSC/Sonterra MUD**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	32,132	LF	$ 45.00	$ 1,445,940
	Bores & Casing				
2	20" Steel Casing Pipe & Bore	120	LF	$ 300.00	$ 36,000
	Pump Stations				
3	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Interconnections				
4	Interconnection w/ meters & backflow preventers	1	LS	$ 120,000.00	$ 120,000
	Chlorination/Chloramines				
5	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Appurtenances				
7	12" Gate Valves	15	EA	$ 2,500.00	$ 37,500
8	2" air release valve	2	EA	$ 3,000.00	$ 6,000
9	4" air release valve		EA	$ 10,000.00	$ -
10	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
11	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000

Construction Cost	**$**	**2,289,440**
Contingency	**$**	**343,416**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**710,871**
Bond Counsel & Financial Advisor Costs	**$**	**78,986**
Right-of-Way, Easement & Land Acquisition	**$**	**160,110**
TOTAL PROJECT COSTS	**$**	**3,582,823**
TOTAL PROJECT PLANNING COSTS	**$**	**3,600,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**313,864**
ANNUAL O&M COSTS[2]	**$**	**42,126**
ANNUAL ENERGY COSTS[3]	**$**	**18,527**
TOTAL ANNUAL COSTS	**$**	**374,517**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1.6% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**8**
Project Name -	**JSWSC/Central Texas WSC Interconnect**
Entity Served -	**JSWSC**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	18" DR-18 C-900 WL w/ ESC & Trench Safety	34,602	LF	$ 75.00	$ 2,595,150
	Bores & Casing				
2	30" Steel Casing Pipe & Bore	160	LF	$ 400.00	$ 64,000
	Pump Stations				
3	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	1	LS	$ 20,000.00	$ 20,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 20,000.00	$ 20,000
	Appurtenances				
6	18" Gate Valves	16	EA	$ 8,000.00	$ 128,000
7	4" air release valve	2	EA	$ 10,000.00	$ 20,000
8	Minor Water Line Tie-Ins (to exist. system)	4	EA	$ 1,000.00	$ 4,000
9	Major Water Line Tie-Ins (to exist. system)	4	EA	$ 2,000.00	$ 8,000
10	New master meter (@ WTP Tie-In)	1	EA	$ 15,000.00	$ 15,000

Construction Cost	**$**	**4,074,150**
Contingency	**$**	**611,123**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**1,265,024**
Bond Counsel & Financial Advisor Costs	**$**	**140,558**
Right-of-Way, Easement & Land Acquisition	**$**	**158,871**
TOTAL PROJECT COSTS	**$**	**6,249,725**
TOTAL PROJECT PLANNING COSTS	**$**	**6,300,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**549,263**
ANNUAL O&M COSTS[2]	**$**	**71,450**
ANNUAL ENERGY COSTS[3]	**$**	**147,037**
TOTAL ANNUAL COSTS	**$**	**767,750**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1.525% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**8a**
Project Name -	**Prairie Dell/FM 487 Interconnect**
Entity Served -	**JSWSC**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	34,872	LF	$ 45.00	$ 1,569,240
	Bores & Casing				
2	20" Steel Casing Pipe & Bore	800	LF	$ 300.00	$ 240,000
	Pump Stations				
3	Booster Pump Station - 1,500 gpm	1	LS	$ 600,000.00	$ 600,000
	Appurtenances				
4	12" Gate Valves	10	EA	$ 2,500.00	$ 25,000
5	2" air release valve	2	EA	$ 3,000.00	$ 6,000
6	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
7	New master meter (@ Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$**	**2,454,240**
Contingency	**$**	**368,136**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**762,042**
Bond Counsel & Financial Advisor Costs	**$**	**84,671**
Right-of-Way, Easement & Land Acquisition	**$**	**160,110**
TOTAL PROJECT COSTS	**$**	**3,829,199**
TOTAL PROJECT PLANNING COSTS	**$**	**3,900,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**340,020**
ANNUAL O&M COSTS[2]	**$**	**43,041**
ANNUAL ENERGY COSTS[3]	**$**	**73,518**
TOTAL ANNUAL COSTS	**$**	**456,579**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1.525% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**9**
Project Name -	**Sonterra MUD Groundwater Well**
Entity Served -	**Sonterra MUD**
Project Type -	**Immediate**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$ 30.00	$ 150,000
	Groundwater Well				
2	Groundwater Well & Controls (includes drilling, site improvements, & TCEQ approved testing/sampling)	1	LS	$ 600,000.00	$ 600,000
	Chlorination/Chloramines				
3	Liquid Feed Chlorination	1	LS	$ 15,000.00	$ 15,000
4	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 15,000.00	$ 15,000
	Appurtenances				
5	6" Gate Valves	8	EA	$ 1,250.00	$ 10,000
6	2" air release valve	2	EA	$ 3,000.00	$ 6,000
7	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
8	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
9	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$**	**810,000**
Contingency	**$**	**121,500**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**251,505**
Bond Counsel & Financial Advisor Costs	**$**	**27,945**
Right-of-Way, Easement & Land Acquisition	**$**	**24,105**
TOTAL PROJECT COSTS	**$**	**1,235,055**
TOTAL PROJECT PLANNING COSTS	**$**	**1,250,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**108,981**
ANNUAL O&M COSTS[2]	**$**	**23,288**
ANNUAL ENERGY COSTS[3]	**$**	**48,816**
TOTAL ANNUAL COSTS	**$**	**181,085**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**10**
Project Name -	**CL&L MUD No. 1 GST & Service Pump Station**
Entity Served -	**CL&L MUD No. 1**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit		Unit Cost		Total Cost
	Constr. - Rural Area						
1	6" DR-18 C-900 WL w/ ESC & Trench Safety	5,000	LF	$	30.00	$	150,000
	Pump Stations						
2	Booster Pump Station - 900 gpm	2	LS	$	500,000.00	$	1,000,000
3	Booster Pump Station - 1,500 gpm		LS	$	800,000.00	$	-
	Chlorination/Chloramines						
4	Liquid Feed Chlorination	1	LS	$	20,000.00	$	20,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$	20,000.00	$	20,000
	Ground/Elevated Storage Tanks						
6	GST - 300,000 gal	1	LS	$	300,000.00	$	300,000
	Appurtenances						
7	6" Gate Valves	4	EA	$	1,250.00	$	5,000
8	2" air release valve	2	EA	$	3,000.00	$	6,000
9	Major Water Line Tie-Ins (to exist. system)	2	EA	$	2,000.00	$	4,000
10	New master meter (@ Tie-In)	2	EA	$	10,000.00	$	20,000

Construction Cost	**$**	**1,525,000**
Contingency	**$**	**228,750**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**473,513**
Bond Counsel & Financial Advisor Costs	**$**	**52,613**
Right-of-Way, Easement & Land Acquisition	**$**	**24,105**
TOTAL PROJECT COSTS	**$**	**2,303,980**
TOTAL PROJECT PLANNING COSTS	**$**	**2,350,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**204,884**
ANNUAL O&M COSTS[2]	**$**	**41,213**
ANNUAL ENERGY COSTS[3]	**$**	**88,222**
TOTAL ANNUAL COSTS	**$**	**334,319**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.35% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**11**
Project Name -	**Chisholm Trail SUD South Lake Georgetown WTP**
Entity Served -	**Chisholm Trail SUD**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	4.0 MGD Membrane WTP	1	LS	$ 3,000,000.00	$ 3,000,000
2	Ground Storage - 1,000,000 gal	1	LS	$ 1,000,000.00	$ 1,000,000
3	Service Pumps & Bldg	1	LS	$ 400,000.00	$ 400,000
4	Pressure Tank - 5,000 gallons	1	LS	$ 50,000.00	$ 50,000
5	Disinfection / Chemicals	1	LS	$ 350,000.00	$ 350,000
6	Electrical	1	LS	$ 250,000.00	$ 250,000
7	Site Improvements	1	LS	$ 200,000.00	$ 200,000
8	Raw Water Pump Station	1	LS	$ 1,000,000.00	$ 1,000,000
9	Sludge Processing & Storage	1	LS	$ 500,000.00	$ 500,000
10	Office Bldg	1	LS	$ 250,000.00	$ 250,000
11	SWPPP	1	LS	$ 50,000.00	$ 50,000

