City of Grand Island

Tuesday, September 17, 2013
Study Session

Item C1

Wastewater Rate Study and Construction Update

Staff Contact: John Collins, P.E. - Public Works Director

Council Agenda Memo

From: Marvin Strong PE, Wastewater Treatment Plant Engineer

Meeting: September 17, 2013

Subject: Wastewater Rate Study and Construction Update

Item #'s: C-1

Presenter(s): John Collins PE, Public Works Director
Marvin Strong PE, Wastewater Treatment Plant Engineer
Anna White, Black & Veatch Consulting Firm
Derek Cambridge PE, Black & Veatch Consulting Firm

Background

The Wastewater Division of the Public Works Department is an enterprise fund with no property tax dollars used to support the division. The entire budget comes from wastewater customers through sanitary sewer bills. The sewer bill for a residential customer is based on usage and standard strength for residential sewage. The sewer bill for commercial and industrial customers is based on usage plus an extra strength component. A cost of service based rate study looks at all costs for the operation and allocates those costs of service to the customer classes according to the costs of providing service. Rates are then designed to equitably cover those costs.

The current sanitary sewer rates are based on Resolution No. 2011-100, which was approved by City Council on April 26, 2011.

Discussion

The revised Wastewater Rate Study reflects anticipated cost of the planned construction program and operations, which are detailed in tonight's presentation.

Conclusion

This item is presented to the City Council in a Study Session to allow for any questions to be answered and to create a greater understanding of the issue at hand.

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CITY OF GRAND ISLAND
COST OF SERVICE AND RATE DESIGN UPDATE

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AGENDA

PURPOSE OF PRESENTATION

BACKGROUND INFORMATION

RATE STUDY RESULTS

PART 1 – PURPOSE OF PRESENTATION

PURPOSE OF PRESENTATION

- Provide the City Council with background information related to the CIP development for the rate model update.
- Present results of the rate model update.
- Respond to questions.
- Gain the City Council's understanding of the proposed CIP and associated rate increases.

PART 2 – BACKGROUND INFORMATION

SINCE MARCH 2011 RATE STUDY (Implemented October 1, 2011 Resolution 2011-100)

- Continued reduction in excess strength loadings from JBS
- Capital Improvement Program (CIP)

REDUCED JBS EXCESS STRENGTH LOADINGS

Parameter	Actual FY 2010	Actual FY 2011	Actual FY 2012	Projected FY 2013	Projected –FY 2014 & Beyond
Flow (mgd)	3.2	2.5	2.5	2.5	2.5
BOD (mg/l)	210	<250	<250	<250	<250
SS (mg/l)	48	<250	10	<250	<250
O&G (mg/l)	23	<100	<100	<100	<100
TKN (mg/l) (a)		**143**	**5**	**5**	**5**
Sulfides (mg/l)	55	48	2	0	0
Ammonia (mg/l)		130	3	0	0
Nitrates (mg/l) (b)			**37**	**10**	**10**

(a) Not projected in 2011 rate study
(b) Lower than projected in 2011 rate study

Recommend eliminating Ammonia surcharge and adding TKN surcharge

BACKGROUND INFORMATION

CAPITAL IMPROVEMENTS PLAN UPDATE

- **Total 5-year CIP in 2011 Rate Study of $44.1M**
- **Major Changes**
  - Collection System Master Planning
  - North Interceptor
  - Collection System Rehabilitation
  - WWTP Improvements
- **Developed total proposed 5-year CIP of $72.9M for use in Rate Study Update**

2013 – 2017 CAPITAL IMPROVEMENT PLAN

Line No.		2013	2014	2015	2016	2017	Total
		$	$	$	$	$	$
1	Sewer Mains	5,192,200	15,165,100	16,373,700	8,681,100	1,387,000	46,799,100
2	Lift Stations	215,100	31,500	0	69,500	1,476,200	1,792,300
	Wastewater Treatment						
3	Raw Water Pumping	760,200	6,924,800	2,343,700	0	0	10,028,700
4	Preliminary Treatment	892,400	8,129,200	2,751,300	0	0	11,772,900
5	Primary Sedimentation/Clarifiers	0	0	231,800	0	0	231,800
6	Aeration Basins	291,400	0	0	0	0	291,400
7	Aeration Equipment	0	0	0	0	0	0
8	Corrosion/Odor Control Facilities	0	0	0	0	0	0
9	Final Clarifiers	50,000	0	0	901,800	0	951,800
10	Disinfection	0	0	0	0	0	0
11	Sludge Handling	0	0	0	0	0	0
12	General Plant	50,700	100,000	103,000	106,100	0	359,800
13	Lab	0	0	0	0	0	0
14	Vehicles	40,000	40,000	30,900	206,800	49,200	366,900
15	Administration & General	118,400	164,900	0	0	0	283,300
16	Land	0	0	0	0	0	0
17	Total	7,610,400	30,555,500	21,834,400	9,965,300	2,912,400	72,878,000

COLLECTION SYSTEM MASTER PLANNING

- Replace LS #20 Forcemain
- Abandon LS #8 – Route to North Interceptor
- LS #2 – Change discharge routing

NORTH INTERCEPTOR

- **Phase I**
  - 2011 Rate Study: $12.3M in 2013 – 2015
  - $11.5M in 2013 – 2014
- **Phase II**
  - $19.8M in 2013 – 2017

COLLECTION SYSTEM REHAB

- **West and South Interceptors**
  - 2011 rate study: $1.3M in 2013 – 2014
  - $0.9M in 2013
- **4th to 5th and Eddy to Vine Street**
  - Not in 2011 rate study
  - $1.5M in 2013

WWTP IMPROVEMENTS

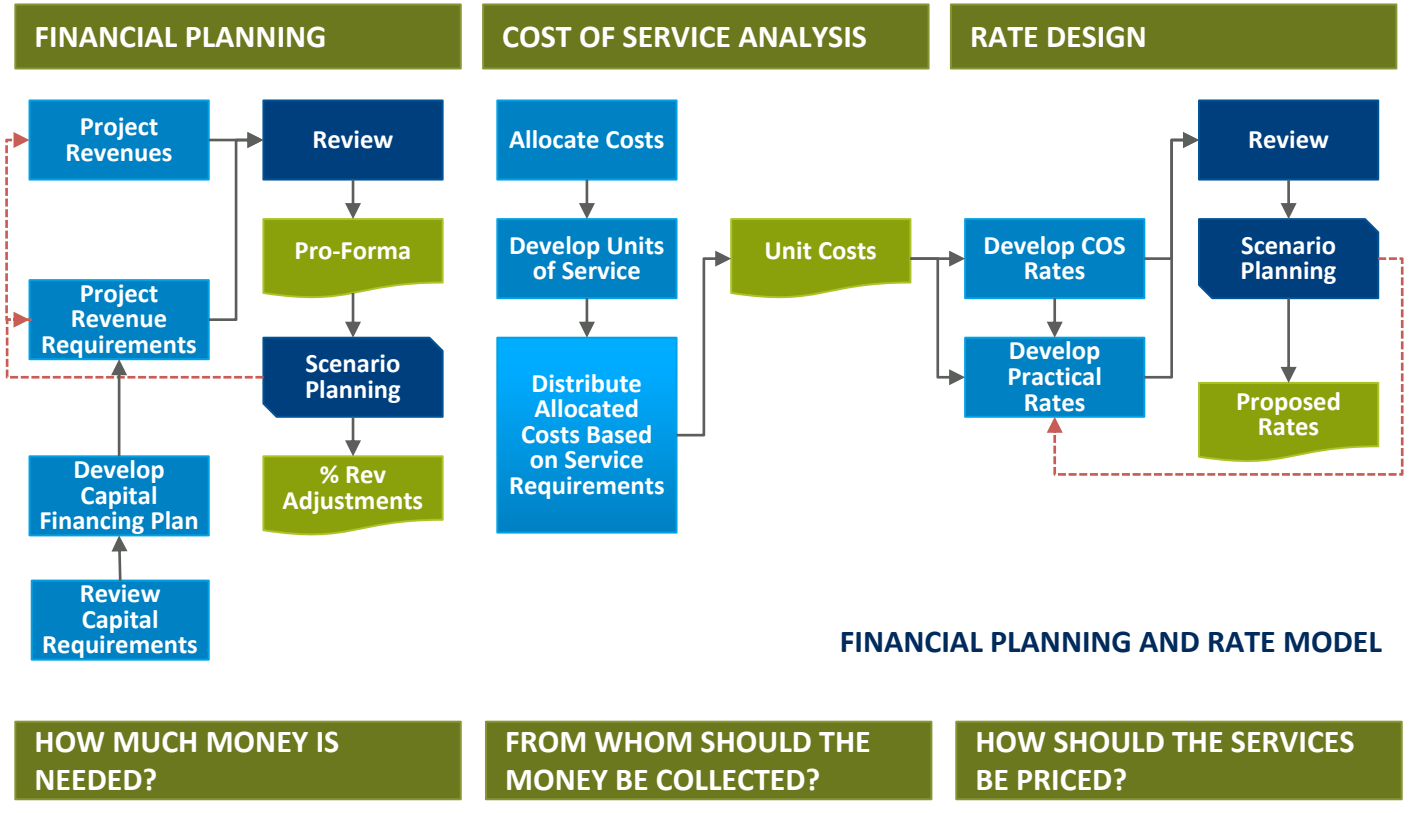
- **Rehab of existing influent pump stations**
  - 2011 Rate Study: $9.2M in 2011 – 2014
  - In January 2012, Alternative 5 was selected,
    - New 50 mgd submersible pump station, reuse existing pump station for plant drain system
    - $16.9M 2013 - 2015
- **Replace Final Clarifier Mechanisms with more corrosion resistant materials**

PART 3 – RATE STUDY RESULTS

PROJECT UNDERSTANDING

- **Perform wastewater rate study update. The study will accomplish the following objectives:**
  - Establish operating and capital financial plans that fully fund activities
  - Perform a cost of service analysis to determine if cost allocations are fair and equitable among the customer classifications
  - Review the existing rate structure and proposed rates that provide adequate revenues

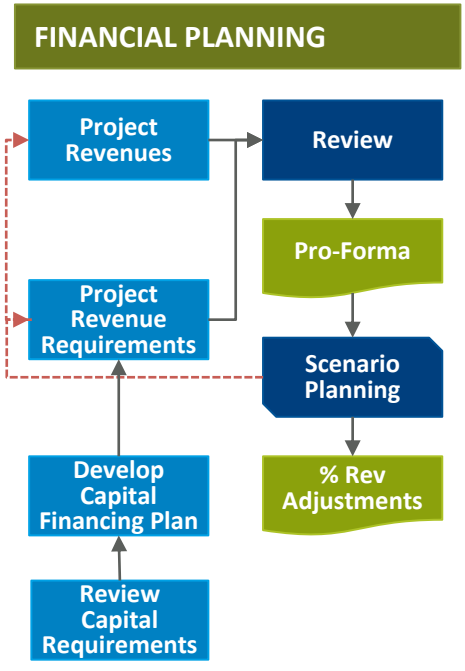
PROJECT METHODOLOGY



FINANCIAL PLANNING AND RATE MODEL

Rigorous, methodical and transparent analysis leads to defensible rates

REVENUE AND REVENUE REQUIREMENTS



- **Objective:**
  - Provide adequate funding of future utility operating and capital program needs
- **Considerations**:
  - Assess appropriateness of operating and capital reserves
  - Evaluate allocation of direct and indirect costs
  - Review other revenue sources

Key Tasks

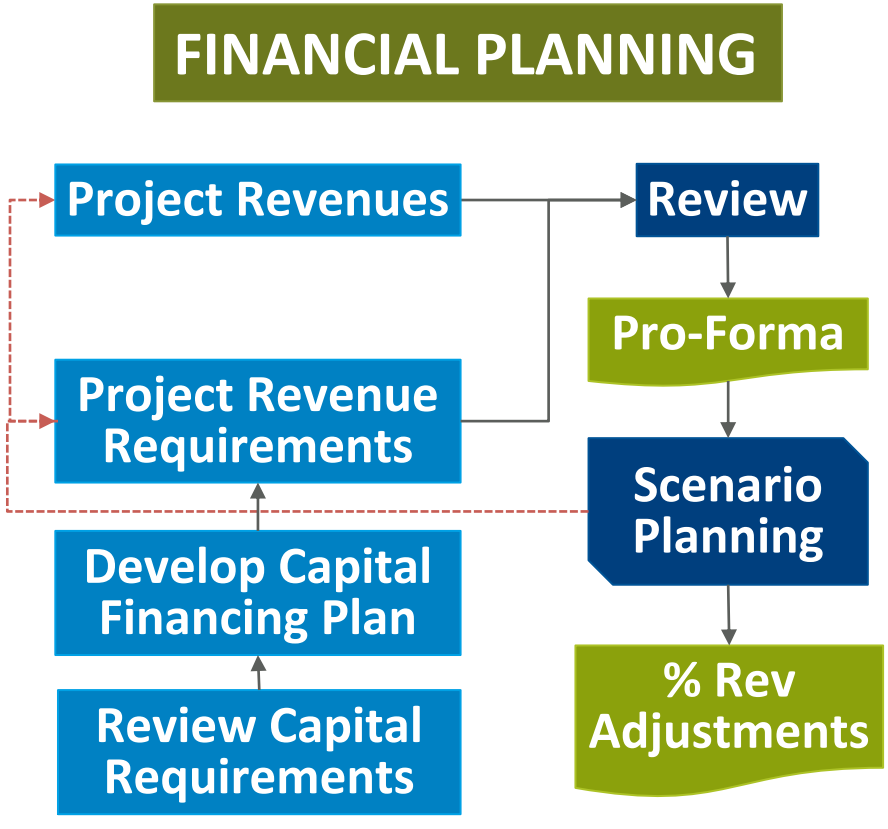
I. Financial Planning

II. Cost Allocation

III. Rate Design

LONG-RANGE FINANCIAL PLANS

ISSUE: PROVIDING FINANCIALLY STABLE UTILITY OPERATIONS
SOLUTION: DEVELOP 10 YEAR FINANCIAL PLANS



REVENUE

- **Develop projected units by customer class**
  - Historical data and trends
  - Projected future growth (e.g. new subdivisions)
- **Apply existing rate structure to projected units to determine projected revenue**
- **Project miscellaneous revenue**
  - Sewer Assessments

