

WQB

Project Number:

Date Received: June 2016

Date to be presented to the WQB: October 26, 2016

**WATER QUALITY BOARD
FEASIBILITY REPORT FOR WASTEWATER TREATMENT PROJECT
AUTHORIZATION**

APPLICANT: San Juan Spanish Valley SSD
P.O. Box 9
Monticello, Utah 84535-009
Telephone: (435) 597-3225

PRESIDING OFFICIAL: Frank Darcy, Chairman

CONTACT PERSON: Kelly Pehrson, County Administrator

TREASURER/RECORDER: Louis Jones, City Recorder

CONSULTING ENGINEER: Ryan Jolley, P. E.
Jones & DeMille Engineering, Inc.
1635 South, 100 West
Richfield, Utah 84701
(435) 896-8266

BOND COUNSEL: Richard Chamberlain
Chamberlain & Associates
81 East, 100 South
Monticello, Utah 84534
Telephone: (435) 587-2223

APPLICANT'S REQUEST:

San Juan Spanish Valley Special Service District (District) is requesting a grant in the amount \$2,000,000 and a loan in the amount \$505,000 loan repayable over 30 years at an interest rate of 0% for construction of a new wastewater collection system. The District is also requesting a Design Advance in the amount of \$220,000.

APPLICANT’S LOCATION:

The District is located in northern San Juan County, south of Moab and the Grand-San Juan Counties line. The proposed sewerage system would connect the District to the regional Moab wastewater treatment facility through Grand Water & Sewer Service Agency’s system.

MAP OF APPLICANT’S LOCATION



Figure 1. San Juan Spanish Valley District Location

BACKGROUND:

Staff introduced the proposed project to the Water Quality Board at its August 24, 2016 meeting. The principal drivers for the project are protection of important groundwater resources underlying the District and rapid growth that is occurring throughout the region.

The District completed a draft Culinary Water/ Sanitary Sewer Master Plan that considered water and sewer needs for the next 30 years. The Master Plan concluded that centralized water and sewer systems are needed to support the community’s planned growth and to protect its drinking water supply. The Drinking Water Board and the Permanent Community Impact Board (CIB) have together authorized a total \$5.1 million in financing for the recommended community culinary water system. A total of \$5.0 million is needed to finance the proposed sewerage system, requested 50:50 from the Water Quality Board and from CIB.

At the August 24, 2016 meeting, the Water Quality Board raised questions about the density of development in the District, the expected growth in the service area, and the timing of the project. These questions are addressed in the following section of this report.

PROJECT NEED:

The District overlies groundwater aquifers that are classification Class IA (pristine) and Class II (drinking water quality) groundwater and these aquifers supply drinking to the community. The 2007 Utah Department of Natural Resources (DNRe) study *Hydrogeology of Moab-Spanish Valley, Grand and San Juan Counties Utah with Emphasis on Maps for Water Resource Management and Land-Use Planning*, the potential impacts of adding additional septic tanks was analyzed and concluded that to keep nitrate concentrations below 3 mg/L, new septic tank system development should be confined to building lots of size 10 to 20 acres per residence.

Current septic tank (and water well) densities in the District are shown in Figure 2. The figure illustrates the concentration of development in the Moab-Spanish Valley; the development is not distributed uniformly across the counties and over the aquifers. Rather, development is focused along Highway 191 and in lower lying, buildable areas. As a result, septic tank densities are much greater than recommended in the 2007 DNRe study and water wells in the area are at greater risk of nitrate contamination in the developed areas. Both Southeast Utah Health Department and the San Juan County Health Department expressed concerns about the potential contamination of individual culinary water wells by older septic system in the area.

The U.S. Census Bureau estimates population growth in the Moab area to be 2% per annum. Based on recent building permit applications, the District's engineer estimates the current growth rate is more like 6%. Although this rate of growth is unlikely to be sustained throughout the 30 year planning period, it is consistent with recreation-driven growth in neighboring Moab. This growth is expected to continue for the next 3 or 4 years and as Moab grows, the need for affordable housing and services should continue to expand in San Juan.