Construction Cost	**$**	**7,050,000**
Contingency	**$**	**1,057,500**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**2,189,025**
Bond Counsel & Financial Advisor Costs	**$**	**243,225**
Right-of-Way, Easement & Land Acquisition	**$**	**500,000**
TOTAL PROJECT COSTS	**$**	**11,039,750**
TOTAL PROJECT PLANNING COSTS	**$**	**11,100,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**967,749**
ANNUAL O&M COSTS[2]	**$**	**648,600**
ANNUAL ENERGY COSTS[3]	**$**	**292,897**
TOTAL ANNUAL COSTS	**$**	**1,909,246**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 8% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**12**
Project Name -	**Chisholm Trail SUD/Jonah Water SUD Interconnect**
Entity Served -	**Chisholm Trail SUD & Jonah Water SUD**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Urban Area				
1	18" DR-25 C-905 WL w/ ESC & Trench Safety	33,019	LF	$ 105.00	$ 3,466,995
2	18" DR-25 C-905 WL (through Georgetown)	26,000	LF	$ 150.00	$ 3,900,000
	Bores & Casing				
3	30" Steel Casing Pipe & Bore	1,000	LF	$ 400.00	$ 400,000
	Pump Stations				
4	Booster Pump Station - 3,000 gpm	1	LS	$ 1,200,000.00	$ 1,200,000
	Chlorination/Chloramines				
5	Liquid Feed Chlorination	1	LS	$ 60,000.00	$ 60,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 60,000.00	$ 60,000
	Ground/Elevated Storage Tanks				
7	GST - 500,000 gal	1	LS	$ 500,000.00	$ 500,000
	Appurtenances				
8	18" Gate Valves	30	EA	$ 8,000.00	$ 240,000
9	24" Gate Valves		EA	$ 15,000.00	$ -
10	4" air release valve	4	EA	$ 10,000.00	$ 40,000
11	Minor Water Line Tie-Ins (to exist. system)		EA	$ 1,000.00	$ -
12	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 5,000.00	$ 10,000
13	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$**	**9,886,995**
Contingency	**$**	**1,483,049**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**3,069,912**
Bond Counsel & Financial Advisor Costs	**$**	**341,101**
Right-of-Way, Easement & Land Acquisition	**$**	**272,126**
TOTAL PROJECT COSTS	**$**	**15,053,183**
TOTAL PROJECT PLANNING COSTS	**$**	**15,100,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**1,316,487**
ANNUAL O&M COSTS[2]	**$**	**156,338**
ANNUAL ENERGY COSTS[3]	**$**	**220,555**
TOTAL ANNUAL COSTS	**$**	**1,693,380**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1.375% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**13**
Project Name -	**Chisholm Trail SUD Ronald Reagan Phase 4 Water Main**
Entity Served -	**Chisholm Trail SUD & Others**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	24" DR-25 C-905 WL w/ ESC & Trench Safety	43,207	LF	$ 100.00	$ 4,320,700
	Bores & Casing				
2	30" Steel Casing Pipe & Bore	400	LF	$ 400.00	$ 160,000
	Pump Stations				
3	Booster Pump Station - 3,000 gpm	1	LS	$ 1,000,000.00	$ 1,000,000
	Chlorination/Chloramines				
4	Liquid Feed Chlorination	1	LS	$ 30,000.00	$ 30,000
5	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$ 30,000.00	$ 30,000
	Appurtenances				
6	24" Gate Valves	22	EA	$ 15,000.00	$ 330,000
7	2" air release valve	2	EA	$ 3,000.00	$ 6,000
8	Major Water Line Tie-Ins (to exist. system)	2	EA	$ 2,000.00	$ 4,000
9	New master meter (@ WTP Tie-In)	1	EA	$ 10,000.00	$ 10,000

Construction Cost	**$**	**5,890,700**
Contingency	**$**	**883,605**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**1,829,062**
Bond Counsel & Financial Advisor Costs	**$**	**203,229**
Right-of-Way, Easement & Land Acquisition	**$**	**199,527**
TOTAL PROJECT COSTS	**$**	**9,006,124**
TOTAL PROJECT PLANNING COSTS	**$**	**9,050,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**789,020**
ANNUAL O&M COSTS[2]	**$**	**93,147**
ANNUAL ENERGY COSTS[3]	**$**	**220,555**
TOTAL ANNUAL COSTS	**$**	**1,102,722**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1.375% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**14**
Project Name -	**Sonterra MUD Elevated Storage Tank**
Entity Served -	**Sonterra MUD**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit		Unit Cost		Total Cost
	Constr. - Rural Area						
1	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$	45.00	$	22,500
2	Constr. - Urban Area						
3	12" DR-18 C-900 WL w/ ESC & Trench Safety	500	LF	$	65.00	$	32,500
	Bores & Casing						
4	20" Steel Casing Pipe & Bore	80	LF	$	300.00	$	24,000
	Chlorination/Chloramines						
5	Liquid Feed Chlorination	1	LS	$	20,000.00	$	20,000
6	Liquid Feed Ammonia (liquid ammonium sulfate)	1	LS	$	20,000.00	$	20,000
	Ground/Elevated Storage Tanks						
7	EST - 300,000 gal	1	LS	$	750,000.00	$	750,000
	Appurtenances						
8	12" Gate Valves	6	EA	$	2,500.00	$	15,000
9	2" air release valve	1	EA	$	3,000.00	$	3,000
10	Minor Water Line Tie-Ins (to exist. system)		EA	$	1,000.00	$	-
11	Major Water Line Tie-Ins (to exist. system)	2	EA	$	2,000.00	$	4,000

Construction Cost	**$**	**891,000**
Contingency	**$**	**133,650**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**276,656**
Bond Counsel & Financial Advisor Costs	**$**	**30,740**
Right-of-Way, Easement & Land Acquisition	**$**	**5,739**
TOTAL PROJECT COSTS	**$**	**1,337,784**
TOTAL PROJECT PLANNING COSTS	**$**	**1,350,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**117,699**
ANNUAL O&M COSTS[2]	**$**	**10,247**
ANNUAL ENERGY COSTS[3]	**$**	**1,176**
TOTAL ANNUAL COSTS	**$**	**129,122**

1 - BASED ON 20 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 1% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**16**
Project Name -	**Interim Supply from BRA Lake Granger WTP**
	from Trinity Aquifer Groundwater Wells (east Will. Co.)
Entity Served -	**Multiple**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	8" DR-18 C-900 WL w/ ESC & Trench Safety	30,000	LF	$ 35.00	$ 1,050,000
2	18" DR-25 C-905 WL w/ ESC & Trench Safety	10,000	LF	$ 75.00	$ 750,000
	Groundwater Well				
3	Test Wells & Evaluation	2	LS	$ 300,000.00	$ 600,000
4	Groundwater Well (includes drilling, site improvements, & TCEQ approved testing/sampling)	6	LS	$ 750,000.00	$ 4,500,000
	Pump Stations				
6	Booster Pump Station - 5,000 gpm	1	LS	$ 3,000,000.00	$ 3,000,000
	Treatment				
7	Cooling Towers	1	LS	$ 2,000,000.00	$ 2,000,000
8	Dissolved Solids	1	LS	$ 7,200,000.00	$ 7,200,000
	Chlorination/Chloramines				
9	Chloramine Disinfection	1	LS	$ 250,000.00	$ 250,000
	Ground/Elevated Storage Tanks				
10	GST - 3,600,000 gal	1	LS	$ 3,600,000.00	$ 3,600,000
11	GST - 7,200,000 gal	1	LS	$ 7,200,000.00	$ 7,200,000
urtena	**Appurtenances**				
	8" Gate Valves	30	EA	$ 1,500.00	$ 45,000
	18" Gate Valves	10	EA	$ 8,000.00	$ 80,000
	2" air release valve	2	EA	$ 3,000.00	$ 6,000
	Master meter (@ Tie-In)	1	EA	$ 15,000.00	$ 15,000
	Well Meters	6	EA	$ 3,000.00	$ 18,000

Construction Cost	**$**	**30,314,000**
Contingency	**$**	**4,547,100**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**9,412,497**
Bond Counsel & Financial Advisor Costs	**$**	**1,045,833**
Right-of-Way, Easement & Land Acquisition	**$**	**204,316**
TOTAL PROJECT COSTS	**$**	**45,523,746**
TOTAL PROJECT PLANNING COSTS	**$**	**45,600,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**3,030,646**
ANNUAL O&M COSTS[2]	**$**	**871,528**
ANNUAL ENERGY COSTS[3]	**$**	**833,403**
TOTAL ANNUAL COSTS	**$**	**4,735,577**

1 - BASED ON 40 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

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Project No. -	**16a**
Project Name -	**Pipeline for Interim Supply from BRA Lake Granger WTP**
Entity Served -	**Multiple**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit		Unit Cost		Total Cost
	Constr. - Rural Area						
1	16" DR-25 C-905 WL w/ ESC & Trench Safety	58,198	LF	$	65.00	$	3,782,870
2	24" DR-25 C-905 WL w/ ESC & Trench Safety	99,877	LF	$	100.00	$	9,987,700
	Constr. - Urban Area						
3	24" DR-25 C-905 WL w/ ESC & Trench Safety	12,000	LF	$	150.00	$	1,800,000
	Bores & Casing						
4	20" Steel Casing Pipe & Bore	200	LF	$	300.00	$	60,000
5	36" Steel Casing Pipe & Bore	1,000	LF	$	450.00	$	450,000
	Pump Stations						
6	L. Granger - Pump Station - (275 HP)	1	LS	$	1,400,000.00	$	1,400,000
7	Circleville - Pump Station - (1,200 HP)	1	LS	$	3,100,000.00	$	3,100,000
8	Bartlett - Pump Station - (375 HP)	1	LS	$	1,700,000.00	$	1,700,000
9	Holland - Pump Station - (370 HP)	1	LS	$	1,700,000.00	$	1,700,000
	Chlorination/Chloramines						
10	Chloramine Disinfection	4	LS	$	80,000.00	$	320,000
	Ground/Elevated Storage Tanks						
11	GST - 300,000 gal	2	LS	$	300,000.00	$	600,000
12	GST - 500,000 gal	2	LS	$	500,000.00	$	1,000,000
	Appurtenances						
13	16" Gate Valves	20	EA	$	6,000.00	$	120,000
14	24" Gate Valves	68	EA	$	15,000.00	$	1,020,450
15	4" air release valve	17	EA	$	10,000.00	$	170,075
16	Master meter (@ Tie-In)	4	EA	$	15,000.00	$	60,000

