

# City of Grand Forks

## Wastewater Service to East Grand Forks Draft Cost of Service Analysis Results

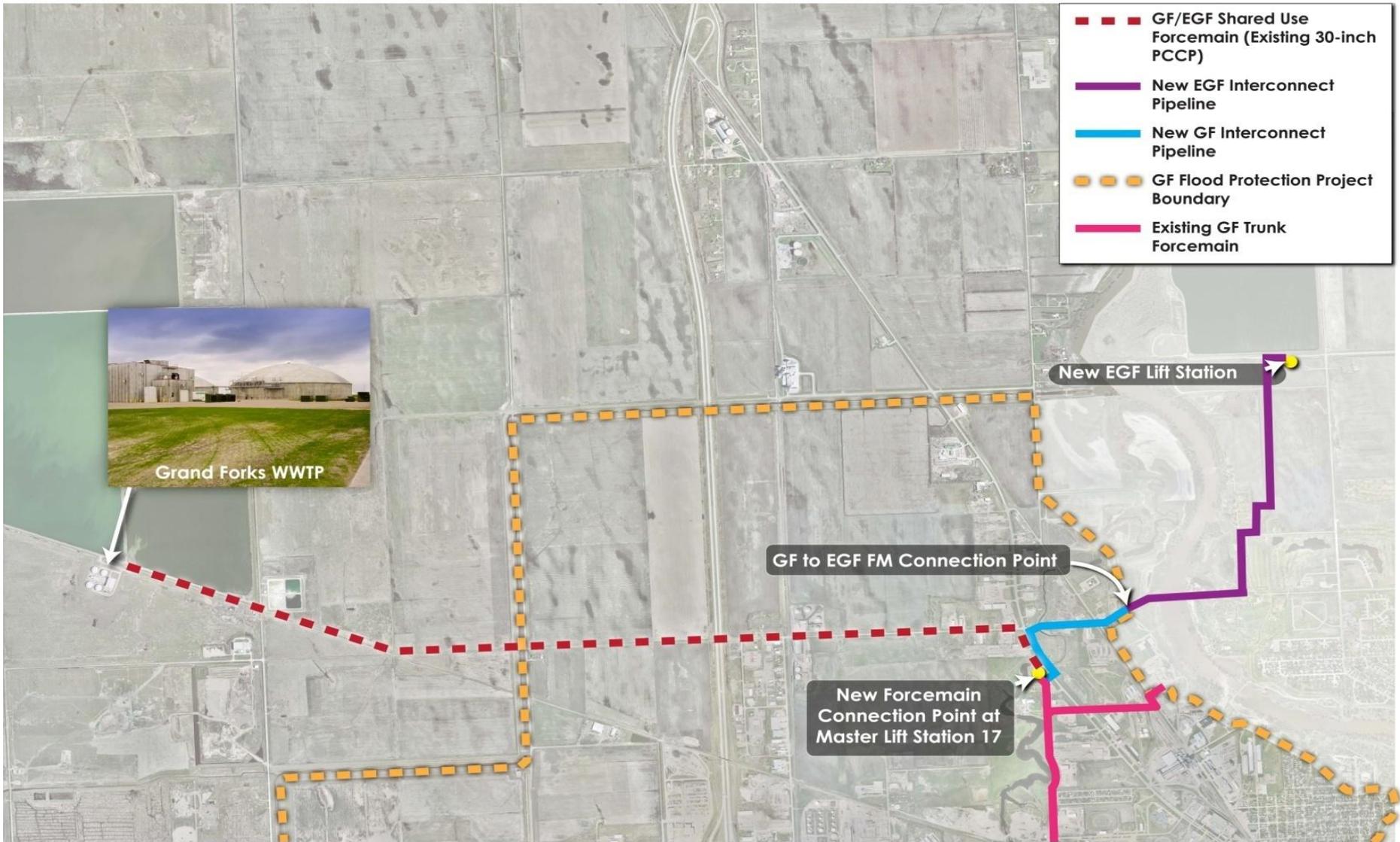
April 23, 2015



# Agenda

- 1. Project Overview**
- 2. Cost of Service Analysis (COSA) Methodology**
- 3. Previous COSA Results**
- 4. Description of COSA Process**
  - Development of Test Year - 2015
  - Functionalization | Classification | Allocation
  - Results
- 5. Future Rate Considerations**
- 6. Next Steps**