REVENUE REQUIREMENTS

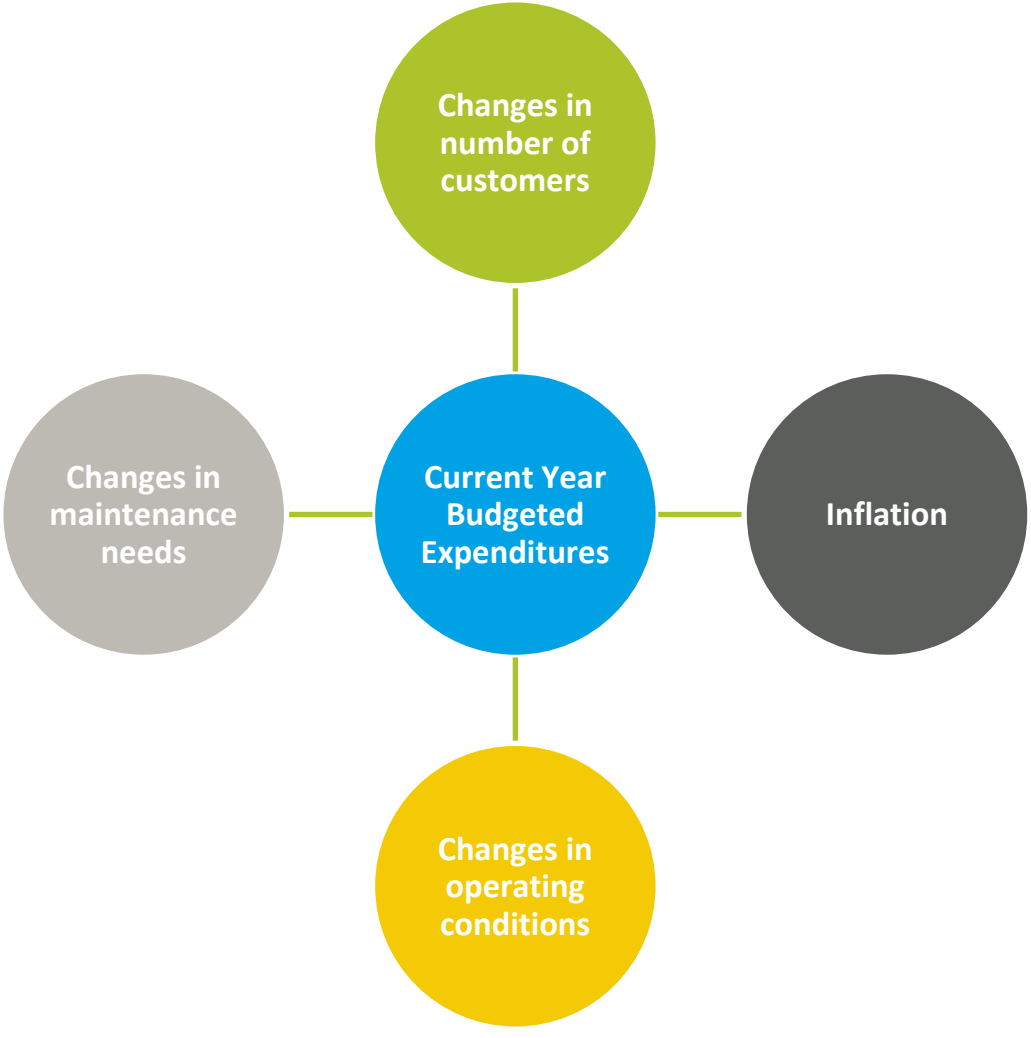
Capital

- Cash Financing
- Debt Service on Proposed Debt
- Existing Debt

Operating

- Routine Capital

OPERATION & MAINTENANCE EXPENSE



REVENUE REQUIREMENTS

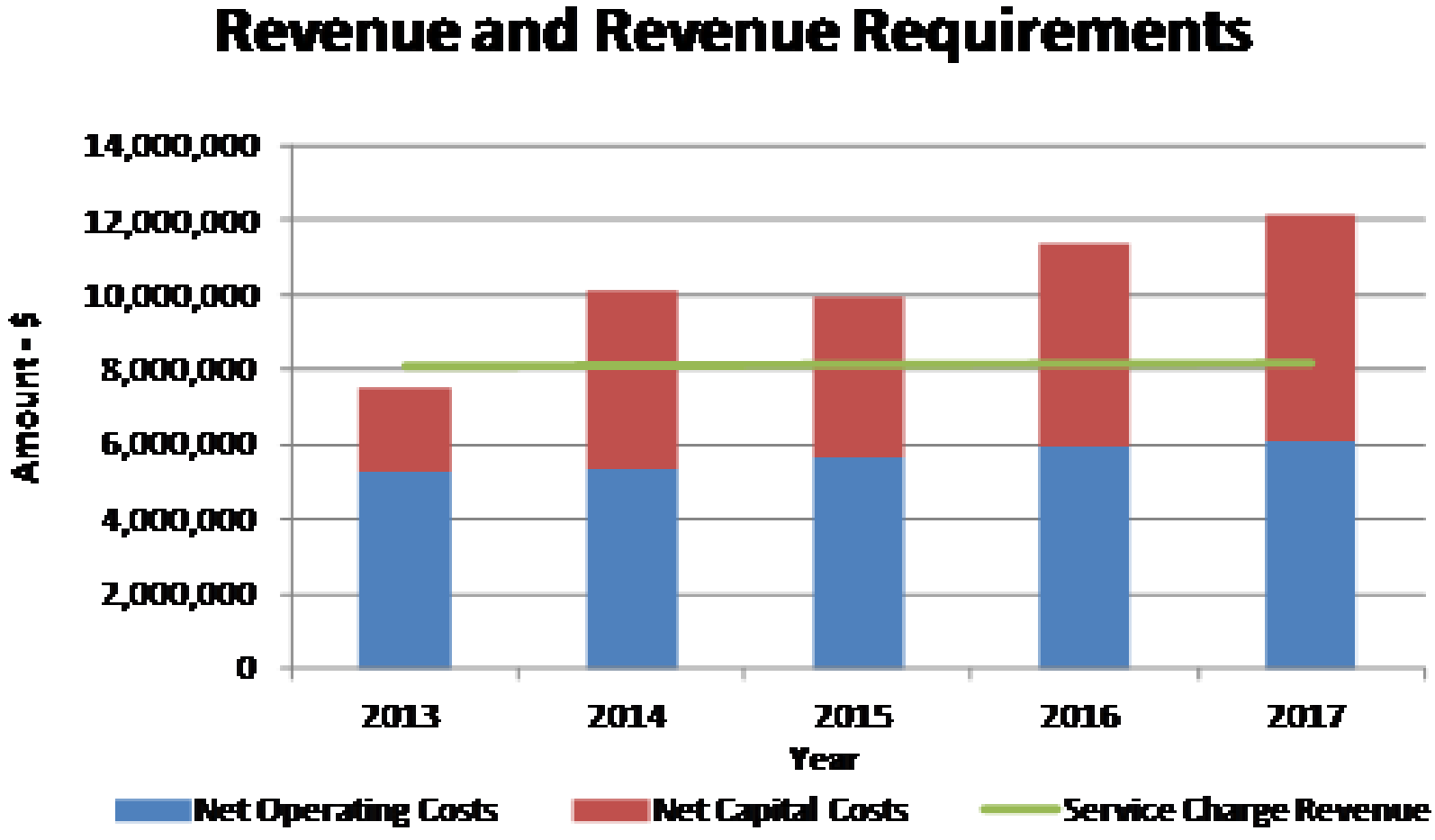
Capital

- Cash Financing
- Debt Service on Proposed Debt
- Existing Debt

Operating

- Routine & Capital Maintenance Expense
- Transfers to Operating

“HOW MUCH MONEY IS NEEDED?”



Key Tasks

I. Financial Planning

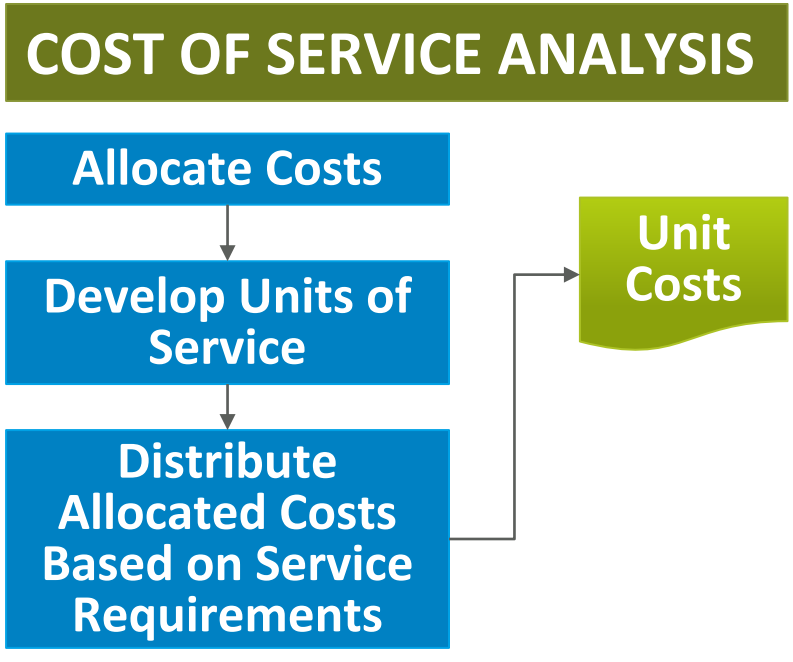
II. Cost Allocation

III. Rate Design

COST OF SERVICE ALLOCATIONS

ISSUE: PROPER RECOGNITION OF COSTS TO SUPPORT DEFENSIBLE RATE DESIGN

SOLUTION: DEFENSIBLE METHODOLOGY RECOGNIZING PROPER COST CAUSATION

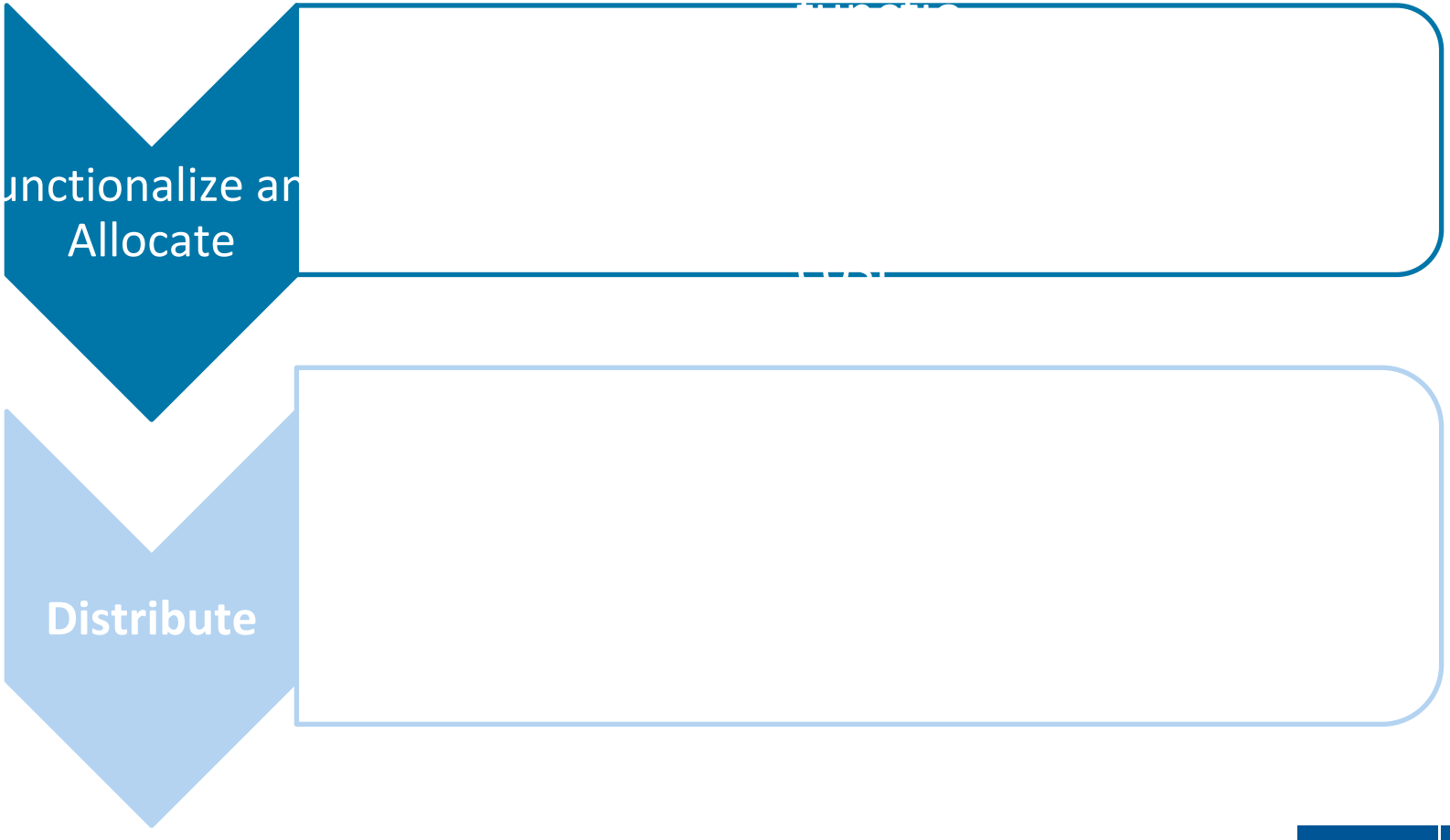


COST OF SERVICE FOR TEST YEAR 2017

Line No.		Operating Expense	Capital Cost	Total
		$	$	$
	Revenue Requirements			
1	Operation & Maintenance Expense	6,632,400		6,632,400
	Debt Service Requirements			
2	Existing Debt Service		0	0
3	Proposed Debt Service		5,002,200	5,002,200
4	Routine Capital Additions		317,000	317,000
5	Cash Financing of Major Improvements		1,000,000	1,000,000
6	Additions to the Operating Reserve	107,200		107,200
7	Total	6,739,600	6,319,200	13,058,800
	Revenue Requirements Met from Other Sources			
8	Other Operating Revenue	922,600	3,000	925,600
9	Interest Income	62,100	247,800	309,900
10	Change in Funds Available	210,500	197,400	407,900
11	Total	1,195,200	448,200	1,643,400
12	Net Costs to be Met from Charges	5,544,400	5,871,000	11,415,400