Construction Cost	**$**	**27,271,095**
Contingency	**$**	**4,090,664**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**8,467,675**
Bond Counsel & Financial Advisor Costs	**$**	**940,853**
Right-of-Way, Easement & Land Acquisition	**$**	**900,253**
TOTAL PROJECT COSTS	**$**	**41,670,540**
TOTAL PROJECT PLANNING COSTS	**$**	**41,700,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**2,771,446**
ANNUAL O&M COSTS[2]	**$**	**784,044**
ANNUAL ENERGY COSTS[3]	**$**	**1,305,685**
TOTAL ANNUAL COSTS	**$**	**4,861,175**

1 - BASED ON 40 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Bell/Williamson Regional Water Supply Facility Plan
Water System Improvements
Engineer's Estimate of Probable Construction Costs

Project No. -	**16b**
Project Name -	**Pipeline for Interim Supply from BRA Lake Granger WTP**
Entity Served -	**Multiple**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit		Unit Cost		Total Cost
	Constr. - Rural Area						
1	24" DR-25 C-905 WL w/ ESC & Trench Safety	156,414	LF	$	100.00	$	15,641,400
	Bores & Casing						
2	36" Steel Casing Pipe & Bore	500	LF	$	450.00	$	225,000
	Pump Stations						
3	L. Granger - Pump Station - (275 HP)	1	LS	$	1,400,000.00	$	1,400,000
4	Circleville - Pump Station - (1,100 HP)	1	LS	$	3,000,000.00	$	3,000,000
5	Mid-Way - Pump Station - (1,300 HP)	1	LS	$	3,300,000.00	$	3,300,000
	Chlorination/Chloramines						
6	Chloramine Disinfection	3	LS	$	80,000.00	$	240,000
	Ground/Elevated Storage Tanks						
7	GST - 500,000 gal	3	LS	$	500,000.00	$	1,500,000
	Appurtenances						
8	24" Gate Valves	63	EA	$	15,000.00	$	938,484
9	4" air release valve	12	EA	$	10,000.00	$	120,000
10	Master meter (@ Tie-In)	3	EA	$	15,000.00	$	45,000

Construction Cost	**$**	**26,409,884**
Contingency	**$**	**3,961,483**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**8,200,269**
Bond Counsel & Financial Advisor Costs	**$**	**911,141**
Right-of-Way, Easement & Land Acquisition	**$**	**745,702**
TOTAL PROJECT COSTS	**$**	**40,228,479**
TOTAL PROJECT PLANNING COSTS	**$**	**40,300,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**2,678,400**
ANNUAL O&M COSTS[2]	**$**	**759,284**
ANNUAL ENERGY COSTS[3]	**$**	**1,573,292**
TOTAL ANNUAL COSTS	**$**	**5,010,976**

1 - BASED ON 40 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Bell/Williamson Regional Water Supply Facility Plan
Water System Improvements
Engineer's Estimate of Probable Construction Costs

Project No. -	**16c**
Project Name -	**Pipeline for Interim Supply from BRA Lake Granger WTP**
Entity Served -	**Multiple**
Project Type -	**Short-Term**

Item No	Description	Estimated Quanitiy	Unit	Unit Cost	Total Cost
	Constr. - Rural Area				
1	24" DR-25 C-905 WL w/ ESC & Trench Safety	87,162	LF	$ 100.00	$ 8,716,200
	Constr. - Urban Area				
2	24" DR-25 C-905 WL along TX 130	18,091	LF	$ 180.00	$ 3,256,380
3	24" DR-25 C-905 WL along I-35	76,665	LF	$ 180.00	$ 13,799,700
	Bores & Casing				
4	36" Steel Casing Pipe & Bore	2,000	LF	$ 450.00	$ 900,000
	Pump Stations				
5	L. Granger - Pump Station - (275 HP)	1	LS	$ 1,400,000.00	$ 1,400,000
6	Circleville - Pump Station - (1,050 HP)	1	LS	$ 2,950,000.00	$ 2,950,000
7	Bartlett - Pump Station - (665 HP)	1	LS	$ 2,250,000.00	$ 2,250,000
8	Holland - Pump Station - (1,375 HP)	1	LS	$ 3,350,000.00	$ 3,350,000
	Chlorination/Chloramines				
9	Chloramine Disinfection	4	LS	$ 80,000.00	$ 320,000
	Ground/Elevated Storage Tanks				
10	GST - 500,000 gal	4	LS	$ 500,000.00	$ 2,000,000
	Appurtenances				
11	24" Gate Valves	73	EA	$ 15,000.00	$ 1,091,508
	4" air release valve	18	EA	$ 10,000.00	$ 181,918
12	Master meter (@ Tie-In)	4	EA	$ 15,000.00	$ 60,000

Construction Cost	**$**	**40,275,706**
Contingency	**$**	**6,041,356**
Engineering, Surveying, Environmental, Construction, Inspection/Admin	**$**	**12,505,607**
Bond Counsel & Financial Advisor Costs	**$**	**1,389,512**
Right-of-Way, Easement & Land Acquisition	**$**	**1,561,304**
TOTAL PROJECT COSTS	**$**	**61,773,484**
TOTAL PROJECT PLANNING COSTS	**$**	**61,800,000**

ANNUAL PROJECT COSTS (DEBT SERVICE)[1]	**$**	**4,107,323**
ANNUAL O&M COSTS[2]	**$**	**1,157,927**
ANNUAL ENERGY COSTS[3]	**$**	**1,979,113**
TOTAL ANNUAL COSTS	**$**	**7,244,363**

1 - BASED ON 40 YEAR PAYBACK OF TOTAL PROJECT PLANNING COSTS @ 6% INTEREST

2 - O&M COSTS BASED ON 2.5% OF PROJECT CONSTRUCTION COSTS

3- ENERGY COSTS BASED ON ELECTRICITY AT $0.09/kWh

Appendix E - Groundwater Conservation District Summaries and Permit Information

Groundwater Conservation Districts Summary Table

Groundwater Conservation District	County	Aquifer	Fees, Permit Terms and Constraints
Clearwater Underground Water Conservation District	Bell	Edwards (BFZ), Trinity	Operating Permits: N1: $200 + $100 deposit N2 <10 ac-ft/yr: $700 + $100 deposit N2 10-37 ac-ft/yr: $1,000 + $100 deposit N2 > 37 ac-ft/yr: $1,500 + $100 deposit Export Fees = $0.025/1000 gallons or a fee negotiated by the District and the Permitee (Export Permits are subject to review and board approval). Permit Term = 1 year
Lost Pines Groundwater Conservation District	Bastrop[1] and Lee	Carrizo-Wilcox	Operating Permit = $100.00-$200.00 (depending on well casing size) Production Fee = $ 0.12/1000 gallons Export Fee = $0.05/1000 gallons Operating Permit Term = 5 years Export Permit Term = 3 years and are subject to review and board approval.
Post Oak Savannah Groundwater Conservation District	Burleson and Milam	Carrizo-Wilcox, Trinity, Brazos Alluvium, Queen, Sparta	Operating Permit = $100.00 Transport Permit Fee= $100.00 Production Fees = $0.01/1000 gallons Transport Fees = $0.04/1000 gallons Production Permits = 40 yrs w/ review every 5 yrs Export Permit Term = 3 - 30 yrs and are subject to review and board approval. (3 years for conveyance systems that are not yet constructed and 30 for those that have been completed).

[1] Bastrop is part of Region K

[2] From Table 3.4-4 in the 2006 Brazos G Regional Water Plan: Lost Pines GCD originally estimated the Lee County groundwater availability from the Carrizo-Wilcox to be equal to recharge in Lee County, as determined by the Central Carrizo-Wilcox GAM, which is 7,500 ac-ft/yr. This availability estimate was changed by the district to 46,458 ac-ft/yr for the appearance of eliminating the apparent conflict with the 2001 Brazos G Regional Water Plan in order to obtain a determination of administrative completeness from the TWDB. This change was made under protest to the TWDB and the BGRWPG

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Groundwater Conservation District Groundwater Availability

Groundwater Conservation District	Completed TWDB Groundwater Availability Model (GAM)	Managed Available Groundwater (MAG) (ac-ft/yr)	Groundwater Control District Estimated Aquifer Availability (ac-ft/yr)	IPP 2011 Brazos G Regional Water Plan Estimated Aquifer Availability (ac-ft/yr)
Clearwater Underground Water Conservation District	Yes	Edwards (BFZ) Aquifer = 7,000 ac-ft/yr Trinity Aquifer = 5,595 ac-ft/yr **Total = 12,592 ac-ft/yr**	--	Edwards (BFZ) Aquifer = 6,469 ac-ft/yr Trinity Aquifer = 7,075 ac-ft/yr **Total = 13.544 ac-ft/yr**
Lost Pines Groundwater Conservation District	No, Tentative completion date is mid to late 2011	--	Bastrop County = 28,000 ac-ft/yr Lee County[2] = 7,500 ac-ft/yr **Total = 35,500 ac-ft/yr**	Bastrop County (Region K) = 28,000 ac-ft/yr Lee County[2] = 31,477 ac-ft/yr **Total = 59,477 ac-ft/yr** From the IPP 2011 Brazos G Regional Water Plan Table 3.4-2 Groundwater Availability (by County)
Post Oak Savannah Groundwater Conservation District	No, Tentative completion date is mid to late 2011	--	All Aquifers Combined = 148,721 ac-ft/yr **Total = 148,721 ac-ft/yr** From POSGCD May 2006 Management Plan	Burleson County = 52,124 ac-ft/yr Milam County = 20,937 ac-ft/yr **Total = 73,061 ac-ft/yr** From the IPP 2011 Brazos G Regional Water Plan Table 3.4-2 Groundwater Availability (by County)