# Project Overview



# Project Overview

**Point of Connection to Grand Forks WW Collection System (near Flood Protection Limits)**

**New Forcemain Construction (\$1.2M GF Capital Project)**

**Point of Metering and Point of Sampling @ New EGF Master Pump Station**

**New Forcemain Construction (EGF Capital Project)**



# Cost of Service Analysis (COSA)

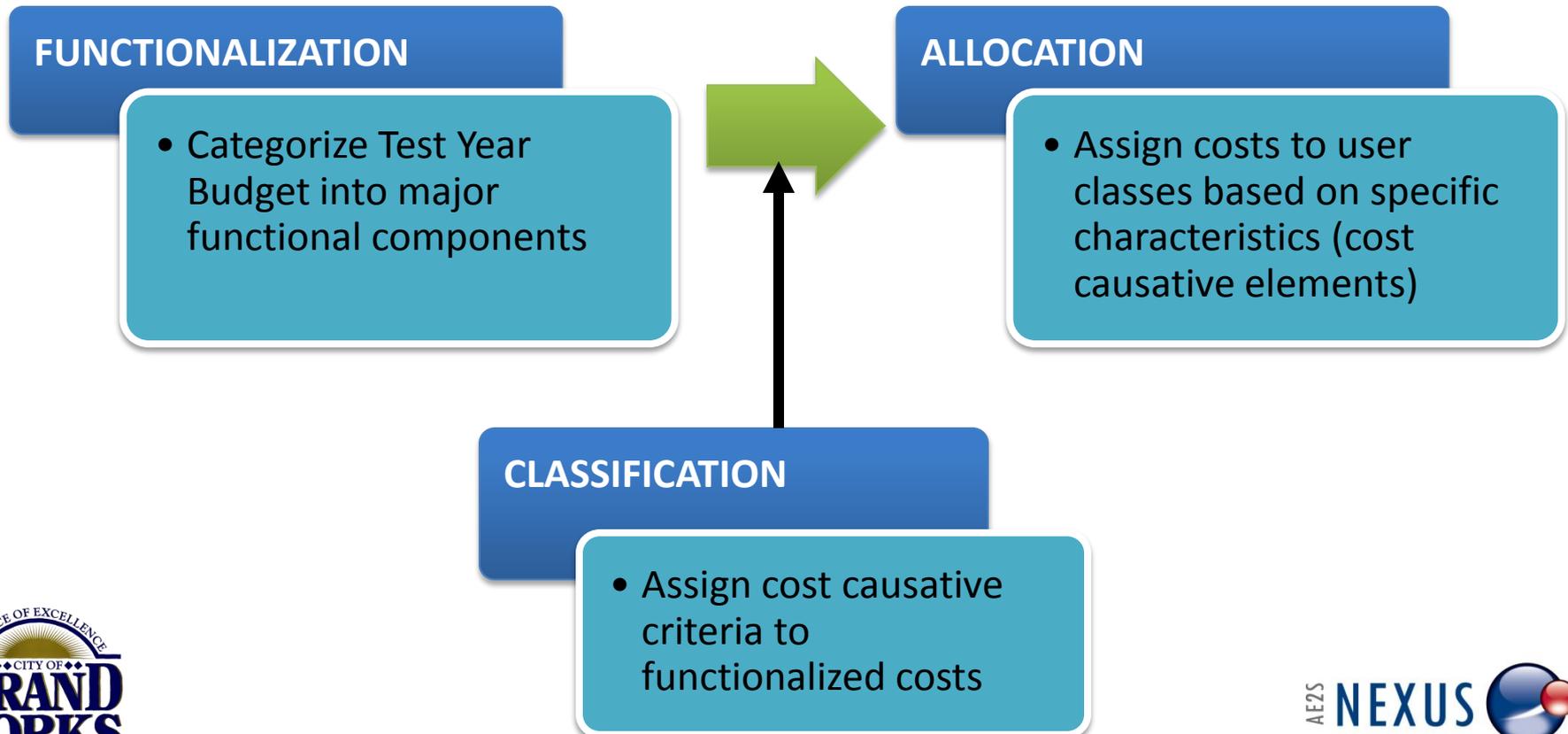
## METHODOLOGY

### Cost of service completed to determine:

1. EGF proportionate share of GF in-place and future capital
2. EGF proportionate share of GF annual operating expense (incrementally adjusted)