COST ALLOCATION

- Allocat
  e costs
  to



WASTEWATER COST FUNCTIONS AND COST CAUSATIVE PARAMETERS

- Separate O&M and Capital Costs into Cost Functions

Lift Station	Wastewater Treatment	Collection System
		

- Distribute O&M and Capital Costs into Cost Causative Parameters

Contributed Flow	Infiltration / Inflow	Customer Billing	BOD	TSS
				
Volume		Customer Costs	Strength	

COST ALLOCATION

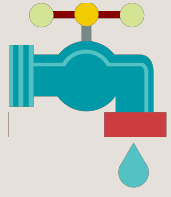
- Allocat
  e costs
  to

unctionalize an
Allocate

Distribute

SAMPLE CALCULATION OF UNIT COSTS (WATER

System Costs		Units of Service		Unit Costs
Base and Extra Capacity Costs				
Volume	÷	Mgal	=	$/Mgal
Customers Costs				
Customer	÷	No. of Bills	=	$/Bill
Direct Costs				
Fire Protection	÷	No. of Eq. Hydrants	=	$/Eq. Hydrant



Mgal= 1,000 gallons

COST ALLOCATION

- Allocate costs to
- Estimate total

unctionalize an
Allocate

Distribute

DISTRIBUTE COSTS TO CUSTOMERS (WATER)

Volume Unit Cost x Residential Units (Mgal) = $

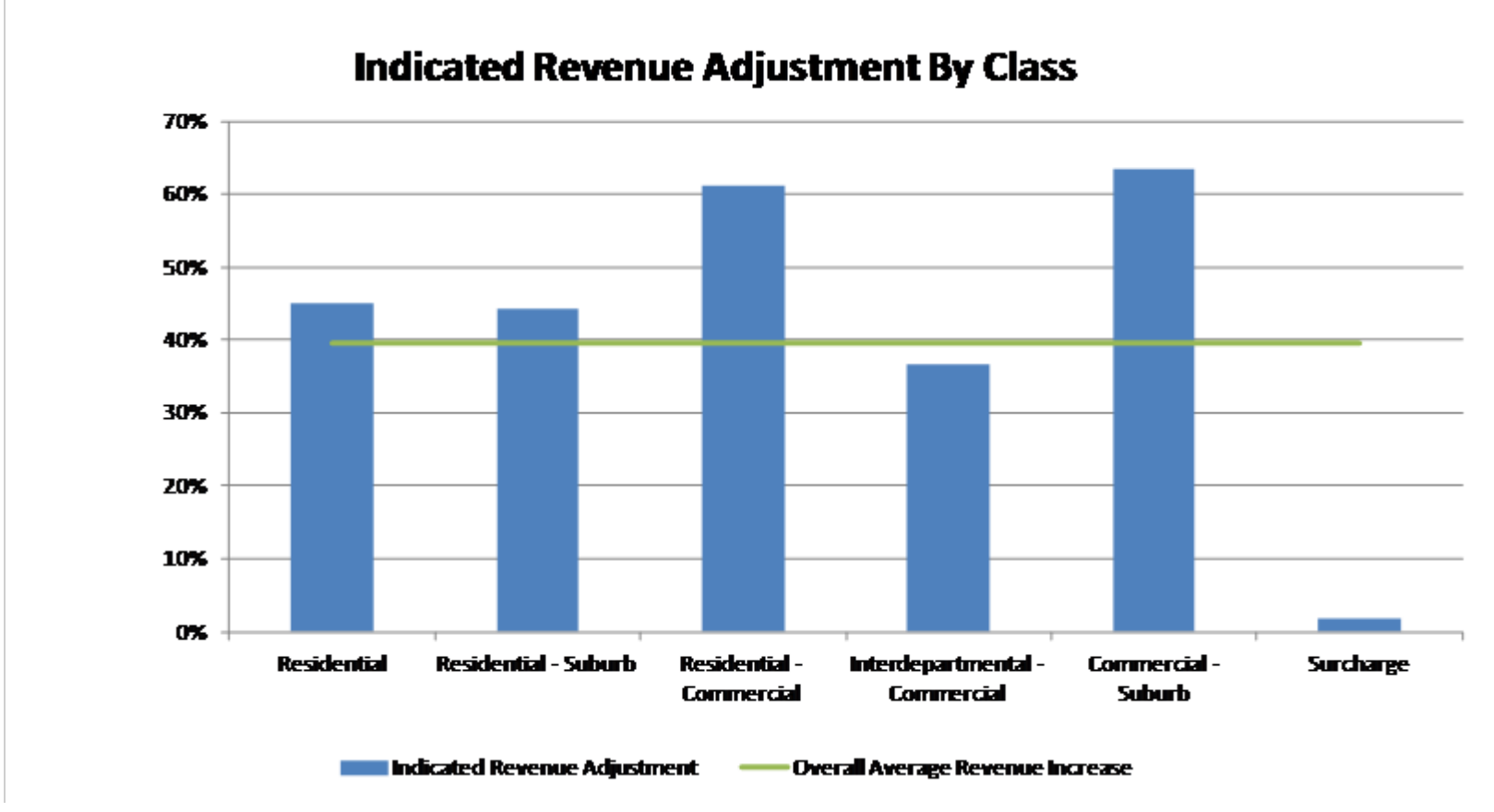
Customer Unit Cost x Residential Units (Bills) = $

Fire Unit Cost x Residential Units (Eq. Hydrants) = $

Total Residential Cost of Service = $

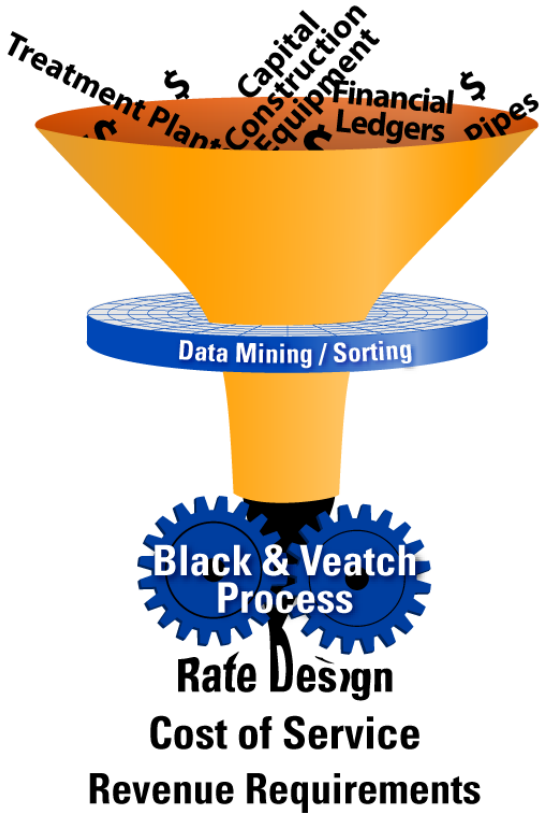
Same Calculation for Other Customer Classes

“FROM WHOM SHOULD THE MONEY BE COLLECTED?”



39.6% Overall Average Revenue Increase by 2017

RATE SETTING PRINCIPLES



- Equitability
- Revenue Stability
- Provides Appropriate Price Signals
- Recognizes Customer Usage Patterns & Demands
- Easy to Understand and Administer
- Customer Acceptance
- Consistent with City Policies
- Legally Acceptable/Defensible

Modeled after AWWA M1 and WEF MoP 27

"HOW SHOULD THE SERVICES BE PRICED?"

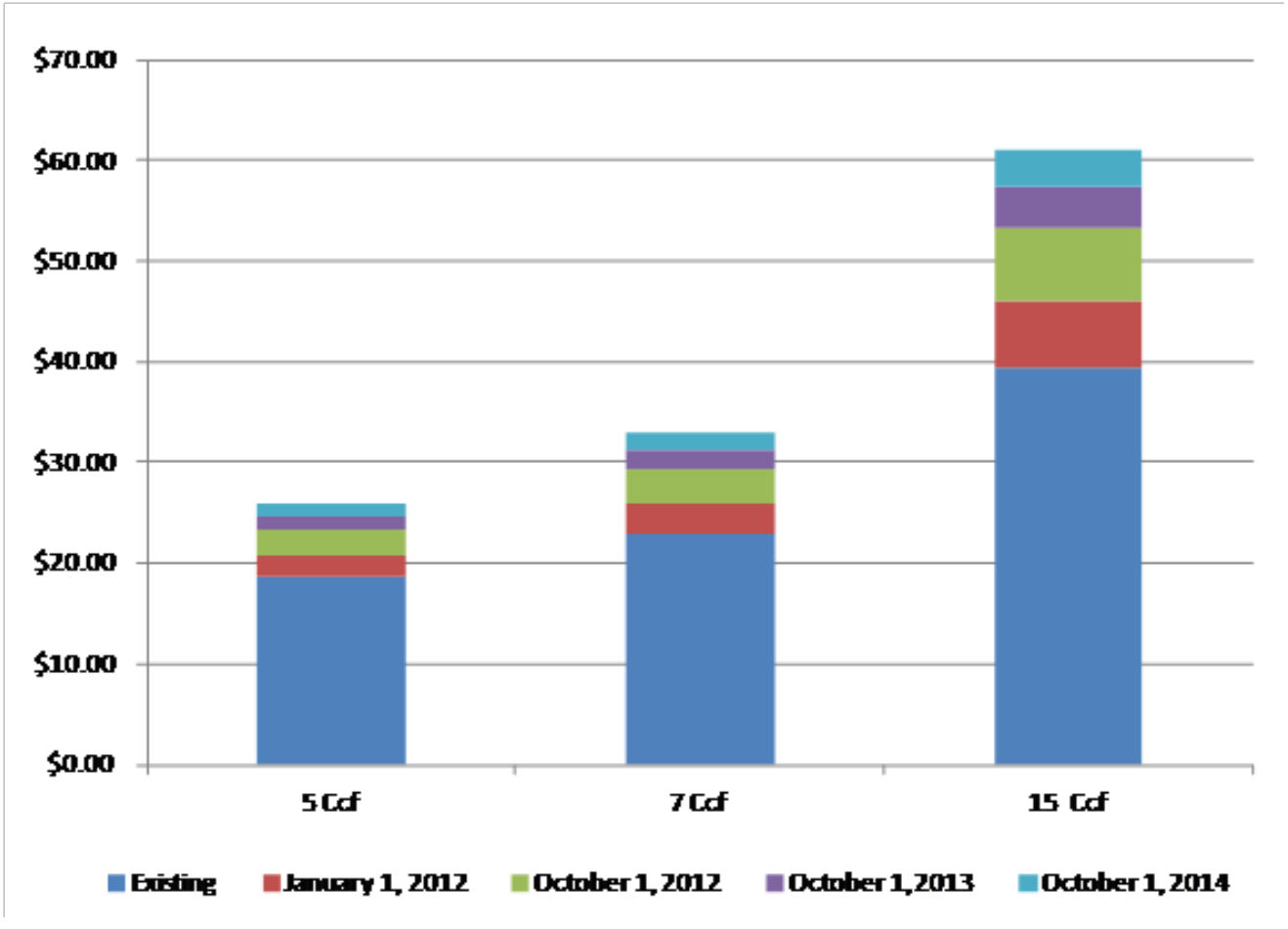
	Existing	Charges to be Effective October 1, 2013	2014	2015	2016
Sewer Service Charge - $/month					
All Customers	8.24	8.24	8.24	8.24	8.24
Volume Charge - $/Ccf					
Low Strength Industrial Dischargers	1.03	1.47	1.96	2.23	2.47
Non-Sanitary Sewer Flow (a)	1.18	1.18	1.18	1.18	1.18
Sanitary Sewer Flow	2.08	2.52	3.01	3.28	3.52
Excess Strength Surcharge - $/lb					
BOD over 250 mg/l	0.3844	0.3844	0.3844	0.3844	0.3844
Suspended Solids over 250 mg/l	0.2533	0.2533	0.2533	0.2533	0.2533
Oil & Grease over 100 mg/l	0.0819	0.0832	0.0845	0.0858	0.0872
Low Strength Industrial Dischargers					
BOD over 0 mg/l	0.3844	0.3844	0.3844	0.3844	0.3844
Suspended Solids over 0 mg/l	0.2533	0.2533	0.2533	0.2533	0.2533
Oil & Grease over 0 mg/l	0.0819	0.0832	0.0845	0.0858	0.0872
TKN over 30 mg/l	0.5701	0.5701	0.6314	0.6927	0.7539
Nitrates over 25 mg/l	1.8739	1.8739	1.8810	1.8881	1.8953

NEW

(a) Applicable to flow discharged from JBS' pretreatment lagoons through their sewer main connecting directly to the City's wastewater treatment plant.