Groundwater Conservation District Groundwater Availability

Groundwater Conservation District	Completed TWDB Groundwater Availability Model (GAM)	Managed Available Groundwater (MAG) (ac-ft/yr)	Groundwater Control District Estimated Aquifer Availability (ac-ft/yr)	IPP 2011 Brazos G Regional Water Plan Estimated Aquifer Availability (ac-ft/yr)
Burnet County [3] **NOTE:** The Edwards (BFZ) Aquifer is not in Burnet County and for the purposes of the Plan only the Brazos river basin availability was used.		--	--	**Total = 2,723 ac-ft/yr** From the IPP 2011 Region K - Lower Colorado Regional Water Plan Table 3.14 Water Availability (by River Basin) for Trinity Aquifer.
Williamson County		--	--	**Total = 5,938 ac-ft/yr** From the IPP 2011 Brazos G Regional Water Plan Table 3.4-2 Groundwater Availability (by County)

[1] Bastrop is part of Region K

[2] From Table 3.4-4 in the 2006 Brazos G Regional Water Plan: Lost Pines GCD originally estimated the Lee County groundwater availability from the Carrizo-Wilcox to be equal to recharge in Lee County, as determined by the Central Carrizo-Wilcox GAM, which is 7,500 ac-ft/yr. This availability estimate was changed by the district to 46,458 ac-ft/yr for the appearance of eliminating the apparent conflict with the 2001 Brazos G Regional Water Plan in order to obtain a determination of administrative completeness from the TWDB. This change was made under protest to the TWDB and the BGRWPG.

Clearwater Underground Water Conservation District
P.O. Box 729, Belton, TX 76513
Phone: 254/933-0120 Fax: 254/770-2360

ADMINISTRATIVE FEE SCHEDULE

Effective January 12, 2010

DESCRIPTION	*FEE*
Well Registration[1]	**No Fee** ($100 deposit for new wells)
Application for Permit[2]	**N1: $200 + $100 deposit** **N2 < 10 ac-ft/year: $700 + $100 deposit** **N2 from 10 to 37 ac-ft/year: $1,000 + $100 deposit** **N2 > 37 ac-ft/year: $1,500 + $100 deposit**
Transport Surcharge[3]	**$0.025/1,000 Gallons of Water**
District Documents[4]	**1st Copy—No Fee** Additional copies provided at cost See Miscellaneous Copying
Miscellaneous Copying	**Provided at Cost** $0.09/black & white; 1st ten—no fee $0.23/color; 1st four—no fee
Maps (Printing & Copying)	**$3.00 - $17.00 Based on Size**

1 $100 well log deposit will be returned if the well log is received within 6 months of registration.

2 Except for N1 wells, fees shown are for anticipated technical review costs and potential legal consultation over $100. If technical and legal expenses are higher than fees shown, N2 applicants pay additional cost; if less, N2 applicants are refunded. Full payment of all fees is required before permit may be issued. See back of this sheet for a description of N1 and N2 permits
$100 deposit will be refunded when all required paperwork (hydrogeological report, State of Texas Well Report (driller's log), etc.) has been received. No fee or deposit is required for a change in well ownership.

3 As allowed in Texas Water Code, Chapter 36.122.

4 Includes documents such as Rules, Management Plan, Bylaws, Annual Report, etc. This does not include studies such as *Groundwater Resources Management Information.* Studies are available at cost.
NOTE: Several documents are available on the District's web site—www.clearwaterdistrict.org.

Printing & Copying Fees
Maps

Map Size	Prices per Map Color	B&W
8.5" x 11"	$5	$3
11" x 17"	$7	$5
17" x 22"	$9	$7
22" x 34"	$11	$9
28" x 40"	$13	$11
34" x 44"	$15	$13
Larger—up to 36" wide	$17	$15

N1: A **NON-EXEMPT WELL, CLASSIFICATION 1**, is a well that satisfies the following conditions:

A water well used for domestic purposes or for watering livestock or poultry that is drilled, equipped or completed so that it is incapable of producing more than 25,000 gallons per day, and is located on a tract of land consisting of less than 10 acres as of March 1, 2004.

Any water well used for other purposes or that is capable of producing more than 25,000 gallons per day, is a Non-Exempt Well, Classification 2 (N2).

N1 wells meet all of the criteria for an exempt well except for the minimum tract size of 10 acres or more.

N2: A **NON-EXEMPT WELL, CLASSIFICATION 2** is a well that satisfies the following conditions:

1) A water well used for purposes other than domestic, livestock or poultry; or
2) A water well that is drilled, equipped or completed so that it is capable of producing more than 25,000 gallons/day.

LOST PINES GROUNDWATER CONSERVATION DISTRICT
SUMMARY OF RULES

Drilling, Registration & Permitting

1 Water wells capable of producing less than 25,000 GPD are exempt.
2 Drilling permits required for all wells.
3 Drilling permits are for 180 days.
4 All pre-existing wells are subject to registration.
5 Non-exempt well drilling permits for the Carrizo-Wilcox aquifers are subject to a hearing process and approval by the Board of LPGCD. Upon completion of the well an operating permit must be issued by the district prior to operating the well.
6 The Operating Permit describes the amount and rate of withdrawal of water as well as the usage. A hearing, notification process and Board approval is required.
7 Non-exempt wells require notification to all property owners within 1 mile of the well and notification in at least one newspaper in each county.
8 Operating Permits have a term of 5 years.
9 A Groundwater Export Permit is required for water exported outside the District. A hearing, notification process and Board approval are required.
10 Export Permits have three year terms.

Well spacing requirements

1 Wells must be at least 50 ft. from property boundary.
2 Non-Exempt wells capable of producing up to and including 500 GPM must maintain a distance of 1,500 ft. from any other well completed in the same sand. 501- 1000 GPM, require 2500 ft. 1001 GPM and greater require 5,000 ft. spacing.
3 Wells producing 200 AFY or more, are required to have a monitoring well or be equipped for the monitoring of static water levels.

District Fees

1 Production Fee - $.12 per 1000 gallons
2 Export Fee - $.05 per 1000 gallons
3 Non-exempt well 2" - 5" casing - $100.00
4 6" – 8" casing - $200.00
5 8" casing or greater - $200.00 per diameter inch
6 All exempt permit fees are refundable, all other fees are prorated refunds
7 Copying - $.25 per page
8 Certified Copies - $1.00 per page
9 Returned Check Fee - $25.00

POST OAK SAVANNAH GROUNDWATER CONSERVATION DISTRICT
SUMMARY OF RULES & MANAGEMENT STRATEGIES

Drilling, Registration & Permitting

- Water wells incapable of producing more than 25,000 GPD for domestic or livestock uses are exempt from permitting and fees, but must obtain registration prior to drilling.
- Drilling permits required for all non-exempt wells.
- Drilling permits are for 1 year with 6 month extension available.
- All pre-existing wells are subject to registration.
- Maximum withdrawal allowed presently is 2 acre feet, per contiguous acre controlled, per year.
- Non-exempt well drilling & operating permits are subject to hearing process & approval by Board.
- Operating Permits describe the amount and rate of withdrawal of water as well as the location and usage.
- Non-exempt wells require notification to all property owners within .5 miles of the well and notification in at least one newspaper in each county.
- Production Permits are issued not to exceed 40 years with a review every 5 years.
- Groundwater Export Permit required for water exported outside the District. A hearing, notification process, and Board approval is required.
- Export Permits have thirty year terms if construction of conveyance system initiated within 3 years.
- Agriculture use wells are exempt from hearing requirements and fees.
- Historic use permits allowed

Well spacing requirements

- Wells must be at least 50 ft. from property boundary or another existing well.
- In the Simsboro formation the spacing of a new well shall be as provided in (a) or (b), at the election of the owner exercised when the application for a new well permit is filed:
  (a) one foot per gallon per minute of production capacity from any well existing in that formation and one-half foot per gallon per minute from the property line of each adjoining landowner; or
  (b) based on engineering studies and drawdown criteria derived from GAM simulations of:
  1. no more than 8% drawdown of hydraulic head at the property boundary;
  2. no more than 25% drawdown of hydraulic head anywhere within the property; and
  3. minimum of one monitoring well for each 2,000 acre/feet/year of permitted production
- A new well to be completed in the Trinity, Sparta, Queen City, Carrizo, Calvert Bluff or Hooper formations shall be spaced a distance of two feet per one gallon per minute production capacity from any well existing in the same formation, and one foot per gallon per minute from the property line of each owner of abutting land that is not owned or controlled by the owner of the new well.
- Little River and Brazos River Alluvium wells are exempt from spacing requirements.

District Fees

- Current Production Fee - $.01 per 1000 gallons permitted
- Export Fee - $.04 per 1000 gallons permitted
- Non-exempt well application- $100.00 plus any additional staff time &/or necessary professional services
- Export application -$100.00 plus any additional staff time &/or necessary professional services
- Exempt well application to drill- $100.00 refundable deposit
- Staff Time - $50.00 per hour
- Copying - $.10 per page, Certified Copies - $1.00 per page
- Returned Check Fee - $25.00

Management Strategy

- Divide District into 6 management zones based on aquifer properties and characteristics.
- Provide protection for existing users and landowners property rights.
- Set predetermined trigger levels of aquifer impact based on existing user's wells.
- Evaluate aquifer impacts through District Monitoring Well Program.
- Take appropriate action to maintain sustainable aquifer water levels.
- Work within GMA process to develop DFCs and management strategies beneficial to all stakeholders.