# Cost of Service Analysis (COSA)

## METHODOLOGY



# Cost of Service Analysis

## “Easy Math Example”

Utility Budget
Total Wastewater Utility Budget = <b>\$10M</b>



Functionalization
Total Utility Budget = <b>\$10M</b>
Customer: \$1M
Collection: \$2M
Pumping: \$2M
<b>Treatment: \$4M</b>
Assigned: \$1M



Classification of Treatment	
Flow	\$3M
Strength	\$1M
<b>Total</b>	<b>\$4M</b>



Allocation of Treatment		
	Gotham City	Gotham Heights
Flow	\$2M	\$1M
Strength	\$0.5M	\$0.5M
<b>Total</b>	<b>\$2.5M</b>	<b>\$1.5M</b>



# Previous COSA Results



	Grand Forks	East Grand Forks	Total
<b>2013 Test Year Total Cost</b>	\$9,119,377	\$490,868	<b>\$9,610,245</b>
<i>Total Cost %</i>	94.89%	5.11%	<b>100%</b>



# 2015 Wastewater Budgeted Expense

Budget Subdivision	2015 Budget
Administration - O&M	\$2,228,840
Administration - Debt	\$3,256,863
Collection System	\$537,690
Pumping	\$1,332,713
Forcemain	\$347,327
Wastewater Treatment (General)	\$280,200
Headworks	\$557,201
Treatment	\$568,703
Clarification	\$516,796
Effluent Management	\$271,653
Lab - Treatment	\$177,256
Lab - IPP	\$159,047
<b>Total</b>	<b>\$10,234,289</b>

# Development of Test Year

➔ Adjustments to 2015 Budget to reflect representative year of cost and operation