Ccf = Hundred Cubic Feet
BOD = Biochemical Oxygen Demand
TKN = Total Kjeldahl Nitrogen
mg/l = milligram per liter

TYPICAL MONTHLY RESIDENTIAL BILLS



Typical Monthly Residential Bill Will Increase $10.08 From 2013 To 2017

REQUESTED ACTION

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Together

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DRAFT

REPORT ON REVENUE REQUIREMENTS, COST OF SERVICE AND RATES FOR WASTEWATER SERVICE

BLACK & VEATCH PROJECT NO. 175144

PREPARED FOR

City of Grand Island, NE

13 SEPTEMBER 2013

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Table of Contents

List of Tables

Introduction

The City of Grand Island, through the Wastewater Division, provides retail wastewater collection and treatment services to approximately 15,000 accounts. The Division's responsibilities include planning, constructing, operating, and maintaining facilities for collection, transportation, treatment, and disposal of the sanitary and industrial wastewater generated within its service area.

The Division, in recognition of the importance of financial planning for the increasing costs to replace, renew, expand, improve, and operate the wastewater utility, authorized this comprehensive study of revenue requirements, costs of service, and rates for wastewater service.

PURPOSE

The purpose of this report is: (1) to examine the future revenues of the wastewater utility under existing levels of charge, as well as the Division's total operating expense and capital financing requirements, and to examine the adequacy of projected revenue to meet the total requirements through the fiscal year ending September 30, 2017; (2) to allocate the total revenue requirements, or costs of service, for a representative test year to the various customer classes in accordance with the respective service requirements that each class places on the system; and (3) to develop a suitable schedule of wastewater rates that will produce revenues adequate to meet the financial needs of the utility on a basis that recognizes customer costs of service and local policy considerations. This report reflects updated projections since the March 2011 Report on Revenue Requirements, Cost of Service and Rates for Wastewater Service was prepared.

SCOPE

This report presents the results of a comprehensive study of projected revenue requirements, cost of service allocations, and proposed rates for wastewater service. Revenues and revenue requirements are projected for five fiscal years through 2017, recognizing anticipated growth in number of customers and projected surcharge loadings for the City's industrial customers. The study of revenue requirements recognizes projected operation and maintenance expense, principal and interest payments on existing and proposed revenue bond issues, expenditures for routine capital additions and major capital improvements met from annual revenues, and recommended reserve fund requirements. Requirements on existing revenue bond indentures are also recognized.

Allocated costs of wastewater service are developed for each class of customer and type of service based on considerations of utility revenue needs and projected customer service requirements. Wastewater rate adjustments are designed for customers in accordance with allocated costs of service and local policy and practical considerations.

In conducting our analyses and in forming an opinion of the projection of future operations summarized in this report, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized by Black & Veatch in performing the analysis follows generally accepted practices for such projections. Such assumptions and methodologies are summarized in this report and are reasonable and appropriate for the purpose for which they are used. While Black & Veatch believes the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that may actually occur.

Summary of Findings and Recommendations

REVENUE UNDER EXISTING RATES

1. The Wastewater Division currently provides wastewater collection and treatment services to approximately 15,540 accounts. The number of bills issued is projected to increase from about 187,054 in 2013 to about 189,554 by 2017.

2. The Division's current wastewater rates became effective October 1, 2012. These retail rates include a monthly service charge, a uniform volume charge, and extra strength surcharges for biochemical oxygen demand (BOD) in excess of 250 milligrams per liter (mg/l), suspended solids (SS) in excess of 250 mg/l, oil and grease in excess of 100 mg/l, TKN (Total Kjeldahl Nitrogen) in excess of 30 mg/l, ammonia in excess of 30 mg/l, and nitrates in excess of 25 mg/l. Industrial customers with lower than normal strength loadings pay a reduced volume charge, but are charged extra strength surcharges for all wastewater strength discharged. All industrial customers are also charged applicable sampling and monitoring fees.

3. Revenue is derived principally from charges for wastewater service, with some revenue also obtained from sewer assessments, sewer tap fees, health insurance co-pays, miscellaneous sampling and permit revenue, and other miscellaneous revenues. Revenue from wastewater service, under existing rates, is projected to increase from about $8,092,300 in 2013 to about $8,176,300 in 2017. Miscellaneous revenue is estimated to increase from $595,900 in 2013 to $925,600 in 2017.

REVENUE REQUIREMENTS

4. Costs of service to be recovered from wastewater service charges include system operation and maintenance expense, debt service on existing and proposed bonds, expenditures for routine capital and major capital improvements met from annual revenues, and recommended reserve fund requirements.

5. Operation and maintenance expense includes the annual salaries and wages of personnel, costs for materials and supplies, fuel and electrical power costs, chemicals, and other costs such as employee benefits, insurance, and contract services. Future wastewater utility operation and maintenance expenses are projected to increase from about $5,510,900 in 2013 to about $6,632,400 in 2017.

6. Major capital improvement expenditures are estimated to total $72,878,000. Projected revenue bonds totaling $68,980,700, together with current revenues, estimated future interest earnings, and various funds on hand are proposed for financing the wastewater utility improvement program.

7. Principal and interest costs on outstanding and proposed revenue bonds are projected to increase from $1,705,900 in 2013 to $5,002,200 in 2017.

8. Based on the cash flow presented in Table 8 of this report, it is anticipated that the projected capital program requirements and estimates of future operating expenses of the wastewater utility during the 2013 – 2017 study period examined can be financed with annual revenue increases of 12 percent effective October 1, 2013 and 2014; 6 percent effective October 1, 2015, and 5 percent effective October 1, 2016.

COST OF SERVICE ALLOCATIONS

9. The annual cost of service for the wastewater system to be met from wastewater service revenue during the projected 2017 test year is as follows:

Total Revenue Requirements:		
Operation and Maintenance Expense	$6,632,400	
Debt Service Requirements		
Proposed Debt Service	5,002,200	
Routine Capital Additions	317,000	
Cash Financing of Major Improvements	1,000,000	
Additions to the Operating Reserve	107,200	
Total		$13,058,800
Revenue Requirements Met from Other Sources:		
Other Operating Income	$ 925,600	
Interest Income	309,900	
Change in Funds Available	407,900	
Total		$1,643,400
Net Costs to be Met from Charges		$11,415,400

10. As a basis for design of a schedule of wastewater rates, costs of service are allocated to classes of customers in accordance with respective service requirements. The resulting costs of service allocated to customer classes are summarized in Table A. Estimated revenue under existing rates and the indicated additional revenue required to meet costs of service are also shown in the table.

PROPOSED RATE ADJUSTMENTS

11. A schedule of proposed rates for wastewater service recognizing both cost of service and local policy considerations described in the report is shown in Table B. The proposed rates structure is similar to the existing structure with the exception that the surcharge for ammonia has been eliminated.

12. Typical wastewater bills for wastewater service under existing rates and rates proposed are shown in Table 20 of the report.

13. It is recommended that the City of Grand Island give consideration to adopting the schedule of proposed wastewater rates shown in Tables B and 18 of this report as a means of meeting the projected wastewater system revenue requirements.

Table A

City of Grand Island, NE
Wastewater Utility
Comparison of Revenue Under Proposed Rates with Allocated Cost of Service
Test Year 2017

Line No.		(1) Revenue Under Proposed Rates	(2) Allocated Cost of Service	(3) Revenue Under Existing Rates	(4) Indicated Additional Revenue Required
		$	$	$	(1) - (4)
1	Residential	5,342,300	5,935,400	3,687,400	1,654,900
2	Residential - Suburb	9,800	10,800	6,800	3,000
3	Residential - Commercial	861,700	781,500	534,900	326,800
4	Interdepartmental - Commercial	4,655,400	4,267,000	3,406,900	1,248,500
5	Commercial - Suburb	8,500	7,500	5,200	3,300
6	Surcharge	544,000	413,200	535,100	8,900
7	Total	11,421,700	11,415,400	8,176,300	3,245,400

Table B

City of Grand Island, NE
Wastewater Utility
Proposed Rates

		Charges to be Effective October 1,			
	Existing	2013	2014	2015	2016
Sewer Service Charge - $/month					
All Customers	8.24	8.24	8.24	8.24	8.24
Volume Charge - $/Ccf					
Low Strength Industrial Dischargers	1.03	1.47	1.96	2.23	2.47
Non-Sanitary Sewer Flow (a)	1.18	1.18	1.18	1.18	1.18
Sanitary Sewer Flow	2.08	2.52	3.01	3.28	3.52
Excess Strength Surcharge - $/lb					
BOD over 250 mg/l	0.3844	0.3844	0.3844	0.3844	0.3844
Suspended Solids over 250 mg/l	0.2533	0.2533	0.2533	0.2533	0.2533
Oil & Grease over 100 mg/l	0.0819	0.0832	0.0845	0.0858	0.0872
Low Strength Industrial Dischargers					
BOD over 0 mg/l	0.3844	0.3844	0.3844	0.3844	0.3844
Suspended Solids over 0 mg/l	0.2533	0.2533	0.2533	0.2533	0.2533
Oil & Grease over 0 mg/l	0.0819	0.0832	0.0845	0.0858	0.0872
TKN over 30 mg/l	0.5701	0.5701	0.6314	0.6927	0.7539
Nitrates over 25 mg/l	1.8739	1.8739	1.8810	1.8881	1.8953

(a) Applicable to flow discharged from JBS' pretreatment lagoons through their sewer main connecting directly to the City's wastewater treatment plant.

Ccf = Hundred Cubic Feet
BOD = Biochemical Oxygen Demand
TKN = Total Kjeldahl Nitrogen
mg/l = milligram per liter

Revenue

The principal source of revenue for the wastewater system to meet annual costs of service is from charges for service to wastewater customers. Additional revenue is derived from sewer assessments, sewer tap fees, health insurance co-pays, miscellaneous surcharge revenue, and other miscellaneous sources.

CUSTOMER GROWTH

Table 1 presents a summary of the historical and projected number of bills issued by the utility. Data are shown individually for each of the five classes of retail customers. These classes consist of Residential (single- family), Residential-Suburb (single- family outside the city limits), Residential-Commercial (multi-family and commercial), Interdepartmental-Commercial (commercial, industrial, and City accounts), and Commercial-Suburb (commercial, multifamily and industrial outside the city limits). As indicated by Table 1, the wastewater utility has experienced an increase in the number of bills since 2008 of approximately 1.0 percent per year. As shown in Table 1, the number of bills is projected to increase approximately 0.3 percent per year, increasing from 187,054 in 2013 to 189,554 in 2017.

WATER REVENUE UNDER EXISTING RATES

The existing schedule for charges for wastewater service is presented in Table 2. The rates consist of a monthly service charge, uniform volume charges, and extra strength surcharges for biochemical oxygen demand (BOD) in excess of 250 milligrams per liter (mg/l), suspended solids (SS) in excess of 250 mg/l, oil and grease in excess of 100 mg/l, TKN (Total Kjeldahl Nitrogen) in excess of 30 mg/l, ammonia in excess of 30 mg/l, and nitrates in excess of 25 mg/l. Industrial customers with lower than normal strength loadings pay a reduced volume charge, but are charged extra strength surcharges for all BOD and SS discharge. All industrial customers are also charged applicable sampling and monitoring fees. Historical and projected billed wastewater revenues are shown in Table 3. Revenues from normal and excess strength wastewater billings under existing rates are projected to increase from about $8,092,300 in 2013 to about $8,176,300 in 2017.

OTHER REVENUE

Historical and projected other wastewater utility income is presented in Table 4. Revenue from sewer assessments is based on estimates provided by wastewater utility staff. It is anticipated that a sewer assessment district will be formed to fund a sewer line extension along highway 281. Anticipated revenue from this district is included in the sewer assessment projections for 2016 and 2017. Revenue from sewer tap fees and health insurance co-pays is projected to remain stable at approximately $3,000 and $46,900, respectively. Miscellaneous surcharge revenue is projected to remain stable at $35,000. Other miscellaneous revenue is projected at approximately $415,000 for each year of the study period.