POST OAK SAVANNAH GCD

Schedule of Fees		Amended and adopted 11/9/2010
Application	**Fee**	
***Any alterations or changes will be billed according to the amended value.		
***Necessary professional services may include Legal and/or Hydrologists counsel, as well as publishing expenses		
***Additional charges must be paid before a Certificate of Permit can be issued.		
Historical Use	$0.00	
Operating		
Exempt	$0.00	
Non Exempt	$100.00	plus any additional staff time &/or necessary professional services
Limited Production	$100.00	plus any additional staff time &/or necessary professional services
Drilling & Operating		
Exempt	$100.00	(With $100 Refundable according to District Rules)
Non Exempt	$100.00	plus any additional staff time &/or necessary professional services
Limited Production	$100.00	plus any additional staff time &/or necessary professional services
Altering		
Exempt	$0.00	
Non Exempt	$100.00	plus any additional staff time &/or necessary professional services
Limited Production	$100.00	plus any additional staff time &/or necessary professional services
Recording (Registering)		
Exempt	$0.00	
Non Exempt	$100.00	plus any additional staff time &/or necessary professional services
Limited Production	$100.00	plus any additional staff time &/or necessary professional services
Transport	$100.00	plus any additional staff time &/or necessary professional services
Amendment		
Exempt	$0.00	
Non Exempt	$100.00	plus any additional staff time &/or necessary professional services
Limited Production	$100.00	plus any additional staff time &/or necessary professional services
Emergency	$0.00	plus any additional staff time &/or necessary professional services
Variance		
Exempt	$0.00	
Non Exempt	$100.00	plus any additional staff time &/or necessary professional services
Limited Production	$100.00	plus any additional staff time &/or necessary professional services
Production and Transport:		
Production Fees	$.01/1000 gal.	
Transport Fees	$.04/1000 gal.	
Annual Production Fee for		
Limited Production Well	$10.00	
Other considerations:		
Staff Time	$50.00	per hour
Returned Check Fee	$25.00	
Copies	$0.10	plus costs

Appendix F – Managed Available Groundwater (MAG) Calculations

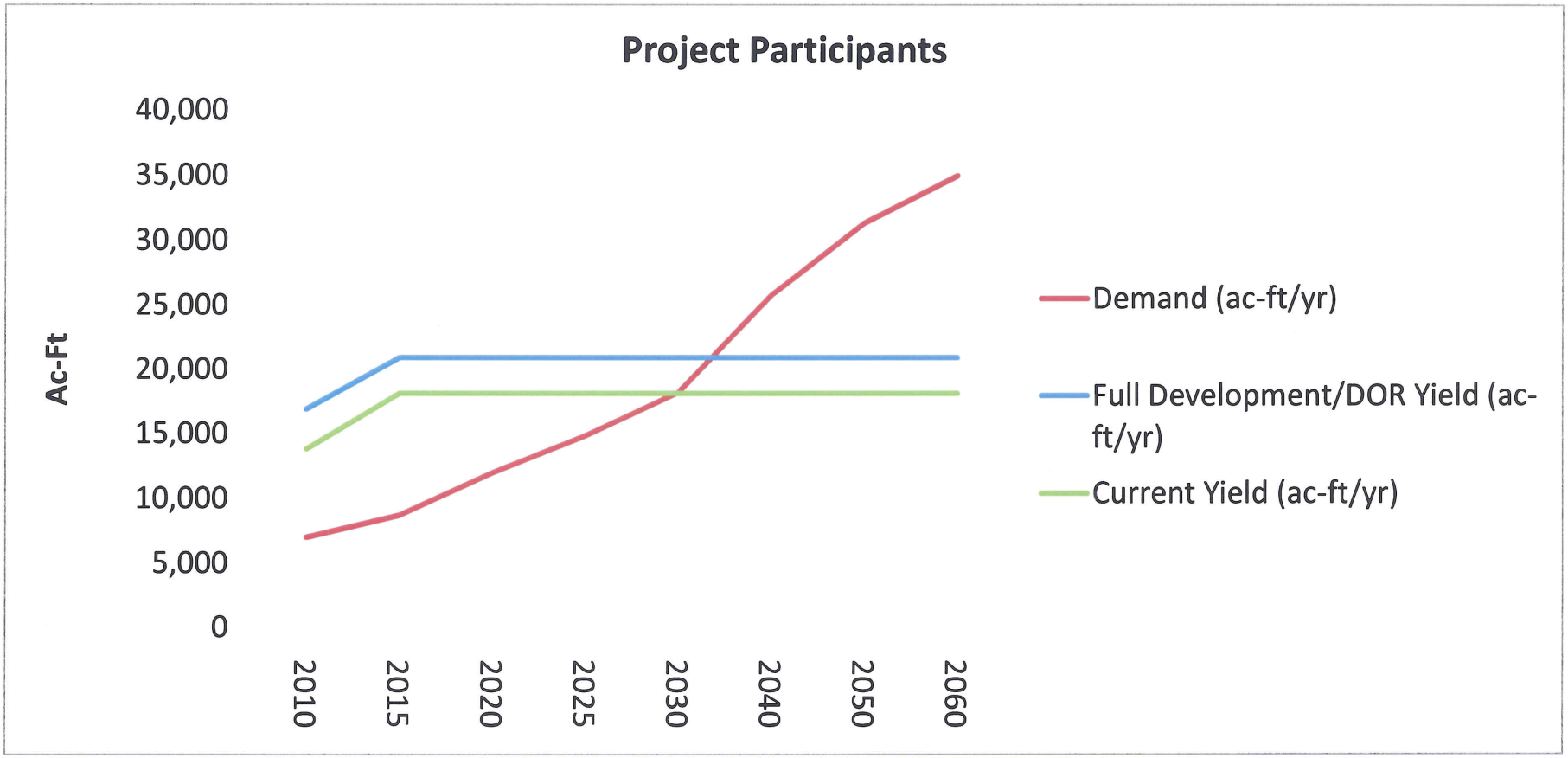
AVAILABLE GROUNDWATER BASED ON SYSTEM'S FOOTPRINT x AVAILABLE GROUNWATER per ACRE (MAG CALCULATIONS)

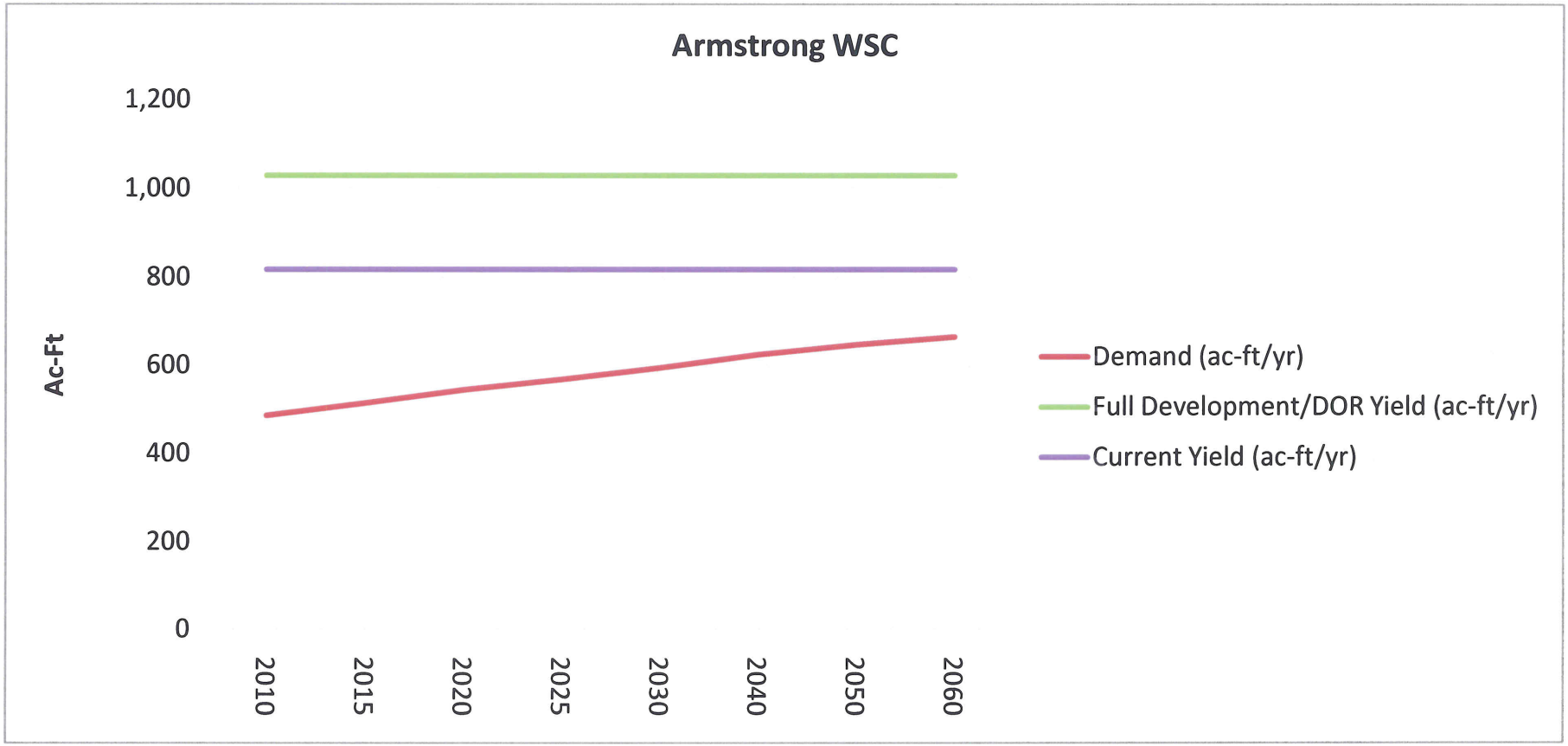
Plan Participants	County	Total System Footprint (acres)	Footprint Above Trinity Aquifer (acres)	Footprint Above Edwards - BFZ (acres)	Trinity Aquifer - Available to System (ac-ft / yr)	Edwards - BFZ Available to System (ac-ft / yr)	Total Available to System (ac-ft / yr)
BRA							-
Armstrong	Bell	39,524	39,524	1,430	402	-	402
Capital Land and Livestock MUD No. 1	Bell, Williamson	12,000	12,000	-	122	-	122
Chisholm Trail SUD	Bell, Williamson, Burnett	257,702	252,123	119,925	4,205	3,479	7,684
City of Florence	Williamson	520	520	248	1	3	5
Jonah Water SUD	Williamson	120,802	113,985	34,932	322	458	780
Jarrell Schwertner WSC	Bell, Williamson	79,997	79,997	43,262	226	567	793
Sonterra MUD	Williamson	1,460	1,460	1,460	4	19	23
	Total	**512,005**	**499,609**	**201,257**	**5,282**	**4,527**	**9,809**