## ADJUSTMENTS INCLUDE:

### EGF Incremental Budget Adjustments:

- Chemicals
- Electricity
- New Forcemain Debt Service

# Test Year Adjustments

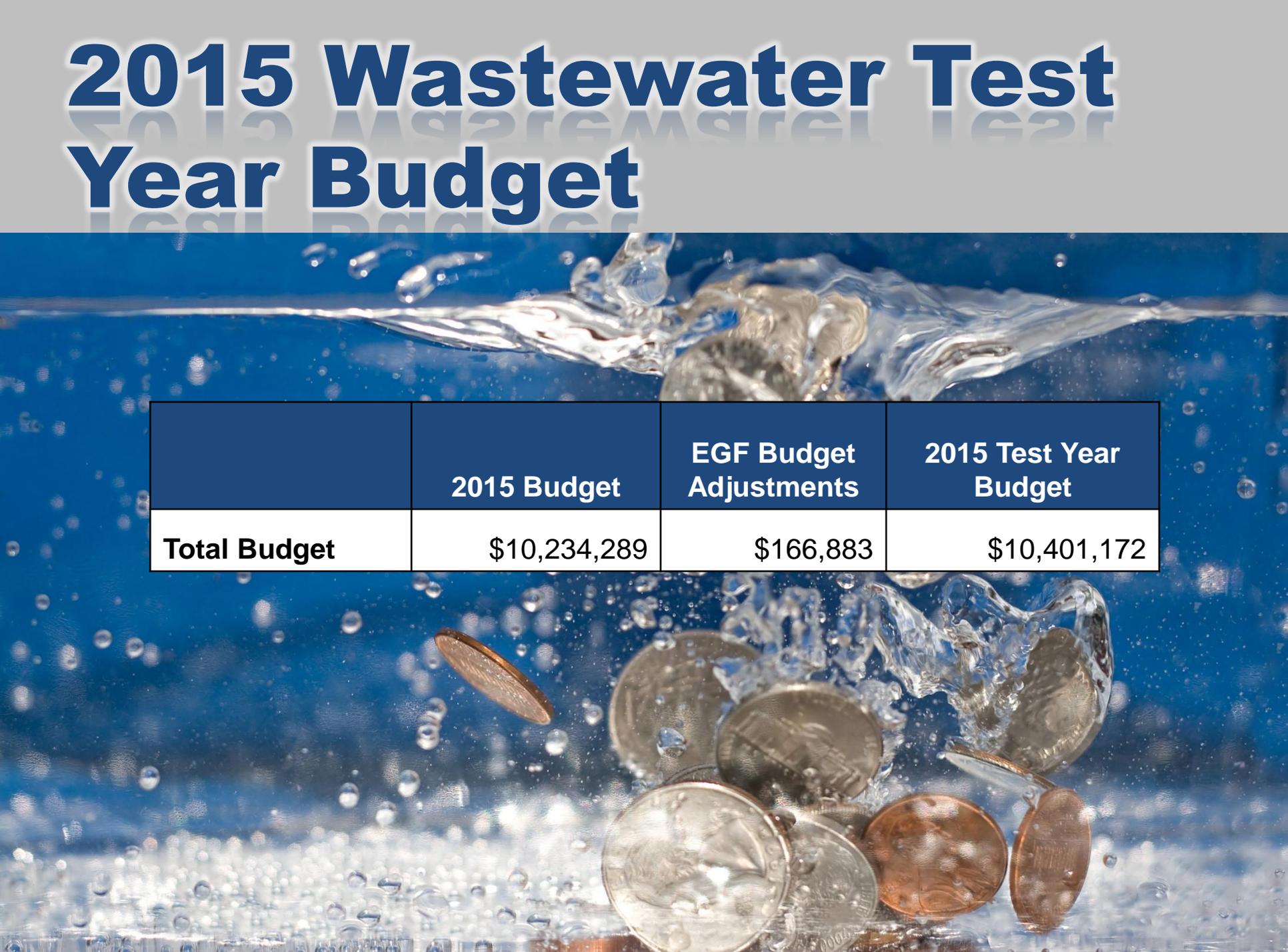
## EGF Incremental Budget Adjustment

	2015 Budget	EGF Adjustment	2015 Test Year
<b>Pumping</b>			
Electricity	\$200,000	\$17,183	\$217,183
<b>Headworks</b>			
Electricity*	\$125,000	\$13,544	\$138,544
<b>Treatment</b>			
Electricity*	\$325,000	\$35,214	\$360,214
<b>Clarification</b>			
Chemicals	\$50,000	\$6,942	\$56,942
Electricity*	\$125,000	\$13,544	\$138,544
<b>EGF Assigned Debt Service</b>	\$0	\$80,457	\$80,457
<b>TOTAL</b>	<b>\$825,000</b>	<b>\$166,884</b>	<b>\$991,884</b>

*\*Adjusted based on 2015 YTD actuals*



# 2015 Wastewater Test Year Budget



	2015 Budget	EGF Budget Adjustments	2015 Test Year Budget
<b>Total Budget</b>	\$10,234,289	\$166,883	\$10,401,172

# Functionalization

Function	2015 Functionalized Budget
Customer	\$1,083,464
Collection	\$1,411,525
Pumping Fixed	\$2,062,814
Pumping Variable	\$217,183
Headworks – Fixed	\$495,233
Headworks - Variable	\$138,544
Treatment Fixed – O&M	\$611,986
Treatment Fixed – Debt	\$2,567,125
Treatment Variable	\$360,214
Treatment Excluding EGF	\$0
Clarification – Fixed	\$408,948
Clarification - Variable	\$195,486
Effluent Management	\$306,367
Lab	\$203,863
Solids Fixed	\$0
Solids Variable	\$0
Assigned – IPP	\$257,964
Assigned – EGF	\$80,457
<b>Total</b>	<b>\$10,401,172</b>

EGF is 1 of 14,000 customers

EGF to utilize a segment  
of these systems  
(allocated based on flow)