Timing needed to implement the project is dictated primarily by availability of wastewater treatment services from Moab. Moab City expects to break ground on its new wastewater treatment plant in November or December 2016. Until this plant is completed in Summer 2018, Moab is unable to accept the District's wastewater. The implementation schedule for the District's project (see below) would have wastewater beginning to flow to Moab in the Spring of 2019.

The construction of the District's sewerage system on the proposed schedule will allow the District to minimize the number of new septic tank systems in its developing areas without curtailing its planned and expected growth while safeguarding the aquifers that provide drinking water to the community.

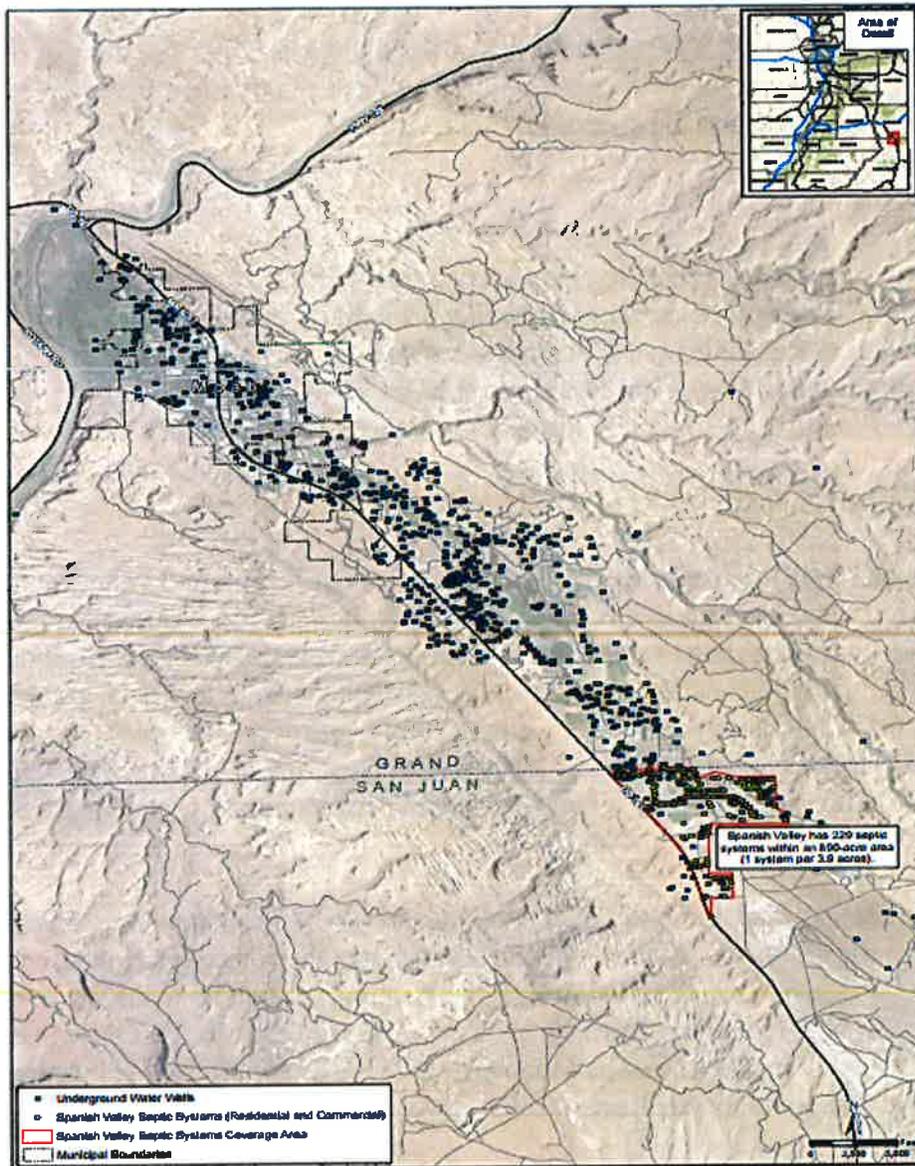


Figure 2. Moab-Spanish Valley Water Well and Septic Tank Density

PROJECT DESCRIPTION:

The District is proposing to construct approximately 44,000 linear feet of 8-inch gravity sewer lines and 145 manholes for sewage collection, as well as 4,800 linear feet of 8-inch interceptor sewer to transfer the wastewater to the Grand Water & Sewer Service Agency (GWSSA). The wastewater will then be conveyed to Moab City’s new wastewater treatment system for treatment and disposal (alternative No. 4 as listed below).

ALTERNATIVES EVALUATED

The Facilities Plan evaluated the following alternatives:

1. No action.

2. Construction of a new “stand alone” sewerage system and treatment works by the District.
 - a. Total Containment lagoons
 - b. Mechanical treatment plant (sequencing batch reactor) with discharge of treated effluent into Pack Creek in Grand County.
3. Construction of a new sewerage system and an interceptor connecting to Moab’s sewerage system and regional treatment works.
4. Construction of a new sewerage system that transfers wastewater to the GWSSA and the Moab regional treatment works.

The recommended alternative is No. 4, which is to construct a new sewerage system that connects to GWSSA and the Moab treatment works.

POSITION ON PROJECT PRIORITY LIST:

The District is ranked No.4 out of 8 projects on the FY 2016 Wastewater Treatment Project Priority List.

POPULATION GROWTH:

	<u>Year</u>	<u>Population¹</u>	<u>ERC²</u>
Current	2016	575	230
Design	2047	1,065	426

¹ The average population growth through the year 2047 is estimated to be 2% by the US Census Bureau.

²ERC = Equivalent Residential Connections

PUBLIC PARTICIPATION AND DEMONSTRATION OF PUBLIC SUPPORT:

The District held a public meeting on May 16, 2016, as required by the Utah Wastewater State Revolving Fund (SRF) program. The District will hold a final public hearing once funding is secured.

IMPLEMENTATION SCHEDULE:

Public Meeting	May 2016
Apply to WQB for Funding:	August 24, 2016
WQB Funding Authorization:	October 2016
CIB Review / Prioritization	November 2016
Public Hearing:	January 2017
Advertise EA (FONSI):	February 2017
CIB Funding Authorization	February 2017
Engineering Report Approval:	March 2017
Commence Design:	May 2017
Issue Construction Permit:	October 2017
Advertise for Bids:	October 2017
Bid Opening:	October 2017
Loan Closing:	December 2017
Commence Construction:	March 2018

APPLICANT’S CURRENT USER CHARGE:

The District does not currently have a public sewer system.

COST ESTIMATE:

Abandonment & New Connection Costs	\$700,000
Engineering - Design	\$220,000
Engineering – CMS	\$175,000
Geotechnical Evaluation & Permit	\$40,000
Land/Easement/Water Rights	\$155,000
Capacity Purchase from Moab and GWSSA	\$795,000
Construction	\$3,270,000
Contingency (~10 % of construction)	\$330,000
DWQ Loan Origination Fee*	\$5,000
Legal/Bonding	\$15,000
Total:	\$5,705,000

*Based on a \$500,000 WQB loan

COSTS SHARING:

The total cost of the project is \$5,705,000. The district has requested the Permanent Community Impact Board (CIB) fund half of the total cost in the amount of \$2,500,000 for this project. This request will be presented during the CIB’s meeting that will be held November 4, 2016. The following cost sharing is proposed for this project:

<u>Funding Source</u>	<u>Cost Sharing</u>	<u>Percent of Project</u>
Local Cost ¹	\$700,000	12%
WQB Funding	\$2,505,000	44%
CIB Funding	\$2,500,000	44%
Total:	\$5,705,000	100%

¹The current residents would need to pay to abandon existing septic systems and to run sewer laterals to the new community sewer system, and a connection fee was estimated to cost \$3,000 per residence. The total local cost is estimated \$700,000 to be paid by the community.