Table 1

City of Grand Island, NE
Wastewater Utility
Historical and Projected Number of Bills

	Historical					Projected				
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Residential	148,449	150,629	152,152	154,160	154,919	155,419	155,919	156,419	156,919	157,419
Residential - Suburb	532	540	545	579	290	290	290	290	290	290
Residential - Commercial	6,653	6,825	7,010	7,156	7,232	7,307	7,382	7,457	7,532	7,607
Interdepartmental - Commercial										
JBS	12	12	12	12	12	12	12	12	12	12
All Other	22,705	22,769	23,035	23,139	23,928	23,978	24,028	24,078	24,128	24,178
Commercial - Suburb	48	48	48	55	48	48	48	48	48	48
Total	178,399	180,823	182,802	185,101	186,429	187,054	187,679	188,304	188,929	189,554

Table 2

City of Grand Island, NE
Wastewater Utility
Existing Wastewater Rates
Fiscal Year 2013
(Effective October 1, 2012)

Sewer Service Charge - $/month	
All Customers	8.24
Volume Charge - $/Ccf	
Low Strength Industrial Dischargers	1.0300
All Other Customers Using City's Collection System	2.0800
Discharge directly into City's Treatment Plant	1.1800
Excess Strength Surcharge - $/lb	
BOD over 250 mg/l	0.3844
Suspended Solids over 250 mg/l	0.2533
Oil & Grease over 100 mg/l	0.0819
Low Strength Industrial Dischargers	
BOD over 0 mg/l	0.3844
Suspended Solids over 0 mg/l	0.2533
Oil & Grease over 0 mg/l	0.0819
TKN over 30 mg/l	0.5701
Ammonia over 30 mg/l	0.5701
Nitrates over 25 mg/l	1.8739

Ccf = Hundred Cubic Feet
BOD = Biochemical Oxygen Demand
TKN = Total Kjeldahl Nitrogen
mg/l = milligram per liter

Table 3

City of Grand Island, NE
Wastewater Utility
Historical and Projected Wastewater Revenue

	Historical					Projected				
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	$	$	$	$	$	$	$	$	$	$
Residential	2,573,636	2,670,018	2,764,665	3,007,536	3,116,410	3,640,500	3,652,200	3,664,000	3,675,700	3,687,400
Residential - Suburb	9,851	10,298	10,432	10,864	5,690	6,800	6,800	6,800	6,800	6,800
Residential - Commercial	353,917	361,129	378,127	427,193	443,781	513,800	519,100	524,400	529,600	534,900
Interdepartmental - Commercial (a)										
JBS (b)	6,003,361	4,113,644	3,847,428	2,728,730	1,939,673	1,477,100	1,477,100	1,477,100	1,477,100	1,477,100
All Other	1,750,843	1,521,894	1,644,830	1,865,152	2,021,690	1,913,800	1,917,800	1,921,800	1,925,800	1,929,800
Commercial - Suburb	2,571	2,765	3,009	3,884	4,525	5,200	5,200	5,200	5,200	5,200
Excess Strength (a)						535,100	535,100	535,100	535,100	535,100
Total	10,694,179	8,679,750	8,648,490	8,043,360	7,531,770	8,092,300	8,113,300	8,134,400	8,155,300	8,176,300

(a) Historical Interdepartmental revenue includes Excess Strength revenue.
(b) JBS historical revenue included with Interdepartmental - Commercial All Other.

Table 4

City of Grand Island, NE
Wastewater Utility
Historical and Projected Miscellaneous Revenue

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Sewer Assessments (a)	Sewer Tap Fees	Other Inter-Gov.	Co-pay Health Insurance	Misc Surcharge Revenue (b)	Other Revenue (c)	Total
	$	$	$	$	$	$	$
				Historical			
2008	394,316	17,261	0	36,476	181,500	193,062	822,615
2009	387,636	28,990	0	39,540	162,500	618,361	1,237,027
2010	227,306	16,496	0	32,888	161,700	183,890	622,280
2011	250,730	6,360	0	39,442	28,400	470,902	795,835
2012	250,750	0	0	40,041	37,900	119,909	448,599
				Projected			
2013	96,000	3,000	0	46,900	35,000	415,000	595,900
2014	96,000	3,000	0	46,900	35,000	415,000	595,900
2015	96,000	3,000	0	46,900	35,000	415,000	595,900
2016	151,000	3,000	0	46,900	35,000	415,000	650,900
2017	425,700	3,000	0	46,900	35,000	415,000	925,600

(a) Includes Interest Income on Sewer Assessments.
(b) Includes Sample Analysis revenue and fees from JBS for discharge in excess of permit limits.
(c) Includes Donations & Contributions, Other Revenue, Sale of Fixed Assets, and Trade-in-Allowance.

Revenue Requirements

The revenue required to provide adequately for the continued operation of the wastewater utility must be sufficient to meet the cash requirements for system operation. Revenue requirements include: (1) system operation and maintenance expenses; (2) debt service on existing and proposed bonds; (3) expenditures for routine capital and major capital improvements met from annual revenues; and (4) recommended reserve fund requirements. Projections of the cash requirements to meet these system expenditures for the five-year study period are developed in this section.

OPERATION AND MAINTENANCE EXPENSE

The elements of operation and maintenance expense for the wastewater utility include the annual expense associated with wastewater collection, treatment, solids handling, solids disposal, and administration.

Operation and maintenance expense includes the total annual salaries and wages of personnel, cost for materials and supplies, fuel and electrical power costs, and other costs such as employee benefits, insurance, and contract services. Annual operation and maintenance expense is met principally from annual operating revenue. A summary of historical and projected operation and maintenance expense for the period 2008 through 2017 is presented in Table 5.

Operation and maintenance expense projections for 2013 reflect the 2013 budget. Projections for the year 2014 through 2017 are based on budgeted 2014 expense amounts adjusted to recognize allowances for known cost increases, the estimated effects of inflation, and anticipated system growth. Future wastewater utility operation and maintenance expense is projected to increase from about $5,510,900 in 2013 to about $6,632,400 in 2017.

MAJOR CAPITAL IMPROVEMENTS

Table 6 presents a summary of the projected major capital improvement program for the period 2013 through 2017. Table 6 is based on estimated improvement program scheduling and cost data supplied by utility staff, adjusted to include allowances for inflation. The five-year improvement program costs are estimated to total $72,878,000.

Major capital improvements related to Sewer Mains shown on Line 1 include rehabilitation and replacement projects within the existing collection system to maintain reliable conveyance of wastewater to the treatment plant. Significant costs were added to the capital program for Sewer Mains following the May 2010 Comprehensive Plan Update which identified several major interceptor sewers in Grade F condition. Most notable was the North Interceptor which received Grade F condition for 100% of the 9,000 feet of pipe inspected. Portions of the South and West Interceptors were also identified to have immediate replacement or rehabilitation needs and included in the CIP.

Improvements to the Capital Avenue forcemain are also included with the Sewer Main costs. With the addition of these interceptor sewer projects, over 50 percent of the proposed CIP is associated with Sewer Main rehabilitation and replacement projects.

Table 5

City of Grand Island, NE
Wastewater Utility
Historical and Projected Operation and Maintenance Expense

	Historical					Projected				
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	$	$	$	$	$	$	$	$	$	$
General Services	2,115,476	1,425,071	1,900,221	1,539,315	3,598,605	992,600	1,087,500	1,118,600	1,180,800	1,247,600
Collection Services	902,240	854,611	780,191	907,407	657,178	974,400	1,204,000	1,280,300	1,363,000	1,452,500
Wastewater Treatment	2,146,344	2,321,835	2,324,606	2,138,872	2,094,491	2,771,800	2,727,000	2,904,000	3,095,800	3,303,600
Solids Handling	1,983,889	995,209	862,359	711,409	539,850	772,100	524,700	556,800	591,400	628,700
Total O&M Expense	7,147,949	5,596,726	5,867,377	5,297,003	6,890,124	5,510,900	5,543,200	5,859,700	6,231,000	6,632,400

Table 6

City of Grand Island, NE
Wastewater Utility
Proposed Capital Improvement Program

Line No.		2013	2014	2015	2016	2017	Total
		$	$	$	$	$	$
1	Sewer Mains	5,192,200	15,165,100	16,373,700	8,681,100	1,387,000	46,799,100
2	Lift Stations	215,100	31,500	0	69,500	1,476,200	1,792,300
	Wastewater Treatment						
3	Raw Water Pumping	760,200	6,924,800	2,343,700	0	0	10,028,700
4	Preliminary Treatment	892,400	8,129,200	2,751,300	0	0	11,772,900
5	Primary Sedimentation/Clarifiers	0	0	231,800	0	0	231,800
6	Aeration Basins	291,400	0	0	0	0	291,400
7	Aeration Equipment	0	0	0	0	0	0
8	Corrosion/Odor Control Facilities	0	0	0	0	0	0
9	Final Clarifiers	50,000	0	0	901,800	0	951,800
10	Disinfection	0	0	0	0	0	0
11	Sludge Handling	0	0	0	0	0	0
12	General Plant	50,700	100,000	103,000	106,100	0	359,800
13	Lab	0	0	0	0	0	0
14	Vehicles	40,000	40,000	30,900	206,800	49,200	366,900
15	Administration & General	118,400	164,900	0	0	0	283,300
16	Land	0	0	0	0	0	0
17	Total	7,610,400	30,555,500	21,834,400	9,965,300	2,912,400	72,878,000

Lift Station projects shown on Line 2 include improvements to Lift Stations 2,7,15, and 20.

Improvements associated with Raw Water Pumping shown on Line 3 include a portion of the costs for the headworks facility at the plant. The costs shown for Preliminary Treatment on Line 4 of Table 6 consist of the estimated costs for influent pumps and the remaining costs associated with the headworks facility. Improvements associated with Aeration Basins are shown on Line 6. Line 9 of Table 6 reflects the estimated cost for repairing the final clarifiers. General Plant costs associated with miscellaneous repairs and equipment replacement are shown on Line 12.

Capital costs for new vehicles are shown on Line 14. Administration and General costs, shown on Line 15, reflect projected costs associated with the utility billing software.

Major capital improvements are typically financed through long term debt obligations and available reserves. Such improvements are normally nonrecurring on an annual basis and debt financing permits the cost burden to be shared by both present and future users of the facilities. Revenue bond issues and debt service projections developed subsequently provide for debt financing of a major portion of this major capital improvement program, with the balance to be funded primarily from existing cash reserves on hand.

ROUTINE CAPITAL ADDITIONS

Expenditures for routine capital additions include those costs that tend to be routinely incurred each year for normal replacements such as vehicles and equipment, and minor improvements or repairs. Since the costs of these improvements are a continuing expense to be met each year, the utility appropriately finances these expenditures from current wastewater revenues. Routine capital additions are projected to remain constant at $317,000 per year throughout the study period.

DEBT SERVICE REQUIREMENTS

Existing debt service requirements consist of principal and interest on the Series 2003 Revenue Bonds. As previously indicated, the issuance of future revenue bonds is anticipated to help finance major capital improvement projects. The proposed revenue bond financing schedule, described more fully in a subsequent section, provides for the issuance of bonds in the following amounts to meet major capital program requirements through 2017:

2013	$ 36,980,700
2014	$ 14,000,000
2015	$ 12,000,000
2016	$ 6,000,000

Summary of Revenue and Revenue Requirements

Total revenue requirements for the wastewater utility recognized for purposes of this report include operation and maintenance expense, debt service costs on existing and proposed bonds, expenditures for routine capital and major capital improvements met from annual revenues, and recommended reserve fund requirements.

MAJOR CAPITAL IMPROVEMENT FINANCING

Table 7 presents the capital improvement financing plan which summarizes the projected source and application of funds over the five-year study period. This plan anticipates that proposed capital improvements will be financed from a combination of available funds on hand, bond sales proceeds, annual operating revenues, and interest earnings.

A 2012 beginning of year balance of $3,461,700 in unencumbered cash and investments is projected to be available to assist in the financial plan as shown on Line 1. Revenue bond issues in the amounts of $36,980,700 in 2013; $14,000,000 in 2014; $12,000,000 in 2015; and $6,000,000 in 2016 are projected and shown on Line 2 of Table 7. The amounts and years of each issue are developed considering capital program needs, current policies, other sources of capital improvement financing, and assumed debt service coverage requirements related to the issuance of additional revenue bonds It is anticipated that the capital costs associated with the South 281 Sewer Assessment District and Tap District will be funded by a loan from the Clean Water State Revolving Fund (CWSRF). The proceeds from this loan is shown on Line 3 of Table 7.

Cash financing of capital improvements from annual revenues is expected to total $4,900,000 for the study period as indicated on Line 4 of Table 7. Other potential sources of funds available to meet capital improvement expenditures include anticipated federal grants and capital contributions and interest income on the capital fund and capital reserve. Interest earnings recognize an assumed 2.0 percent average annual interest rate on short term investments such as funds held for improvements and 3.0 percent on long-term investments such as the capital reserve. Lines 5 and 6 indicate the estimated annual funds from each of these sources and Line 7 shows the total of all funds available to finance the capital improvement program.

The application of funds show that $72,878,000 in total major capital improvements expenditures are projected over the planning period, as previously summarized in Table 6. A portion of the Series 2013 bonds will be used to refund the Series 2003 bonds. Line 9 reflects the amount to be deposited to the refunding escrow fund for the 2003 bonds. Line 10 of Table 7 shows the debt issuance costs associated with projected bond issues. These costs are estimated to be 1.5 percent of the total principal amounts. Line 11 indicates the amount of revenue bond reserve payments required by current bond covenants. These amounts are assumed to be funded from proceeds and are set to maintain a reserve fund equal to the maximum principal and interest payment on all outstanding bonds. Line 12 shows the total of all fund applications and the resulting end of year balance is shown on Line 13.

The City desires to maintain a capital reserve fund with a minimum balance of $1,500,000. This fund is shown on Line 14 of Table 7 and is separate from the end of year balance in the capital fund shown on Line 13.