EGF assigned proportionate share  
of total annual Treatment  
(allocated based on flow and  
strength)

EGF Assigned Proportionate Share  
of Significant Customer  
Administration  
(allocated based on strength)

EGF Forcemain Debt Service



# Functionalization Refinement

## EGF Shared Collection & Pumping



EGF will share in the benefit of the use of 6% of total collection system

EGF will share in the benefit of the use of 1 of 42 pump stations in GF

# East Grand Forks Allocation Criteria

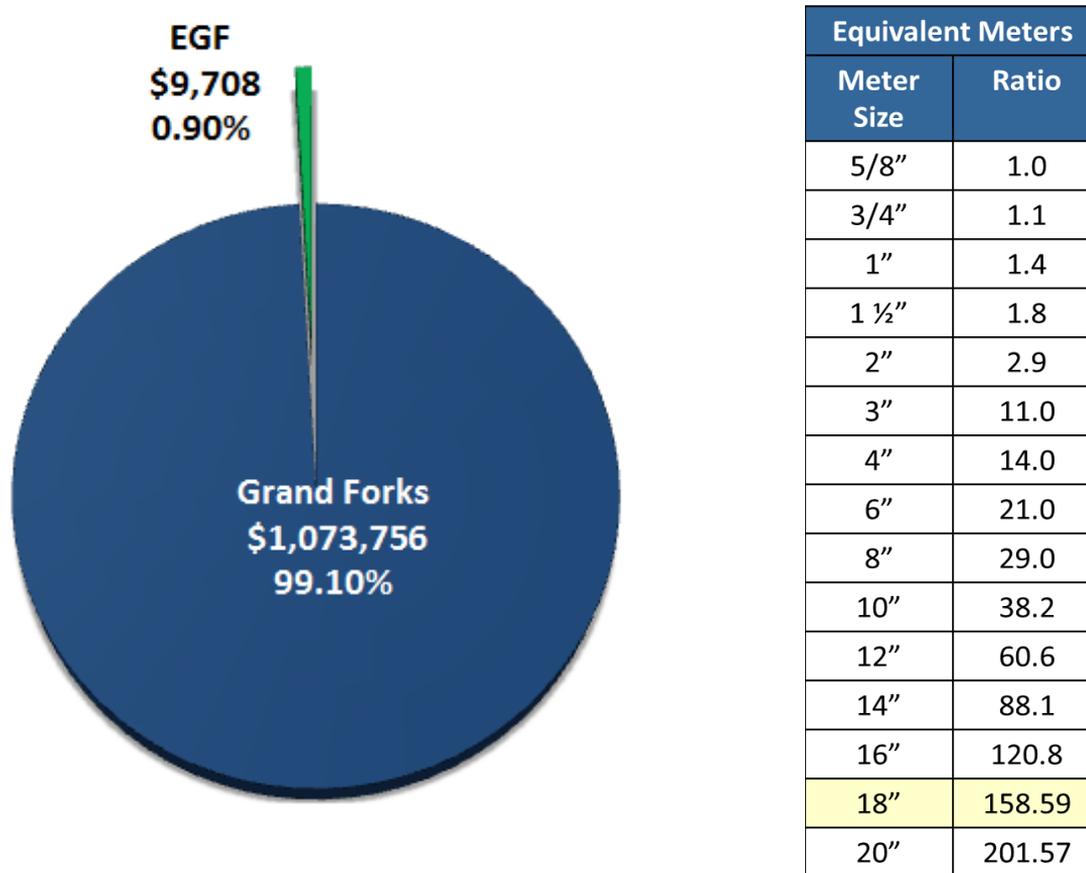
## FIXED:

	Design Capacity
Flow (MGD)	1.20
BOD (PPD)	2,002 (200 mg/L)
TSS (PPD)	2,502 (250 mg/L)
TKN (PPD)	350 (35 mg/L)

## VARIABLE:

	Average Annual
Flow (MGD)	1.16
BOD (PPD)	1,938 (200 mg/L)
TSS (PPD)	2,423 (250 mg/L)
TKN (PPD)	291 (35 mg/L)