ESTIMATED ANNUAL COST FOR SEWER SERVICE:

Staff developed cost models (static and dynamic) to evaluate several financing alternatives for the project. The basic cost data used in modeling financial alternatives for the project are provided below.

Operation & Maintenance – Annual	\$35,000
Existing Debt Service	\$0
Median Adjusted Gross Household Income- Moab (2014)	\$33,922
WQB Maximum Affordable Rate at 1.4% MAGI	\$37.24

The static model financing alternatives considered are given in Attachment 1. The applicant’s requested financing terms were: a construction grant of \$2,000,000, and a \$500,000 loan with a 30 years term and 0% interest. The requested financing package is highlighted in Attachment 1. The loan origination fee of 1% was added to the WQB loan amount. For modeling purposes, it was assumed that CIB would extend the same financing package as the WQB except that CIB does not charge a loan origination fee.

The static model shows that a 30 year, 0% interest loan of \$600,000 plus \$6,000 origination fee is affordable with a grant of \$1,900,000. The basic results from this calculation are as follows:

WQB Debt Service (0.0%; 30 yrs)	\$20,200
WQB Annual Reserve Payment (first 10 years)	\$3,030
CIB Debt Service (0.0%; 30 yrs)	\$20,000
CIB Annual Reserve Payment (first 10 years)	\$3,000
Total Annual Cost	\$102,000
Monthly Cost / ERU	\$36.93
Cost calculated as % of MAGI	1.39%

Staff developed a dynamic cost model for the project to determine if growth-based sewer revenues could contribute significantly toward financing the project and reducing the amount of grant needed. The dynamic model presented in Attachment 2 uses a 30 year term and 0% interest rate to establish a graduated loan repayment schedule that recognizes growth in sewer revenue as new connections are made each year. This model uses a 2% annual growth rate, 1.8% annual cost inflation, and the maximum affordable sewer rate of \$37.24 per month per ERC. A minimum debt-to-service ratio of 1.25% is maintained throughout the loan term.

For these conditions, the dynamic model shows that a WQB loan of \$968,000 is affordable; the grant amount would be \$1,547,000. Comparable loan and grant amounts (and terms) from CIB, and a minimum District impact fee of \$2,100, are needed to keep the project affordable. The basic results from the dynamic model calculation are as follows:

Average WQB Debt Service (0.0%; 30 yrs)	\$32,267
Average WQB Annual Reserve Payment (first 10 years)	\$3,880
Average CIB Debt Service (0.0%; 30 yrs)	\$31,933
Average CIB Annual Reserve Payment (first 10 years)	\$3,830
Average Total Annual Cost	\$142,690
Monthly Cost / ERU	\$37.24
Cost calculated as % of MAGI	1.4%

Cost sharing by this cost model would be as follows. Should CIB elect to fund this project with and interest bearing loan (likely) their loan / grant amounts would differ.

Funding Source	Cost Sharing	Percent of Project
Local Cost ¹	\$700,000	12%
WQB Loan (30 year, 0% int.)	\$968,000	17%
WQB Grant	\$1,547,000	27%

CIB Loan (30 year, 0% int.)	\$958,000	17%
CIB Grant	\$1,537,000	27%
Total:	\$5,710,000	100%

STAFF COMMENTS:

Staff supports the District’s plan to implement a public sewerage system that will protect a valuable regional drinking water resource and contribute to orderly growth in the area. The recommended alternative would connect the District’s sewer to the regional wastewater treatment plant in Moab City, linking the regional needs for water quality protection.

Financing the project is challenging because of its high cost and the limited number of potential sewer customers in the District at present. Current growth and rising costs support the need for planning and constructing a public sewerage system now.