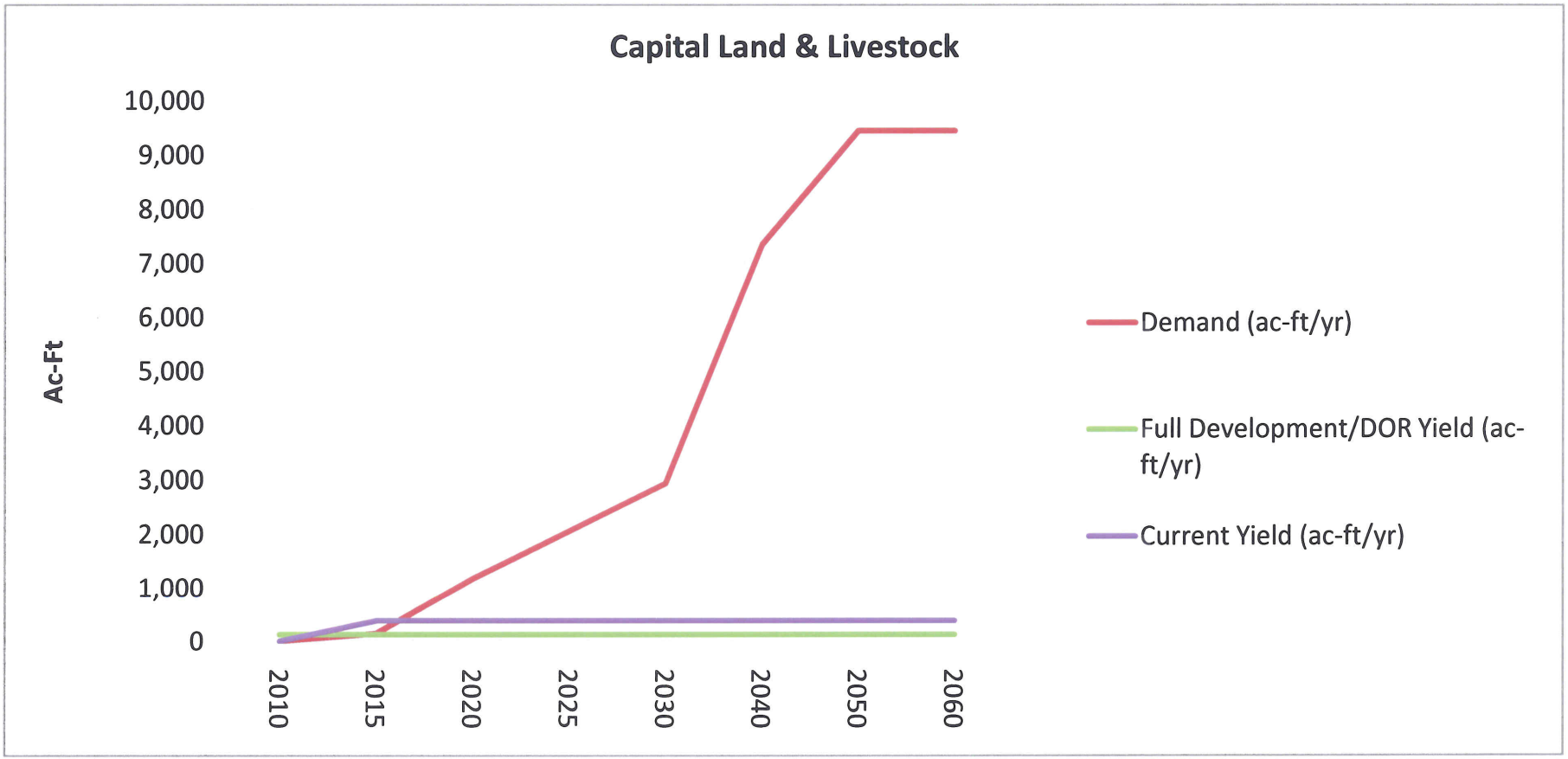
County MAGS per GMA 8 Summary	Trinity Aquifer (acre-ft/yr)	Edwards - BFZ (acre-ft/yr)	Trinity Aquifer (acres)	Edwards - BFZ (acres)	Trinity Aquifer (ac-ft/yr per acre)	Edwards - BFZ (ac-ft/yr per acre)
Bell*	7,068	6,469	695,404	81,978	0.01016388	0.07891142
Burnet+	2,723	-	422,683	-	0.00644218	-
Williamson*+	1,968	3,472	697,305	264,707	0.00282229	0.01311639
Total	**11,759**	**9,941**	**1,815,392**	**346,685**		

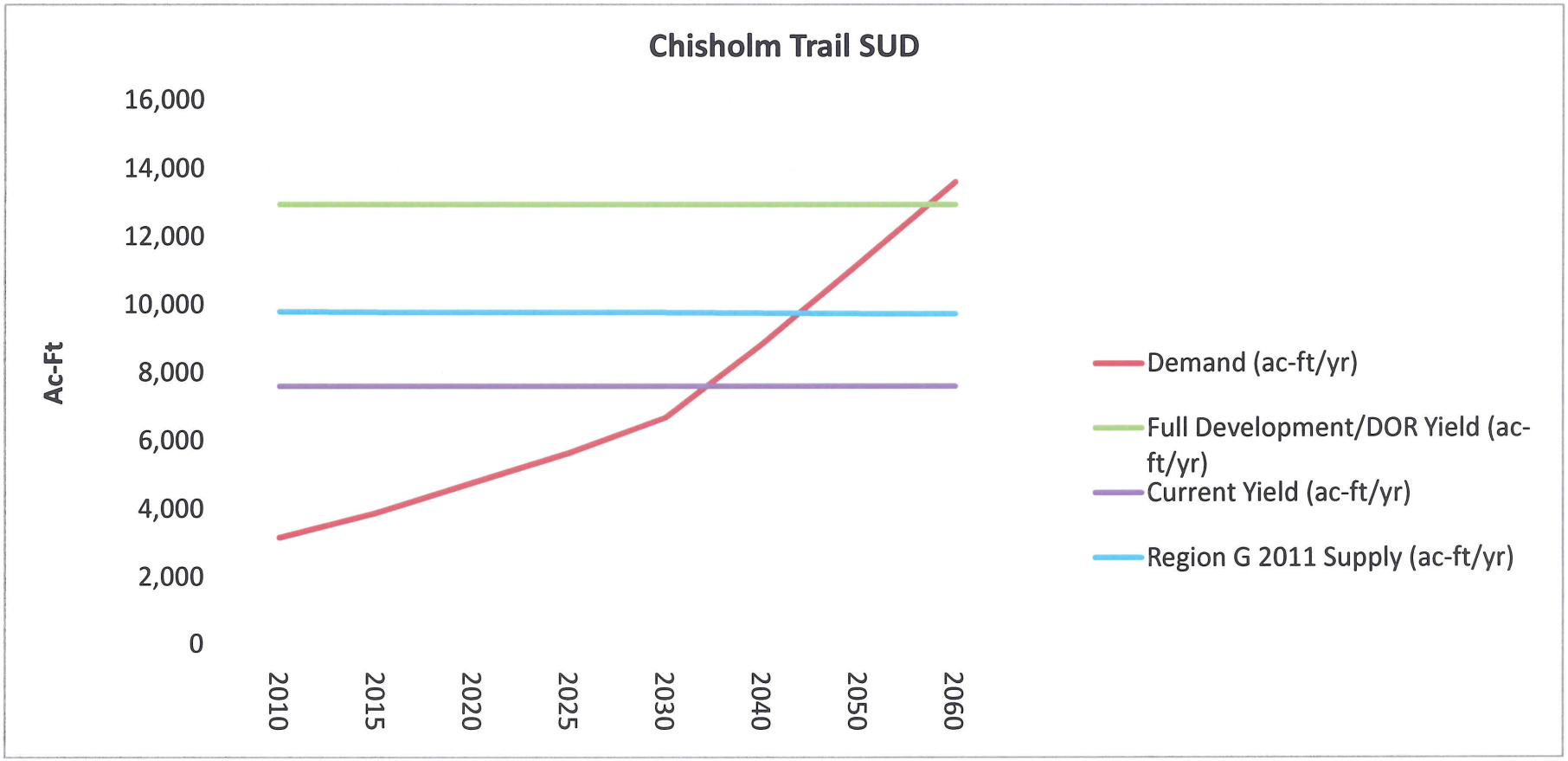
Notes:
* Region G 2010 Draft Plan
+ Region K 2010 Draft Plan