Table 7

City of Grand Island, NE
Wastewater Utility
Capital Improvement Program Financing

Line No.	Description	Year Ending September 30, 2013	2014	2015	2016	2017	Total
		$	$	$	$	$	$
	Sources of Funds						
1	Beginning of Year Balance	3,461,700	30,934,100	18,034,400	8,503,100	5,216,600	3,461,700
2	Revenue Bond Proceeds	36,980,700	14,000,000	12,000,000	6,000,000	0	68,980,700
3	CWSRF Loan Proceeds	0	2,812,000	0	0	0	2,812,000
4	Cash Financing of Construction	400,000	1,500,000	1,000,000	1,000,000	1,000,000	4,900,000
5	Grants/Developer Contributions	499,600	0	0	0	0	499,600
6	Interest Income (a)	183,200	507,700	292,400	173,400	143,300	1,300,000
7	Total Funds Available	41,525,200	49,753,800	31,326,800	15,676,500	6,359,900	81,954,000
	Application of Funds						
8	Major Capital Improvements	7,610,400	30,555,500	21,834,400	9,965,300	2,912,400	72,878,000
9	Refunding Escrow Deposits	1,443,700	0	0	0	0	1,443,700
10	Issuance Costs	567,300	219,800	180,000	90,000	0	1,057,100
11	Bond Reserve Funds (b)	969,700	944,100	809,300	404,600	0	3,127,700
12	Total Application of Funds	10,591,100	31,719,400	22,823,700	10,459,900	2,912,400	78,506,500
13	End of Year Fund Balance	30,934,100	18,034,400	8,503,100	5,216,600	3,447,500	3,447,500
14	Capital Reserve Balance	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	

(a) Includes interest earnings on the capital reserve.
(b) Reflects use of Bond Reserve Fund from Series 2003.

SYSTEM OPERATIONS

Table 8 shows the application of estimated future revenues under existing rates and estimated additional revenue from proposed rate increases to meet projected obligations for the period 2013 through 2017. This table summarizes the financing of operation and maintenance expense, debt service costs on outstanding and proposed revenue bonds, routine capital additions, the transfer of operating funds for major improvement financing, and additions to the operating reserve.

Line 1 of Table 8 shows projected revenue under existing rates as previously presented in Table 3.

Lines 2 through 6 show indicated increases in revenues associated with rate increases assumed to be in effect the number of months shown. The date and magnitude of increase shown for each year were selected based on consideration of three principal criteria, which include: (1) total revenue necessary to meet cash requirements, (2) total revenue required to provide minimum bond coverage requirements, and (3) establishment of rate increases on a generally levelized basis intended to "phase in" or otherwise minimize the impact of burdensome rate adjustments required in any single year.

Other revenue available for system operations, shown on Lines 9 through 11, consists of Other Operating Revenue, as shown in Table 4, and interest income on Operations and Reserve Funds. Annual interest income available to the operating fund, shown on Line 10, recognizes an assumed 2.0 percent average annual interest rate for short-term investments. Interest income on the Reserve Funds includes the Principal and Interest Account, Bond Reserve Fund, and Operating Reserve and recognizes an assumed 3.0 percent average annual interest rate for long-term investments. Projected total revenue from system operations is shown on Line 12.

Operation and maintenance expense, previously projected in Table 5 is shown on Line 13. Line 14 shows the estimated net revenue remaining after deducting projected operation and maintenance expense from total revenue.

Debt service requirements on currently outstanding revenue bonds are presented on Line 15 and reflect the Series 2003 bonds. Estimated debt service requirements on revenue bonds projected to be issued to help finance major capital program expenditures are shown on Line 16. Debt repayment schedule on the 2013 bonds was provided by the City's underwriter. Additional revenue bonds indicated to be issued during the study period are assumed to be 25 year, 4.5 percent fixed interest rate bonds with equal annual payments of principal and interest. Debt service on the previously mentioned CWSRF loan is shown on Line 18.

Capital outlay for routine capital additions to be financed from revenue is shown on Line 20 of Table 8. Line 21 reflects the projected transfer of accumulated net earnings from system operations to assist in major capital financing. Reserve deposits required to maintain the Operating Reserve equal to the next 90 days of operation and maintenance expense are shown on Line 22.

Line 23 indicates the estimated net annual balance from operations remaining at the end of each year. It is assumed that there will be no funds available at the beginning of fiscal year 2013 to assist in funding the revenue requirements of the system. The end of year balance is shown on Line 25 and is exclusive of the balance in the Operating Reserve which is shown on Line 26.

Table 8

City of Grand Island, NE
Wastewater Utility
Comparison of Projected Revenue Under Existing Rates With Projected Revenue Requirements

Line No.	Description			Year Ending September 30, 2013	2014	2015	2016	2017
				$	$	$	$	$
1	Revenue Under Existing Rates			8,092,300	8,113,300	8,134,400	8,155,300	8,176,300
	Additional Revenue Required							
	Fiscal Year	Revenue Increase	Months Effective					
2	2013	0.00%	12	0	0	0	0	0
3	2014	12.00%	12		973,600	976,100	978,600	981,200
4	2015	12.00%	12			1,093,300	1,096,100	1,098,900
5	2016	6.00%	12				613,800	615,400
6	2017	5.00%	12					543,600
7	Total Additional Revenue			0	973,600	2,069,400	2,688,500	3,239,100
8	Total Service Charge Revenue			8,092,300	9,086,900	10,203,800	10,843,800	11,415,400
9	Other Operating Revenue			595,900	595,900	595,900	650,900	925,600
10	Interest Income - Operations			12,300	15,200	14,300	17,800	11,400
11	Interest Income - Reserve Funds (a)			146,900	217,500	246,800	282,100	298,500
12	Total Revenue			8,847,400	9,915,500	11,060,800	11,794,600	12,650,900
13	Operation and Maintenance Expense			5,510,900	5,543,200	5,859,700	6,231,000	6,632,400
14	Net Revenue			3,336,500	4,372,300	5,201,100	5,563,600	6,018,500
	Debt Service							
15	Existing Revenue Bonds			1,705,900	0	0	0	0
16	Proposed Revenue Bonds			0	3,165,900	3,204,500	4,336,200	4,672,500
17	Total Revenue Bonds			1,705,900	3,165,900	3,204,500	4,336,200	4,672,500
18	CWSRF Loan			0	0	0	55,000	329,700
19	Total Debt Service			1,705,900	3,165,900	3,204,500	4,391,200	5,002,200
20	Routine Capital Additions (b)			317,000	317,000	317,000	317,000	317,000
21	Cash Financing of Major Improvement			400,000	1,500,000	1,000,000	1,000,000	1,000,000
22	Additions to Operating Reserve			7,900	78,100	91,500	99,000	107,200
23	Net Annual Balance			905,700	(688,700)	588,100	(243,600)	(407,900)
24	Beginning of Year Balance			0	905,700	217,000	805,100	561,500
25	End of Year Balance			905,700	217,000	805,100	561,500	153,600
26	Operating Reserve Balance			1,366,800	1,444,900	1,536,400	1,635,400	1,742,600

(a) Includes interest earnings on the Principal and Interest Account, Bond Reserve Fund, and operating reserve.

(b) Cash financing of Machinery & Equipment and Vehicles.

BOND COVERAGE REQUIREMENTS

An additional consideration in measuring the adequacy of revenues is the provision of sufficient debt service coverage to meet the bond covenant requirements for the issuance of parity revenue bonds.

The revenue bond ordinance provides that rates shall be maintained such that net revenue available for debt service each year shall be equal to or greater than 110 percent of the current year's debt service requirements on all outstanding revenue bonds.

Furthermore, additional parity bonds may be issued provided that one of the following conditions is met: (1) the net revenue available for debt service for the fiscal year next preceding the issuance of additional bonds is equal to or greater than 125 percent of the average annual debt service requirements on all outstanding revenue bonds and the proposed additional bonds; or (2) the net revenue available for debt service in each of the three full fiscal years after the issuance of the proposed additional bonds will be equal to or greater than 125 percent of the average annual debt service requirements on all outstanding revenue bonds and the proposed additional bonds. The City is required to have an independent consulting engineer prepare a projection to verify that the second test is met.

The ability of the wastewater utility revenues to meet the rate covenant and additional bonds test is shown in Table 9. The utility meets the rate covenant and the second additional bonds test in each year of the study period.

Table 9

City of Grand Island, NE
Wastewater Utility
Coverage Requirements

Line No.		Year Ending September 30, 2013	2014	2015	2016	2017	2018	2019	2020
		$	$	$	$	$	$	$	$
	Rate Covenant Coverage								
1	Projected Net Revenues	3,336,500	4,372,300	5,201,100	5,563,600	6,018,500	6,182,000	6,828,400	7,501,500
2	Annual Debt Service	1,705,900	3,165,900	3,204,500	4,336,200	4,672,500	4,679,000	4,675,000	4,671,000
3	Projected Actual Net Revenue as a Percent of Debt Service (a)	1.96 x	1.38 x	1.62 x	1.28 x	1.29 x	1.32 x	1.46 x	1.61 x
	Additional Bond Coverage (b)								
4	Preceding Year Projected Net Revenues	3,488,191	3,336,500	4,372,300	5,201,100	5,563,600	6,018,500	6,182,000	6,828,400
5	Average Annual Debt Service	2,485,677	3,330,117	3,985,774	4,248,738	4,245,092	4,226,510	4,205,942	4,183,606
6	Projected Actual Net Revenue as a Percent of Debt Service (c)	1.40 x	1.00 x	1.10 x	1.22 x	1.31 x	1.42 x	1.47 x	1.63 x
7	Ensuing Year Projected Net Revenues	3,336,500	4,372,300	5,201,100	5,563,600	6,018,500	6,182,000	6,828,400	7,501,500
8	Average Annual Debt Service	2,485,677	3,330,117	3,985,774	4,248,738	4,245,092	4,226,510	4,205,942	4,183,606
9	Projected Actual Net Revenue as a Percent of Debt Service (d)	1.34 x	1.31 x	1.30 x	1.31 x	1.42 x	1.46 x	1.62 x	1.79 x

(a) The Bond Ordinance requires net revenue to equal or exceed 1.10x actual debt service.
(b) The City shall comply with one or the other of the two additional bonds tests.
(c) The Bond Ordinance requires net revenue to equal or exceed 1.25x average annual debt service.
(d) The Bond Ordinance requires net revenue to equal or exceed 1.25x average annual debt service in each of the three full fiscal years after the issuance of the proposed Additional Bonds.

Cost Allocations

Cost of service allocations provide a means of determining the proportionate responsibility of each customer class for the service provided. Cost responsibilities are based upon allocations of various elements of costs of service according to the relative service requirements of respective customer classes. Factors considered in determining service requirements include the volume of wastewater contributed, strength of wastewater, and the number of customers.

COST OF SERVICE TO ALLOCATED

The cost of service to be allocated to the various customer classes consists of the total revenue requirements less income received from other sources. For allocation purposes, this cost of service is expressed as an annual requirement for a specific test year. For purposes of this study, the fiscal year ending September 30, 2017 has been selected as generally typical of conditions anticipated during the study period. This cost, totaling $11,415,400, consists of $5,544,400 of net operation and maintenance expense and $5,871,000 of net capital costs. These costs are derived from Table 8 and summarized on Line 12 of Table 10.

FUNCTIONAL COST COMPONENTS

The various cost elements of wastewater service are assigned to functional cost components as the first step in the subsequent distribution of the costs of service to customer classes. The principal functional cost components consist of volume related costs, strength related costs, and customer related costs.

Volume costs are those which vary directly with the quantity of wastewater contributed. They consist of capital costs related to investment in system facilities which are sized on the basis of, or required because of, wastewater volume. This also includes operation and maintenance expense related to those facilities and the expense of volume related treatment chemicals and purchased power.

Wastewater strength costs consist of the operation and maintenance expense and capital costs related to system facilities which are designed principally based on the projected strength concentrations of the wastewater. The strengths recognized in this study include biochemical oxygen demand (BOD), suspended solids (SS), oil and grease (O&G), Total Kjeldahl Nitrogen (TKN) and nitrates. Costs associated with each of these strengths are those costs of wastewater treatment which tend to vary according to the quantity of each strength in the raw wastewater. Customer costs are defined as costs which tend to vary in proportion to the number of customers connected to the system. These include billing, collection and accounting costs.

The separation of costs of service into these principal categories provides the means of further allocating such costs to the various customer classes based on the respective total wastewater volume, strength, and customer service requirements of each customer class.

ALLOCATION TO COST COMPONENTS

In establishing the costs associated with each functional cost component, the net capital portion of the test year cost of service is distributed to cost functions based on an allocation of the estimated test year value of wastewater system facilities. The test year net operating expense is similarly allocated to cost functions based on the projected test year expense estimated for each wastewater system component.

Table 10

City of Grand Island, NE
Wastewater Utility
Cost of Service
Test Year 2017

Line No.		Operating Expense	Capital Cost	Total
		$	$	$
	Revenue Requirements			
1	Operation & Maintenance Expense	6,632,400		6,632,400
	Debt Service Requirements			
2	Existing Debt Service		0	0
3	Proposed Debt Service		5,002,200	5,002,200
4	Routine Capital Additions		317,000	317,000
5	Cash Financing of Major Improvements		1,000,000	1,000,000
6	Additions to the Operating Reserve	107,200		107,200
7	Total	6,739,600	6,319,200	13,058,800
	Revenue Requirements Met from Other Sources			
8	Other Operating Revenue	922,600	3,000	925,600
9	Interest Income	62,100	247,800	309,900
10	Change in Funds Available	210,500	197,400	407,900
11	Total	1,195,200	448,200	1,643,400
12	Net Costs to be Met from Charges	5,544,400	5,871,000	11,415,400

ALLOCATION OF NET PLANT INVESTMENT

The estimated test year net plant investment in wastewater facilities consists of net plant in service as of September 30, 2012 and proposed capital improvements up to the year 2017. Table 11 shows the allocation of the wastewater utility's total estimated plant value less contributions on an original cost less depreciation value basis. Total plant investment is estimated to be $95,663,600 as indicated by Line 19 of the table.