Using a back-loaded repayment schedule as defined in the dynamic model allows the WQB to apply more loan funds to the project and allows the District to defer loan payments while its builds its customers. Both the WQB and the District take on greater risk when depending on this growth to maintain the system and make future debt service payments. Staff believes that this risk is manageable with prudent management of the assets and the utility’s finances, including but not limited to regular attention to its cost of services, establishing sewer fees that are consistent with uses, adequately funding depreciation, and maintaining impact fees.

Staff anticipates that this project, when authorized by the WQB, would be funded with first round or equivalency-project federal dollars and that the grant component would be provided as 2015 Capitalization Grant “principal forgiveness.”

STAFF RECOMMENDATION:

Staff recommends that the Water Quality Board authorize **SJSVSSD a loan in the amount of \$968,000 at an interest rate of 0% repayable over 30 years and a grant in the amount of \$1,547,000, along with a Design Advance in the amount of \$220,000** subject to these special conditions:

1. The District must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. As part of the facility planning, the District must complete a Water Conservation and Management Plan.
3. The District must pursue and retain additional funding necessary to fully implement the project.

4. The District must negotiate an inter-local agreement between the District, Moab City and GWSSA and establish a construction schedule that indicates the date when Moab and GWSSA will accept its wastewater.

5. As part of its Plan of Operations, the District must develop and implement an asset management program that is consistent with the SRF's Fiscal Sustainability Plan.

U:\ENG_WQ\B\WONDIMU\PROJECT\SPANISH VALLEY SSD\SAN JUAN SPANISH VALLEY FEASIBILITY AUTHORIZATION OCTOBER 2016.DOC

File: Spanish Valley SSD/Planning/Section 1

ATTACHMENT 2 - DYNAMIC COST MODEL
San Juan Spanish Valley SSD Cash Flow Model (2016 dollars)

WQB Loan Terms

Funded Project Cost:	\$	5,710,000
CIB Grant Amount:	\$	1,537,000
CIB Loan Amount:	\$	958,000
WQB Grant Amount:	\$	1,547,000
WQB Loan Amount:	\$	968,000
Local Contribution:	\$	700,000
Loan Term:		30
Interest Rate:		0.0%
Average Annual WQB Payment:	\$	32,267

Annual Sewer Expenses (Estimated)

Proposed WQB Loan Amount:	\$	968,000
Estimated O&M Cost:	\$	35,000
Annual O&M Cost Increase:		1.80%
Existing Debt Service:	\$	-
<hr/>		
Incremental Increase Year 1 - 10 =		31.0%
Incremental Increase Year 11 - 30 =		25.0%

Sewer Revenue Sources (Projected)

Beginning Cash:	\$	-
Initial Customers (ERU):		230
Projected Growth Rate:		2.00%
District Impact Fee:	\$	2,100
Moab + GWSSA Impact Fee	\$	3,800
Proposed Monthly User Charge:	\$	37.24