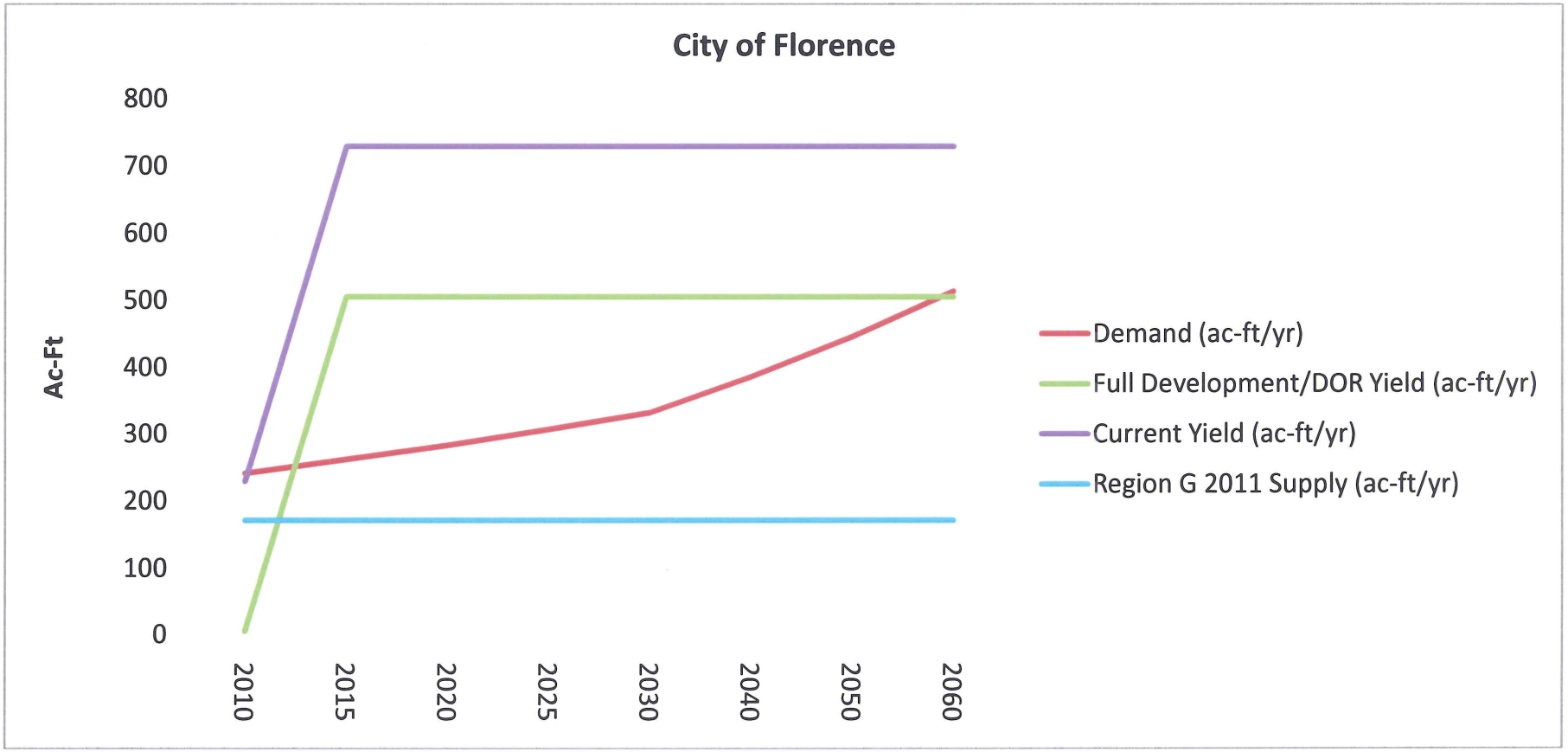
Appendix G – Individual Water System Supply/Demand Charts


Project Participants
Ac-Ft
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)

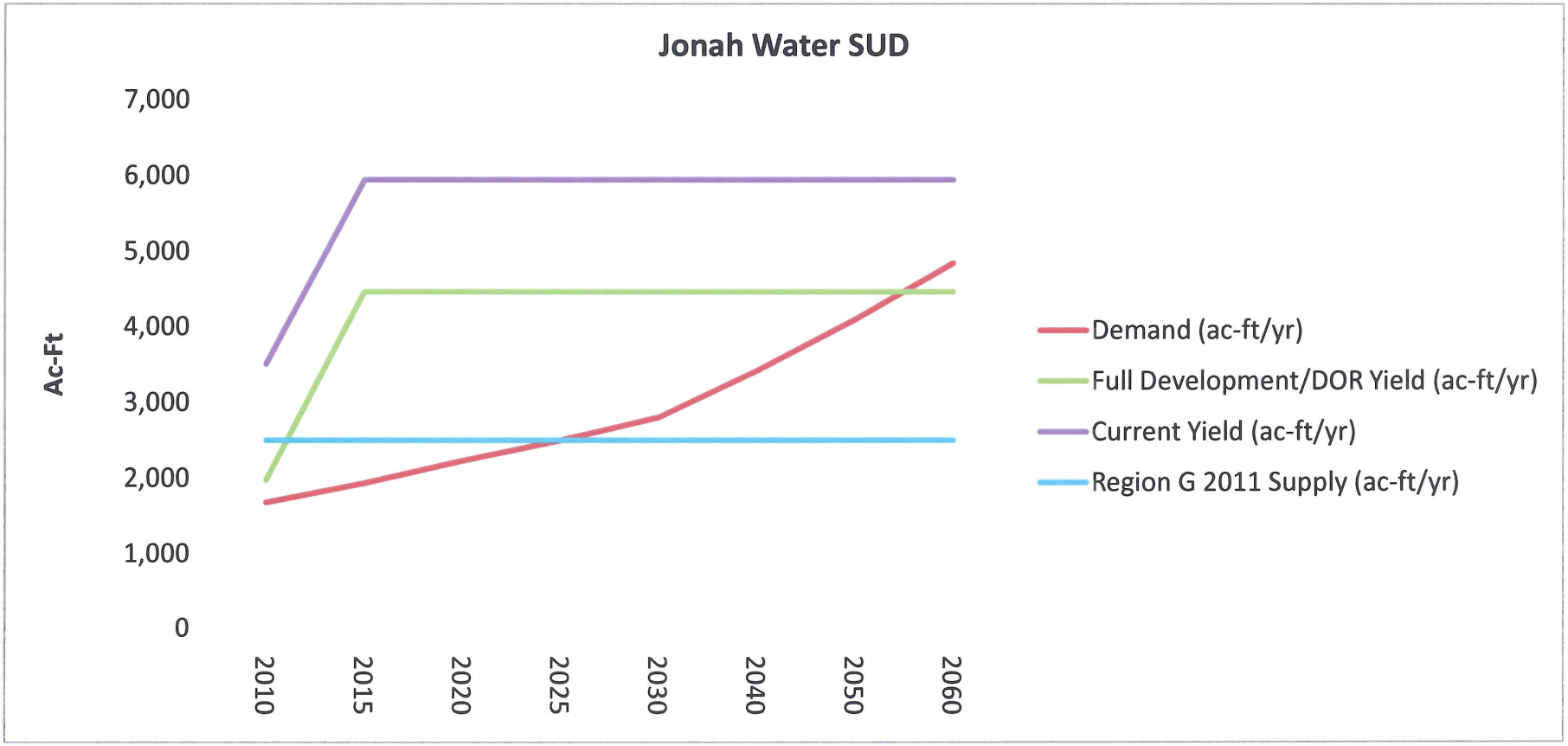

Armstrong WSC
1,200
1,000
800
600
400
200
0
Ac-Ft
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)