Each item of plant investment is allocated to a functional cost component, or components, primarily in accordance with the function which determines the amount of investment. JBS discharges wastewater volume from two discharge points. One point is used for sanitary waste and discharges into the City's sanitary sewer system. The second discharge point is from JBS' lagoons and flows directly to the treatment plant via a dedicated main. All industrial waste is pre-treated and discharged to the treatment plant through the discharge from the lagoons. In recognition of the fact that a portion of the contributed flow that enters the plant does not enter the City's sanitary sewer system, a functional cost component for only contributed flow that does enter the sanitary sewer system has been designated as City Collection System Users volume.

Collection system facilities and lift stations are designed to meet average flow and are therefore allocated to the City Collection System Users volume component. Liquid oxygen, raw water pumping, preliminary treatment, corrosion/odor control facilities, and disinfection facilities are designed based on average flow and are applicable to all flow entering the treatment plant therefore, costs are assigned to the Common to All volume component.

Primary sedimentation/clarifiers are designed to remove BOD, SS, and oil and grease from influent flow, therefore, the costs associated with this equipment is allocated to those strength components.

Aeration basins and equipment are sized based on the BOD, SS, TKN and nitrates loadings therefore, costs are assigned to each of these strength cost components as shown on Lines 7 and 8 of Table 11.

Costs associated with the final clarifiers are allocated to the BOD and SS components. In addition, the costs associated with Sludge Handling are allocated 50 percent to the BOD strength component, 45 percent to the SS component, and 5 percent to the oil and grease component. General Plant costs are allocated to the cost components on the basis of the subtotal of all other treatment plant functions.

Costs associated with the Lab are allocated to the wastewater strength cost components based on the estimated number of hours spent performing lab tests for each strength component.

Vehicles and Administration & General facilities are allocated to all cost components on the basis of all other net plant investment.

Land shown on Line 18 of Table 11 is allocated to the Common to All volume component.

Test year net capital costs, shown on Line 12 of Table 10, are assigned to the functional cost components on the basis of net plant investment and are shown on Line 20 of Table 11.

Table 11

City of Grand Island, NE
Wastewater Utility
Allocation of Net Plant Investment
To Functional Cost Components
Test Year 2017

Line No.		Net Plant Investment	Common to All						City Collection System Users
				Wastewater Strength					
			Volume	BOD	SS	O&G	TKN	Nitrates	Volume
		$	$	$	$	$	$	$	$
1	Sewer Mains	57,878,700							57,878,700
2	Liquid Oxygen	7,500	7,500						
3	Lift Stations	2,411,000							2,411,000
	Wastewater Treatment								
4	Raw Water Pumping	9,293,300	9,293,300						
5	Preliminary Treatment	10,519,600	10,519,600						
6	Primary Sedimentation/Clarifiers	899,500		359,800	404,800	134,900			
7	Aeration Basins	2,256,100		902,400	1,083,000		45,100	225,600	
8	Aeration Equipment	275,100	100	110,000	132,000		5,500	27,500	
9	Corrosion/Odor Control Facilities	6,200	6,200						
10	Final Clarifiers	1,049,400		472,200	577,200				
11	Disinfection	425,800	425,800						
12	Sludge Handling	7,420,300		3,710,200	3,339,100	371,000			
13	General Plant	1,623,800	1,022,500	280,600	279,700	25,600	2,600	12,800	0
14	Subtotal	33,769,100	21,267,500	5,835,200	5,815,800	531,500	53,200	265,900	0
15	Lab	22,700		4,900	10,700	3,000	2,200	1,900	
16	Vehicles	364,900	82,200	22,600	22,500	2,100	200	2,300	233,000
17	Administration & General	348,100	78,500	21,500	21,400	2,000	200	2,200	222,300
18	Land	522,900	522,900						
19	Total	95,663,600	21,958,600	5,884,200	5,870,400	538,600	55,800	611,000	60,745,000
20	Net Capital Costs to be Recovered	5,871,000	1,347,600	361,100	360,300	33,100	3,400	37,500	3,728,000

ALLOCATION OF OPERATING EXPENSES

Table 12 presents the allocation of operation and maintenance expense to the functional cost components. Total test year operation and maintenance expense, including the addition to the operating reserve, amounts to $6,739,600, as shown on Line 17. The allocation of each element of operating expense to cost components shown in Lines 1 through 13 is performed in a similar manner to the allocation of net plant investment previously described. Solids handling, as shown on Line 14, is allocated to the BOD and suspended solids strength cost components in recognition that sludge production, handling, and disposal costs are driven by these parameters. Billing costs included with General Operations (Line 15) are allocated to Billing. All remaining expenses associated with General Operations and Additions to the Operating Reserve (Line 16) are allocated to the cost components on the basis of all other operating expenses excluding power and chemicals.

Other operating revenue and interest income available to meet a portion of these expenditures reduces the level of operation and maintenance to be recovered by wastewater service charges to $5,544,400. Other Operating Revenue associated with sewer assessments is allocated to the City Collection System Users volume component. Other Revenue associated with lab samples and discharge fees are allocated to the wastewater strength components in the same manner as the allocation of capital costs associated with the Lab. All other miscellaneous revenue is allocated to the Common to All volume component. Revenue from Interest Income and Change in Funds Available is allocated to the cost components on the basis of total operation and maintenance expense shown on Lines 19 and 20.

DISTRIBUTION OF COSTS TO CUSTOMER CLASSES

As a basis for determining the cost of wastewater service to each customer class, the elements of cost of service previously allocated to functional cost components are distributed among the classes in proportion to their respective service requirements. Estimates of these requirements, or units of service, reflect the average number of accounts, annual wastewater volume, and wastewater strength. Analysis of resulting costs of service to each class and comparison of allocated costs with revenues under existing rates provide a basis for future wastewater rate adjustments.

Customer Classification

The customers of the wastewater utility are separated into groups having similar service requirements and ownership status. These classes consist of Residential (single- family), Residential-Suburb (single-family outside the city limits), Residential-Commercial (multi-family and commercial), Interdepartmental-Commercial (commercial, industrial, and City accounts), and Commercial-Suburb (commercial, multifamily and industrial outside the city limits).

Units of Service

Derivation of the responsibility of customer classes for costs of service require that each class be allocated a portion of the volume, strength, and customer costs of service according to their respective service requirements.

The cost of service responsibility for volume costs, which vary with the volume of wastewater contributed to the wastewater system, is distributed to customer classes on that basis. Strength costs are principally related to the function of removing wastewater BOD, suspended solids, oil and grease, TKN and nitrates. Customer costs, which consist of billing and collection costs, are allocated on the basis of the number of customer bills.

Table 12

City of Grand Island, NE
Wastewater Utility
Allocation of Operation & Maintenance Expense
To Functional Cost Components
Test Year 2017

Line No.		Operating Expenses	Common to All							City Collection System Users
				Wastewater Strength						
			Volume	BOD	SS	O&G	TKN	Nitrates	Billing	Volume
		$	$	$	$	$	$	$	$	$
1	Collection Service	1,452,500								1,452,500
	Wastewater Treatment									
2	Raw Water Pumping	351,600	351,600							
3	Preliminary Treatment	273,800	273,800							
4	Primary Sedimentation/Clarifiers	154,400		61,800	69,500	23,200				
5	Aeration Basins	104,300		41,700	50,100		2,100	10,400		
6	Aeration Equipment	771,500		308,600	370,300		15,400	77,200		
7	Corrosion/Odor Control Facilities	353,700	353,700							
8	Final Clarifiers	98,500		44,300	54,200					
9	Disinfection	241,400	241,400							
10	Sludge Handling	522,000		261,000	234,900	26,100				
11	General Plant	268,700	169,300	46,400	46,300	4,200	400	2,100		
12	Subtotal	3,139,900	1,389,800	763,800	825,300	53,500	17,900	89,700	0	0
13	Lab	81,800		17,400	38,600	10,800	8,000	7,000		
14	Solids Handling	628,700		345,800	282,900					
15	General Operations	1,329,500	308,400	242,800	243,700	14,400	5,300	18,100	127,500	369,300
16	Additions to the Operating Reserve	107,200	27,500	21,700	21,700	1,300	500	1,600		32,900
17	Total O&M Expense	6,739,600	1,725,700	1,391,500	1,412,200	80,000	31,700	116,400	127,500	1,854,700
	Less Offsetting Revenues									
18	Other Operating Revenue	922,600	726,200	10,900	24,200	6,700	5,000	4,400	0	145,200
19	Interest Income	62,100	15,900	12,800	13,000	700	300	1,100	1,200	17,100
20	Change in Funds Available	210,500	53,900	43,500	44,100	2,500	1,000	3,600	4,000	57,900
21	Total Offsetting Revenues	1,195,200	796,000	67,200	81,300	9,900	6,300	9,100	5,200	220,200
22	Net Operating Expenses to be Recovered	5,544,400	929,700	1,324,300	1,330,900	70,100	25,400	107,300	122,300	1,634,500

The estimated test year service requirements or units of service for the various customer classes are shown in Table 13. Wastewater collected and treated consists of two elements: (1) sanitary wastewater flow and (2) infiltration/inflow (I/I) of ground and surface water into the sewers. Contributed wastewater flow is the billable annual water use of each customer class estimated to enter the sanitary wastewater sewer system. Estimates of the contributed volume of each class are based upon wastewater utility billing records. The balance of the wastewater flow processed by the treatment plant is assumed to comprise I/I. Based on historical data, it is estimated that the test year amount of flow entering the sewers as I/I will average approximately 55 percent of the total volume transported by the sanitary sewer system which does not include the contributed flow discharged from JBS' pre-treatment lagoons. Each customer class should bear its proportionate share of the costs associated with I/I, as the wastewater system must be adequate to convey and process the total wastewater flow. Recognizing that the major cost responsibility for I/I is allocable on an individual connection basis, two-thirds of the projected I/I volume associated with the sewer collection system is allocated to customer classes based on the number of customers with the remaining one-third allocated on the basis of contributed volume entering the treatment plant through the sanitary sewer system. The I/I attributable to interceptors is allocated to all customer classes based on the total flow contributed to the wastewater system.

Estimated total strength quantities shown for each customer class are based on an average BOD concentration of 171 milligrams per liter (mg/l), average suspended solids concentration of 197 mg/l, and average oil and grease concentration of 28 mg/l. Estimated BOD, suspended solids, oil and grease, TKN and nitrates responsibilities of each customer class shown in Table 13 are based on the respective indicated average strength concentrations and contributed wastewater and I/I volumes for each class. Customer billing and collection costs are distributed to classes on the basis of the number of bills for each customer class in Column 9 of Table 13.

CUSTOMER CLASS COSTS OF SERVICE

Unit costs of service are developed by dividing the total cost allocated to each functional cost component by the total applicable units of service. The customer class responsibility for service is obtained by applying unit costs of service to the number of units for which the customer class is responsible.

Table 14 shows the development of the unit costs of service applicable to each cost function. Lines 1 through 3 summarize the units of service developed in Table 13. Total allocated costs or investment shown on Lines 4 and 6 were previously developed in Tables 12 and 11, respectively. Units of service for each component are determined simply by dividing the allocated cost or investment by the total units of service and are shown on Lines 5, 7 and 8 of Table 14. Applying the total unit cost of service shown on Line 8 to the units of service shown on Lines 1 and 2 produces the total cost of service shown on Lines 9, 10, and 11

The costs of service allocated to customer classes are summarized in Table 15. Total costs of service for each class are based on unit costs of service from Table 14 and units of service from Table 13.

Table 16 shows allocated cost of service by customer class from Table 15, revenue under existing rates, and the indicated additional revenue required for each class. The additional revenue will be recovered from annual 12 percent increases effective October 1, 2013 and October 1, 2014; followed by a 6 percent increase effective October 1, 2015 and a 5 percent increase effective October 1, 2016.