Sewer Revenue Projections

Year	Growth Rate (%)	Annual Growth (ERU)	Total Users (ERU)	User Charge Revenue	District Only Impact Fee Revenue	Total Revenue	Amortized WQB Loan	WQB Loan Reserves	Amortized CIB Loan	CIB Loan Reserves	Remaining Principal	Moab/GWSSA Sewer Fee	O&M Expenses	Total Expenses	Beginning Cash	Ending Cash Flow	Net Revenue	Debt Service Ratio
2018	2.0%		230								1,926,000							
2019	2.0%	5	235								1,926,000							
2020	2.0%	5	240	107,251	10,500	117,751	22,705	3,406	22,372	3,356	1,880,923	21,600	35,630	109,068		8,683	8,683	1.34
2021	2.0%	5	245	109,486	10,500	119,986	23,398	3,510	23,064	3,460	1,834,461	22,050	36,271	111,753	8,683	16,916	8,233	1.33
2022	2.0%	5	250	111,720	10,500	122,220	24,090	3,614	23,757	3,564	1,786,614	22,500	36,924	114,449	16,916	24,687	7,771	1.31
2023	2.0%	5	255	113,954	10,500	124,454	24,783	3,717	24,450	3,667	1,737,381	22,950	37,589	117,156	24,687	31,985	7,298	1.30
2024	2.0%	5	260	116,189	10,500	126,689	25,476	3,821	25,142	3,771	1,686,763	23,400	38,265	119,876	31,985	38,798	6,813	1.28
2025	2.0%	5	265	118,423	10,500	128,923	26,168	3,925	25,835	3,875	1,634,760	23,850	38,954	122,608	38,798	45,113	6,315	1.27
2026	2.0%	5	270	120,658	10,500	131,158	26,861	4,029	26,528	3,979	1,581,371	24,300	39,655	125,352	45,113	50,918	5,805	1.26
2027	2.0%	5	275	122,892	10,500	133,392	27,554	4,133	27,220	4,083	1,526,598	24,750	40,369	128,109	50,918	56,201	5,283	1.25
2028	2.0%	6	281	125,573	12,600	138,173	28,385	4,258	28,052	4,208	1,470,161	25,290	41,096	131,288	56,201	63,087	6,886	1.27
2029	2.0%	6	287	128,255	12,600	140,855	29,216	4,382	28,883	4,332	1,412,062	25,830	41,836	134,479	63,087	69,462	6,375	1.26
2030	2.0%	6	293	130,936	12,600	143,536	28,492		28,159		1,355,412	26,370	42,589	125,609	69,462	87,389	17,926	1.32
2031	2.0%	6	299	133,617	12,600	146,217	29,162		28,829		1,297,420	26,910	43,355	128,257	87,389	105,349	17,960	1.31
2032	2.0%	6	305	136,298	12,600	148,898	29,833		29,499		1,238,088	27,450	44,136	130,918	105,349	123,330	17,981	1.30
2033	2.0%	6	311	138,980	12,600	151,580	30,503		30,170		1,177,415	27,990	44,930	133,593	123,330	141,317	17,987	1.30
2034	2.0%	6	317	141,661	12,600	154,261	31,173		30,840		1,115,402	28,530	45,739	136,282	141,317	159,295	17,979	1.29
2035	2.0%	6	323	144,342	12,600	156,942	31,844		31,510		1,052,048	29,070	46,562	138,986	159,295	177,251	17,956	1.28
2036	2.0%	6	329	147,024	12,600	159,624	32,450		32,117		987,481	29,610	47,400	141,577	177,251	195,298	18,047	1.28
2037	2.0%	7	336	150,152	14,700	164,852	33,296		32,963		921,222	30,240	48,253	144,752	195,298	215,397	20,099	1.30
2038	2.0%	7	343	153,280	14,700	167,980	34,078		33,745		853,399	30,870	49,122	147,815	215,397	235,562	20,165	1.30
2039	2.0%	7	350	156,408	14,700	171,108	34,860		34,527		784,012	31,500	50,006	150,893	235,562	255,777	20,215	1.29
2040	2.0%	7	357	159,536	14,700	174,236	35,642		35,309		713,061	32,130	50,906	153,987	255,777	276,026	20,249	1.29
2041	2.0%	7	364	162,664	14,700	177,364	36,424		36,091		640,546	32,760	51,823	157,098	276,026	296,293	20,267	1.28
2042	2.0%	7	371	165,792	14,700	180,492	37,206		36,873		566,467	33,390	52,755	160,225	296,293	316,561	20,268	1.27
2043	2.0%	7	378	168,921	14,700	183,621	37,988		37,655		490,824	34,020	53,705	163,368	316,561	336,813	20,252	1.27
2044	2.0%	8	386	172,496	16,800	189,296	38,882		38,549		413,393	34,740	54,672	166,842	336,813	359,266	22,453	1.29
2045	2.0%	8	394	176,071	16,800	192,871	39,776		39,442		334,175	35,460	55,656	170,334	359,266	381,803	22,537	1.28
2046	2.0%	8	402	179,646	16,800	196,446	40,670		40,336		253,169	36,180	56,658	173,843	381,803	404,405	22,602	1.28
2047	2.0%	8	410	183,221	16,800	200,021	41,563		41,230		170,376	36,900	57,677	177,371	404,405	427,055	22,650	1.27
2048	2.0%	8	418	186,796	16,800	203,596	42,457		42,124		85,795	37,620	58,716	180,916	427,055	449,735	22,679	1.27
2049	2.0%	8	426	190,371	16,800	207,171	43,064		42,731		0	38,340	59,772	183,907	449,735	472,999	23,264	1.27
				401,100			968,000		958,000									