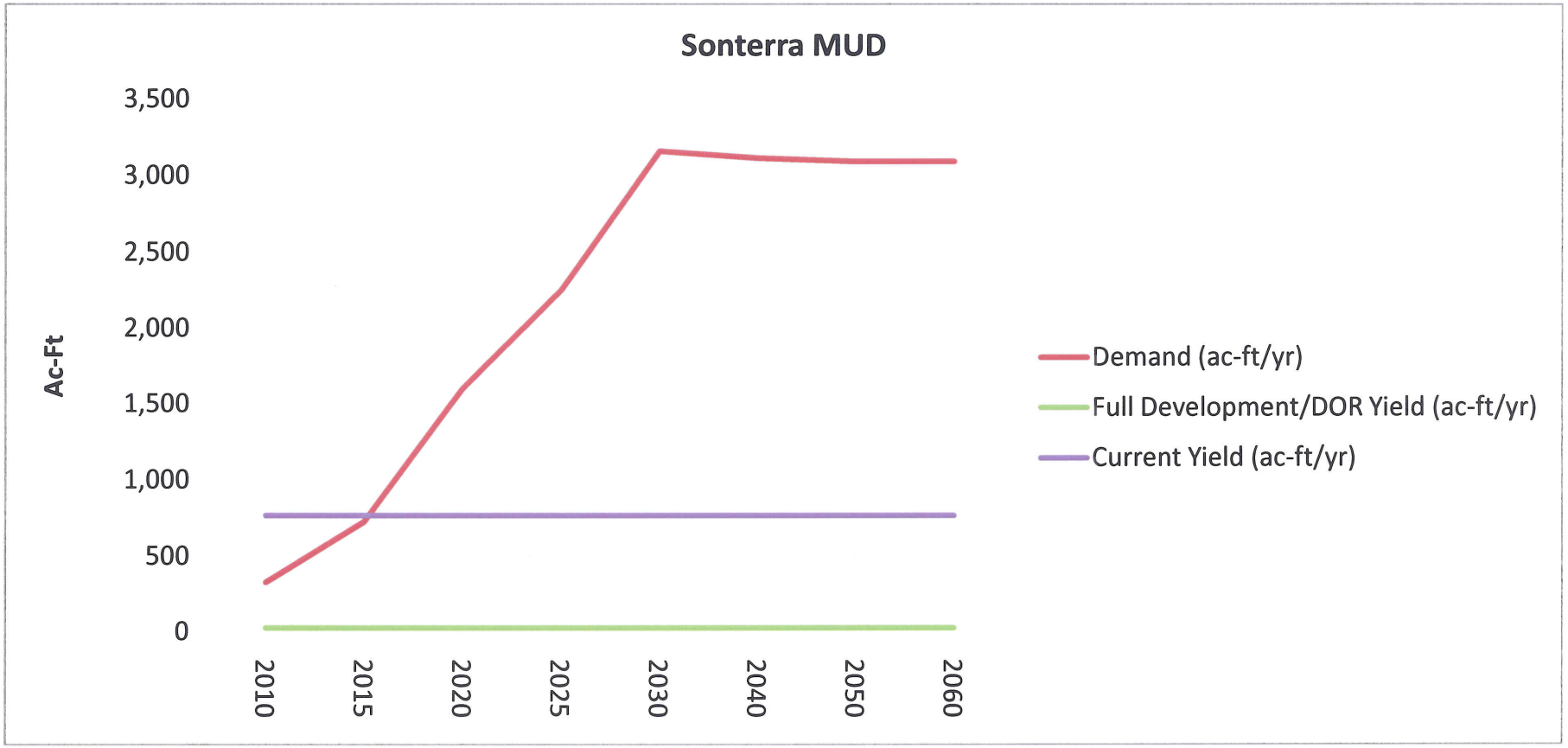

Capital Land & Livestock
Ac-Ft
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)


Chisholm Trail SUD
Ac-Ft
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)
Region G 2011 Supply (ac-ft/yr)


City of Florence
Ac-Ft
800
700
600
500
400
300
200
100
0
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)
Region G 2011 Supply (ac-ft/yr)


JSWSC
Ac-Ft
3,000
2,500
2,000
1,500
1,000
500
0
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)
Region G 2011 Supply (ac-ft/yr)


Jonah Water SUD
Ac-Ft
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)
Region G 2011 Supply (ac-ft/yr)


Sonterra MUD
Ac-Ft
3,500
3,000
2,500
2,000
1,500
1,000
500
0
2010
2015
2020
2025
2030
2040
2050
2060
Demand (ac-ft/yr)
Full Development/DOR Yield (ac-ft/yr)
Current Yield (ac-ft/yr)

Appendix H – Rate Effect Calculations for Individual Projects

EFFECT OF PROJECT COSTS ON EXISTING WATER BILLS

Project No.	Project Name	Planning Period	Project Cost	Annual Costs - Total	Project Beneficiaries	Total No. of Connections of Project Beneficiaries	Annual Project Costs/ Connection	Monthly Project Costs/ Connection	Avgerage Monthly Water Bill	Project Cost/Month	"NEW" Monthly Water Bill	Percent Increase
1	Armstrong WSC Distribution System Improvments	Immediate	$ 1,611,000	**$ 199,182**	Armstrong WSC	859	$ 232	$ 19	$ 96	$ 19	$ 115	**20**
2	CLL MUD #1 - Groundwater Wells	Immediate	$ 4,300,000	**$ 543,498**	JSWSC, Sonterra	2,454	$ 221	$ 18	$ 92	$ 18	$ 111	**20**
3	City of Florence Tie-In with Chisholm Trail SUD	Immediate	$ 1,450,000	**$ 160,984**	City of Florence	452	$ 356	$ 30	$ 59	$ 30	$ 89	**50**
4	JSWSC/Sonterra MUD Emergency Interconnection	Immediate	$ 60,000	**$ 6,475**	JSWSC, Sonterra	2,454	$ 3	$ 0	$ 92	$ 0	$ 92	**0**
5	JSWSC/Sonterra MUD Interconnection	Immediate	$ 1,560,000	**$ 179,510**	JSWSC, Sonterra	2,454	$ 73	$ 6	$ 92	$ 6	$ 98	**7**
6	JSWSC/Jonah Water SUD Interconnection	Immediate	$ 5,000,000	**$ 507,120**	JSWSC, Sonterra	2,454	$ 207	$ 17	$ 92	$ 17	$ 109	**19**
7	JSWSC/Jonah Water SUD Interconnection	Immediate	$ 3,600,000	**$ 374,517**	JSWSC	1,759	$ 213	$ 18	$ 98	$ 18	$ 116	**18**
8	JSWSC/Central Texas WSC Interconnection	Immediate	$ 6,300,000	**$ 767,750**	JSWSC	1,759	$ 436	$ 36	$ 98	$ 36	$ 134	**37**
8a	JSWSC - Prarie Dell/Jarrell I-35 Tie-In	Immediate	$ 3,900,000	**$ 456,579**	JSWSC	1,759	$ 260	$ 22	$ 98	$ 22	$ 120	**22**
9	Sonterra MUD Groundwater Well	Immediate	$ 1,250,000	**$ 181,085**	JSWSC	1,759	$ 103	$ 9	$ 98	$ 9	$ 107	**9**
10	CLL MUD #1 - Ground Storage & Service Pumps	Short-Term	$ 2,350,000	**$ 334,319**	CLL MUD, JSWSC	4,247	$ 79	$ 7	$ 98	$ 7	$ 105	**7**
11	CTSUD - L. Georgetown Southside WTP	Short-Term	$ 11,100,000	**$ 1,909,246**	CTSUD, CLL, JSWSC, Jonah, Sonterra	21,876	$ 87	$ 7	$ 75	$ 7	$ 83	**10**
12	CTSUD/Jonah Water SUD Interconnection	Short-Term	$ 15,100,000	**$ 1,693,380**	CTSUD, CLL, JSWSC, Jonah, Sonterra	21,876	$ 77	$ 6	$ 75	$ 6	$ 82	**9**
13	CTSUD - Ronald Reagan Phase 4 Transmission Main	Short-Term	$ 9,050,000	**$ 1,102,722**	CTSUD, CLL, JSWSC, Jonah, Sonterra	21,876	$ 50	$ 4	$ 75	$ 4	$ 79	**6**
14	Sonterra MUD - Elevated Storage Tank	Short-Term	$ 1,350,000	**$ 129,122**	Sonterra	3,311	$ 39	$ 3	$ 77	$ 3	$ 80	**4**
16	BRA - Trinity Aquifer Groundwater Well Supply	Short-Term	$ 45,600,000	**$ 4,735,577**	Armstrong,CLL,JSWSC,Jonah,Sonterra, Holland,Granger,Bartlett	14,719	$ 322	$ 27	$ 79	$ 27	$ 106	**34**
16a	BRA - Lake Granger Transmission Trunk Mains	Short-Term	$ 41,700,000	**$ 4,861,175**	Armstrong,CLL,JSWSC,Jonah,Sonterra, Holland,Granger,Bartlett	14,719	$ 330	$ 28	$ 79	$ 28	$ 106	**35**
16b	BRA - Lake Granger Transmission Trunk Mains	Short-Term	$ 40,300,000	**$ 5,010,976**	Armstrong,CLL,JSWSC,Jonah,Sonterra, Holland,Granger,Bartlett	14,719	$ 340	$ 28	$ 79	$ 28	$ 107	**36**
16c	BRA - Lake Granger Transmission Trunk Mains	Short-Term	$ 61,800,000	**$ 7,244,363**	Armstrong,CLL,JSWSC,Jonah,Sonterra, Holland,Granger,Bartlett	14,719	$ 492	$ 41	$ 79	$ 41	$ 120	**52**

Abbreviations:
CLL = Capital Land & Livestock MUD No. 1
CTSUD = Chisholm Trail SUD
JSWSC = Jarrell Schwertner WSC
Jonah = Jonah Water SUD
Sonterra = Sonterra MUD

Notes:
1. Short-Term projects use 2020 population numbers.
2. Water rates for short-term projects assume 2010 water
3. CLL MUD No. 1 water rates assumed to equal JSWSC rates.