Table 13

City of Grand Island, NE
Wastewater Utility
Units of Service
Test Year 2017

Line No.		(1) Wastewater Volume Contributed Volume	(2) Wastewater Volume Infiltration /Inflow	(3) Wastewater Volume Total	(4) Wastewater Strength BOD	(5) Wastewater Strength Suspended Solids	(6) Wastewater Strength Oil & Grease	(7) Wastewater Strength TKN	(8) Wastewater Strength Nitrates	(9) Customers
		Ccf	Ccf	Ccf (1) + (2)	Pounds	Pounds	Pounds	Pounds	Pounds	Bills
1	Residential	1,149,200	1,992,000	3,141,200	2,485,300	3,393,400	480,300	0	0	157,419
2	Residential - Suburb	2,100	3,600	5,700	4,500	6,100	800	0	0	290
3	Residential - Commercial	227,000	165,500	392,500	419,800	528,000	73,600	0	0	7,607
	Interdepartmental - Commercial									
4	JBS	1,225,000	14,200	1,239,200	1,991,300	2,301,500	314,700	0	0	12
5	All Other	832,000	570,400	1,402,400	1,527,400	1,912,900	266,200	0	0	24,178
6	Commercial - Suburb	2,300	1,400	3,700	4,100	5,200	700	0	0	48
	Surcharge									
7	JBS				0	0	0	38,200	76,400	
8	All Other				774,000	271,700	46,900	0	0	
9	Total	3,437,600	2,747,100	6,184,700	7,206,400	8,418,800	1,183,200	38,200	76,400	189,554

Ccf = Hundred Cubic Feet

Table 14

City of Grand Island, NE
Wastewater Utility
Unit Costs of Service
Test Year 2017

Line No.		Total	Common to All							City Collection System Users
			Wastewater Strength							
			Volume	BOD	SS	O&G	TKN	Nitrates	Billing	Volume
			Ccf	Pounds	Pounds	Pounds	Pounds	Pounds	Bills	Ccf
	Units of Service									
1	City Collection System Users		4,945,500	5,215,100	6,117,300	868,500	0	0	189,542	4,945,500
2	JBS		1,239,200	1,991,300	2,301,500	314,700	38,200	76,400	12	49,200
3	Total		6,184,700	7,206,400	8,418,800	1,183,200	38,200	76,400	189,554	4,994,700
	Costs of Service									
	Net Operating Expense									
4	Total Cost - $	5,544,400	929,700	1,324,300	1,330,900	70,100	25,400	107,300	122,300	1,634,500
5	Unit Cost - $/unit		0.15032	0.18377	0.15809	0.05925	0.66492	1.40445	0.64520	0.32725
	Capital Costs									
6	Total Cost - $	5,871,000	1,347,600	361,100	360,300	33,100	3,400	37,500		3,728,000
7	Unit Cost - $/unit		0.21789	0.05011	0.04280	0.02797	0.08901	0.49084	0.00000	0.74639
8	Total Unit Cost of Service		0.36822	0.23388	0.20088	0.08722	0.75393	1.89529	0.64520	1.07364
	Total Cost of Service									
9	City Collection System Users	9,777,300	1,820,900	1,219,700	1,228,900	75,800	0	0	122,300	5,309,700
10	JBS	1,638,100	456,300	465,700	462,300	27,400	28,800	144,800	0	52,800
11	Total	11,415,400	2,277,200	1,685,400	1,691,200	103,200	28,800	144,800	122,300	5,362,500

Ccf = Hundred Cubic Feet

Table 15

City of Grand Island, NE
Wastewater Utility
Allocated Costs of Service to Customer Classes
Test Year 2017

Line No.		Total	Common to All							City Collection System Users
				Wastewater Strength						
			Volume	BOD	SS	O&G	TKN	Nitrates	Billing	Volume
			Ccf	Pounds	Pounds	Pounds	Pounds	Pounds	Bills	Ccf
1	Unit Cost of Service - $/unit		0.36822	0.23388	0.20088	0.08722	0.75393	1.89529	0.64520	1.07364
	Residential									
2	Units of Service		3,141,200	2,485,300	3,393,400	480,300	0	0	157,419	3,141,200
3	Allocated Cost - $	5,935,400	1,156,500	581,200	681,700	41,800	0	100	101,600	3,372,500
	Residential - Suburb									
4	Units of Service		5,700	4,500	6,100	800	0	0	290	5,700
5	Allocated Cost - $	10,800	2,100	1,100	1,200	100	0	0	200	6,100
	Residential - Commercial									
6	Units of Service		392,500	419,800	528,000	73,600	0	0	7,607	392,500
7	Allocated Cost - $	781,500	144,500	98,200	106,100	6,400	0	0	4,900	421,400
	Interdepartmental - Commercial									
	JBS									
8	Units of Service		1,239,200	1,991,300	2,301,500	314,700	0	0	12	49,200
9	Allocated Cost - $	1,464,600	456,300	465,700	462,300	27,500	0	0	0	52,800
	All Other									
10	Units of Service		1,402,400	1,527,400	1,912,900	266,200	0	0	24,178	1,402,400
11	Allocated Cost - $	2,802,400	516,400	357,200	384,300	23,200	0	0	15,600	1,505,700
	Commercial - Suburb									
12	Units of Service		3,700	4,100	5,200	700	0	0	48	3,700
13	Allocated Cost - $	7,500	1,400	1,000	1,000	100	0	0	0	4,000
	Surcharge									
	JBS									
14	Units of Service		0	0	0	0	38,200	76,400	0	
15	Allocated Cost - $	173,500	0	0	0	0	28,800	144,700	0	0
	All Other									
16	Units of Service		0	774,000	271,700	46,900	0	0	0	0
17	Allocated Cost - $	239,700	0	181,000	54,600	4,100	0	0	0	0
18	Total System	11,415,400	2,277,200	1,685,400	1,691,200	103,200	28,800	144,800	122,300	5,362,500

Ccf = Hundred Cubic Feet

Table 16

City of Grand Island, NE
Wastewater Utility
Comparison of Allocated Cost of Service
with Revenue Under Existing Rates
Test Year 2017

Line No.		(1) Allocated Cost of Service $	(2) Revenue Under Existing Rates $	(3) Indicated Additional Revenue Required (1) - (2)
1	Residential	5,935,400	3,687,400	2,248,000
2	Residential - Suburb	10,800	6,800	4,000
3	Residential - Commercial	781,500	534,900	246,600
4	Interdepartmental - Commercial	4,267,000	3,406,900	860,100
5	Commercial - Suburb	7,500	5,200	2,300
6	Surcharge	413,200	535,100	(121,900)
7	Total	11,415,400	8,176,300	3,239,100

Rate Adjustment

The principal consideration in establishing wastewater rate schedules is the establishment of equitable charges to customers, commensurate with the cost of providing that service. The only method of assessing entirely equitable rates for wastewater service would be the determination of each customer's bill based upon their particular service requirements. Since this is impractical, schedules of rates are normally designed to meet average conditions for groups of customers having similar service requirements. Practicality also dictates the use of a rate schedule which is simple to apply, reasonably recovers costs proportionately from all classes, and is subject to as few misinterpretations as possible.

The revenue requirements and cost of service allocations described in this report provide the basis for adjusting wastewater rates. The revenue requirements section shows the need for adjustment and the level of revenue required. The allocations section provides the unit costs of service used in the rate design process and gives a basis for determining whether resultant rates will develop revenues which recover costs of service from customer classes in proportion to service required and provide the total level of revenue required.

EXISTING RATES

The existing schedule for charges for wastewater service became effective October 1, 2012. The rates consist of a monthly service charge, normal strength and low strength uniform volume charges, and extra strength surcharges for biochemical oxygen demand in excess of 250 mg/l, suspended solids in excess of 250 mg/l, oil and grease in excess of 100 mg/l, TKN in excess of 30 mg/l, and nitrates in excess of 25 mg/l. Industrial customers with lower than normal strength loadings pay a reduced volume charge, but are charged extra strength surcharges for all wastewater strength discharged. All industrial customers are also charged applicable sampling and monitoring fees.

PROPOSED RATES

The cost of service study described in preceding sections of this report provides a basis for the design of a schedule of wastewater rates to meet total costs of service. As previously indicated in Table 8, wastewater revenues shown for test year 2017 are anticipated to be recovered under an adjusted rate schedule that would generate revenues that exceed revenues recoverable under existing rates by 39.6 percent.

In developing proposed schedules of rates, it must be recognized that the cost of service studies are the result of engineering estimates, based to some extent upon judgment and experience, and detailed results should not be used as literal and exact answers but as guides to the necessity for and nature of rate adjustments. Judgment must enter into the final choice of rates and factors such as previous rate levels, economic impact on the customer, public reaction to the extent of changes, and local practice in the past are commonly recognized in making rate adjustments. It is emphasized that all factors beyond cost of service considerations are strictly a matter of local policy.

Considerations recognized in the derivation of the proposed schedules of wastewater rates subsequently presented herein, developed based on discussions with utility representatives, include the indicated desire to: (1) develop rate modifications so that the total revenues recovered from wastewater charges will be at least adequate to recover the respective revenue requirements of the utility, (2) recover test year revenues from each class of wastewater customer approximately equal to the allocated costs of providing service, (3) develop a surcharge for total TKN and (4) to the extent possible, permit

no decreases in existing rates of charge to any class of customers at a time when rates to other classes are to be increased. In attempting to meet these policy criteria, and as a result of the collaborative efforts of the utility staff, proposed schedules of rates for wastewater service are presented and discussed in the following paragraphs.

The existing schedule of rates for wastewater service includes charges based on the quantity of water used, with a service charge. This form of rate is common among wastewater utilities and generally can be designed to recover revenue from system customers reasonably commensurate with the cost of service.

Schedules of proposed wastewater rates, designed to recover revenue requirements generally in accordance with the preceding cost allocation and other practical considerations for each year of the study period are shown in Table 17. The proposed rate structure is similar to the existing structure and includes a surcharge for TKN over 30 mg/l.

It is recommended that the City Council adopt the schedule of rates shown in Table 17.

ADEQUACY OF PROPOSED RATES

A comparison of estimated test year revenue under the proposed rates with allocated costs of service for each customer class is shown in Table 18. This comparison indicates that the proposed rates will recover revenues from customer groups reasonably commensurate with the cost of service and practical considerations previously noted.

TYPICAL BILLS

To better reflect the total effect the proposed rates will have on customer's bills, a comparison of typical bills under existing rates and the rates proposed is shown in Table 19.

Table 17

City of Grand Island, NE
Wastewater Utility
Proposed Rates

		Charges to be Effective October 1,			
	Existing	2013	2014	2015	2016
Sewer Service Charge - $/month					
All Customers	8.24	8.24	8.24	8.24	8.24
Volume Charge - $/Ccf					
Low Strength Industrial Dischargers	1.03	1.47	1.96	2.23	2.47
Non-Sanitary Sewer Flow (a)	1.18	1.18	1.18	1.18	1.18
Sanitary Sewer Flow	2.08	2.52	3.01	3.28	3.52
Excess Strength Surcharge - $/lb					
BOD over 250 mg/l	0.3844	0.3844	0.3844	0.3844	0.3844
Suspended Solids over 250 mg/l	0.2533	0.2533	0.2533	0.2533	0.2533
Oil & Grease over 100 mg/l	0.0819	0.0832	0.0845	0.0858	0.0872
Low Strength Industrial Dischargers					
BOD over 0 mg/l	0.3844	0.3844	0.3844	0.3844	0.3844
Suspended Solids over 0 mg/l	0.2533	0.2533	0.2533	0.2533	0.2533
Oil & Grease over 0 mg/l	0.0819	0.0832	0.0845	0.0858	0.0872
TKN over 30 mg/l	0.5701	0.5701	0.6314	0.6927	0.7539
Nitrates over 25 mg/l	1.8739	1.8739	1.8810	1.8881	1.8953

(a) Applicable to flow discharged from JBS' pretreatment lagoons through their sewer main connecting directly to the City's wastewater treatment plant.

Ccf = Hundred Cubic Feet
BOD = Biochemical Oxygen Demand
TKN = Total Kjeldahl Nitrogen
mg/l = milligram per liter

Table 18

City of Grand Island, NE
Wastewater Utility
Comparison of Revenue Under Proposed Rates with Allocated Cost of Service
Test Year 2017

Line No.		(1) Revenue Under Proposed Rates	(2) Allocated Cost of Service	(3) Revenue Under Existing Rates	(4) Indicated Additional Revenue Required
		$	$	$	(1) - (4)
1	Residential	5,342,300	5,935,400	3,687,400	1,654,900
2	Residential - Suburb	9,800	10,800	6,800	3,000
3	Residential - Commercial	861,700	781,500	534,900	326,800
4	Interdepartmental - Commercial	4,655,400	4,267,000	3,406,900	1,248,500
5	Commercial - Suburb	8,500	7,500	5,200	3,300
6	Surcharge	544,000	413,200	535,100	8,900
7	Total	11,421,700	11,415,400	8,176,300	3,245,400

Table 19

City of Grand Island, NE
Wastewater Utility
Typical Bills
Test Year 2017

Line No.	Customer Class	Billed Wastewater Volume	Existing Rates	Typical Wastewater Bills (a) 2014	2015	2016	2017
		Ccf	$	$	$	$	$
	Residential						
1	Small	5	18.64	20.84	23.29	24.64	25.84
				2.20	2.45	1.35	1.20
2	Medium	7	22.80	25.88	29.31	31.20	32.88
				3.08	3.43	1.89	1.68
3	Large	15	39.44	46.04	53.39	57.44	61.04
				6.60	7.35	4.05	3.60
	Commercial						
4	Small	70	153.84	184.64	218.94	237.84	254.64
				30.80	34.30	18.90	16.80
5	Medium	100	216.24	260.24	309.24	336.24	360.24
				44.00	49.00	27.00	24.00
6	Large	160	341.04	411.44	489.84	533.04	571.44
				70.40	78.40	43.20	38.40
	Industrial (b)						
7	Small	50	187.12	209.13	233.65	247.16	259.17
				22.01	24.51	13.51	12.01
8	Medium	500	1,797.06	2,017.18	2,262.30	2,397.43	2,517.56
				220.12	245.12	135.12	120.13
9	Large	5,000	17,896.45	20,097.66	22,548.88	23,900.10	25,101.41
				2,201.22	2,451.22	1,351.22	1,201.31
10	JBS (c)	102,100	136,511.90	137,787.90	139,448.12	140,470.34	141,405.86
				1,276.00	1,660.22	1,022.22	935.52

(a) Increase shown reflects change from previous year.

(b) Assumes biochemical oxygen demand excess strength of 502 mg/l, suspended solids excess strength of 176 mg/l, oil and grease excess strength of 30 mg/l.

(c) 2013 typical bill assumes TKN excess strength of 5 mg/l and Nitrates strength of 10 mg/l. Beginning in 2014 typical bills assume total nitrates excess strength of 10 mg/l.