NO PRINT BOX	0%	\$967,999.76	\$957,999.76
	1%	\$889,732.84	\$880,468.15
	1%	\$819,631.45	\$811,028.88
	2.00%	\$700,202.44	\$692,736.95
	2.50%	\$649,302.80	\$642,326.03

ATTACHMENT 2 - DYNAMIC COST MODEL
San Juan Spanish Valley SSD Cash Flow Model (2016 dollars)

WQB Loan Terms	
Funded Project Cost:	\$ 5,710,000
CIB Grant Amount:	\$ 1,537,000
CIB Loan Amount:	\$ 958,000
WQB Grant Amount:	\$ 1,547,000
WQB Loan Amount:	\$ 968,000
Local Contribution:	\$ 700,000
Loan Term:	30
Interest Rate:	0.0%
Average Annual WQB Payment:	\$ 32,267

Annual Sewer Expenses (Estimated)	
Proposed WQB Loan Amount:	\$ 968,000
Estimated O&M Cost:	\$ 35,000
Annual O&M Cost Increase:	1.80%
Existing Debt Service:	\$ -
Incremental Increase Year 1 - 10 =	31.0%
Incremental Increase Year 11 - 30 =	25.0%

Sewer Revenue Sources (Projected)	
Beginning Cash:	\$ -
Initial Customers (ERU):	230
Projected Growth Rate:	2.00%
District Impact Fee:	\$ 2,100
Moab + GWSSA Impact Fee	\$ 3,800
Proposed Monthly User Charge:	\$ 37.24

Sewer Revenue Projections

Year	Growth Rate (%)	Annual Growth (ERU)	Total Users (ERU)	User Charge Revenue	District Only Impact Fee Revenue	Total Revenue	Amortized WQB Loan	WQB Loan Reserves	Amortized CIB Loan	CIB Loan Reserves	Remaining Principal	Moab/GWSSA Sewer Fee	O&M Expenses	Total Expenses	Beginning Cash	Ending Cash Flow	Net Revenue	Debt Service Ratio
2018	2.0%		230								1,926,000							
2019	2.0%	5	235								1,926,000							
2020	2.0%	5	240	107,251	10,500	117,751	22,705	3,406	22,372	3,356	1,880,923	21,600	35,630	109,068		8,683	8,683	1.34
2021	2.0%	5	245	109,486	10,500	119,986	23,398	3,510	23,064	3,460	1,834,461	22,050	36,271	111,753	8,683	16,916	8,233	1.33
2022	2.0%	5	250	111,720	10,500	122,220	24,090	3,614	23,757	3,564	1,786,614	22,500	36,924	114,449	16,916	24,687	7,771	1.31
2023	2.0%	5	255	113,954	10,500	124,454	24,783	3,717	24,450	3,667	1,737,381	22,950	37,589	117,156	24,687	31,985	7,298	1.30
2024	2.0%	5	260	116,189	10,500	126,689	25,476	3,821	25,142	3,771	1,686,763	23,400	38,265	119,876	31,985	38,798	6,813	1.28
2025	2.0%	5	265	118,423	10,500	128,923	26,168	3,925	25,835	3,875	1,634,760	23,850	38,954	122,608	38,798	45,113	6,315	1.27
2026	2.0%	5	270	120,658	10,500	131,158	26,861	4,029	26,528	3,979	1,581,371	24,300	39,655	125,352	45,113	50,918	5,805	1.26
2027	2.0%	5	275	122,892	10,500	133,392	27,554	4,133	27,220	4,083	1,526,598	24,750	40,369	128,109	50,918	56,201	5,283	1.25
2028	2.0%	6	281	125,573	12,600	138,173	28,385	4,258	28,052	4,208	1,470,161	25,290	41,096	131,288	56,201	63,087	6,886	1.27
2029	2.0%	6	287	128,255	12,600	140,855	29,216	4,382	28,883	4,332	1,412,062	25,830	41,836	134,479	63,087	69,462	6,375	1.26
2030	2.0%	6	293	130,936	12,600	143,536	28,492		28,159		1,355,412	26,370	42,589	125,609	69,462	87,389	17,926	1.32
2031	2.0%	6	299	133,617	12,600	146,217	29,162		28,829		1,297,420	26,910	43,355	128,257	87,389	105,349	17,960	1.31
2032	2.0%	6	305	136,298	12,600	148,898	29,833		29,499		1,238,088	27,450	44,136	130,918	105,349	123,330	17,981	1.30
2033	2.0%	6	311	138,980	12,600	151,580	30,503		30,170		1,177,415	27,990	44,930	133,593	123,330	141,317	17,987	1.30
2034	2.0%	6	317	141,661	12,600	154,261	31,173		30,840		1,115,402	28,530	45,739	136,282	141,317	159,295	17,979	1.29
2035	2.0%	6	323	144,342	12,600	156,942	31,844		31,510		1,052,048	29,070	46,562	138,986	159,295	177,251	17,956	1.28
2036	2.0%	6	329	147,024	12,600	159,624	32,450		32,117		987,481	29,610	47,400	141,577	177,251	195,298	18,047	1.28
2037	2.0%	7	336	150,152	14,700	164,852	33,296		32,963		921,222	30,240	48,253	144,752	195,298	215,397	20,099	1.30
2038	2.0%	7	343	153,280	14,700	167,980	34,078		33,745		853,399	30,870	49,122	147,815	215,397	235,562	20,165	1.30
2039	2.0%	7	350	156,408	14,700	171,108	34,860		34,527		784,012	31,500	50,006	150,893	235,562	255,777	20,215	1.29
2040	2.0%	7	357	159,536	14,700	174,236	35,642		35,309		713,061	32,130	50,906	153,987	255,777	276,026	20,249	1.29
2041	2.0%	7	364	162,664	14,700	177,364	36,424		36,091		640,546	32,760	51,823	157,098	276,026	296,293	20,267	1.28
2042	2.0%	7	371	165,792	14,700	180,492	37,206		36,873		566,467	33,390	52,755	160,225	296,293	316,561	20,268	1.27
2043	2.0%	7	378	168,921	14,700	183,621	37,988		37,655		490,824	34,020	53,705	163,368	316,561	336,813	20,252	1.27
2044	2.0%	8	386	172,496	16,800	189,296	38,882		38,549		413,393	34,740	54,672	166,842	336,813	359,266	22,453	1.29
2045	2.0%	8	394	176,071	16,800	192,871	39,776		39,442		334,175	35,460	55,656	170,334	359,266	381,803	22,537	1.28
2046	2.0%	8	402	179,646	16,800	196,446	40,670		40,336		253,169	36,180	56,658	173,843	381,803	404,405	22,602	1.28
2047	2.0%	8	410	183,221	16,800	200,021	41,563		41,230		170,376	36,900	57,677	177,371	404,405	427,055	22,650	1.27
2048	2.0%	8	418	186,796	16,800	203,596	42,457		42,124		85,795	37,620	58,716	180,916	427,055	449,735	22,679	1.27
2049	2.0%	8	426	190,371	16,800	207,171	43,064		42,731		0	38,340	59,772	183,907	449,735	472,999	23,264	1.27

		401,100	968,000	958,000
NO PRINT BOX	0%	\$967,999.76		\$957,999.76
	1%	\$889,732.84		\$880,468.15
	1%	\$819,631.45		\$811,028.88
	2.00%	\$700,202.44		\$692,736.95
	2.50%	\$649,302.80		\$642,326.03