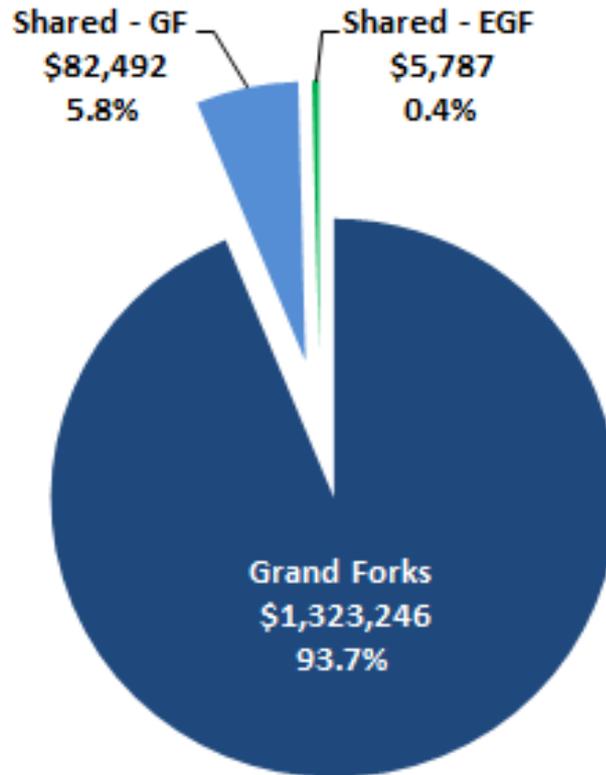
# Allocation : Customer



**Total Customer Cost Budget = \$1,083,464**  
 EGF Allocated 0.9% based on Equivalent Meters



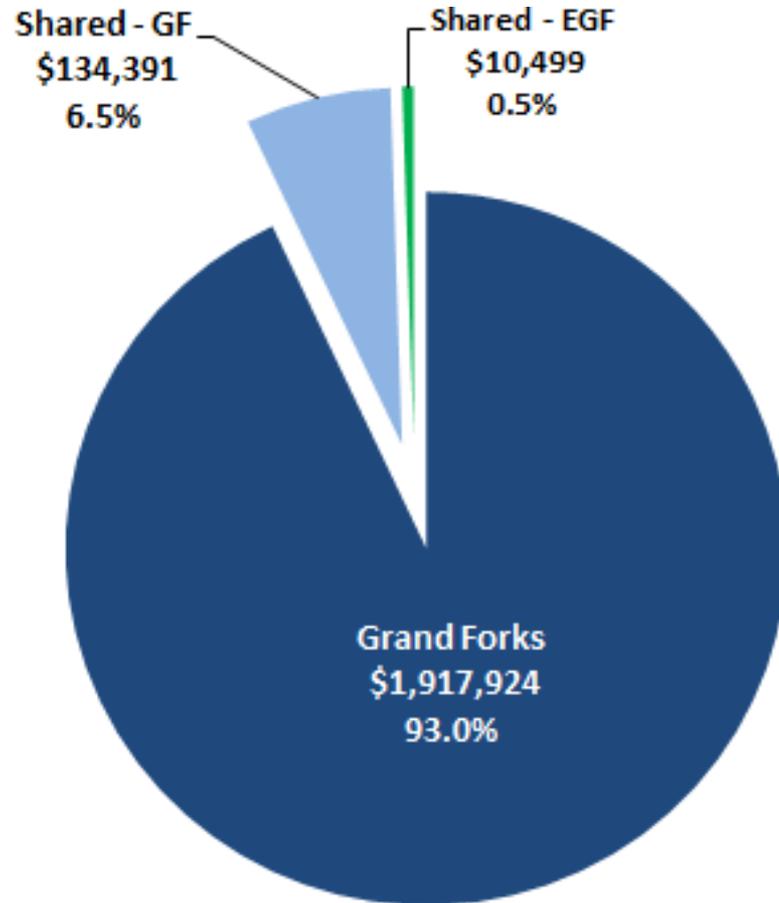
# Allocation : Collection



**Total Collection Cost Budget = \$1,411,525**

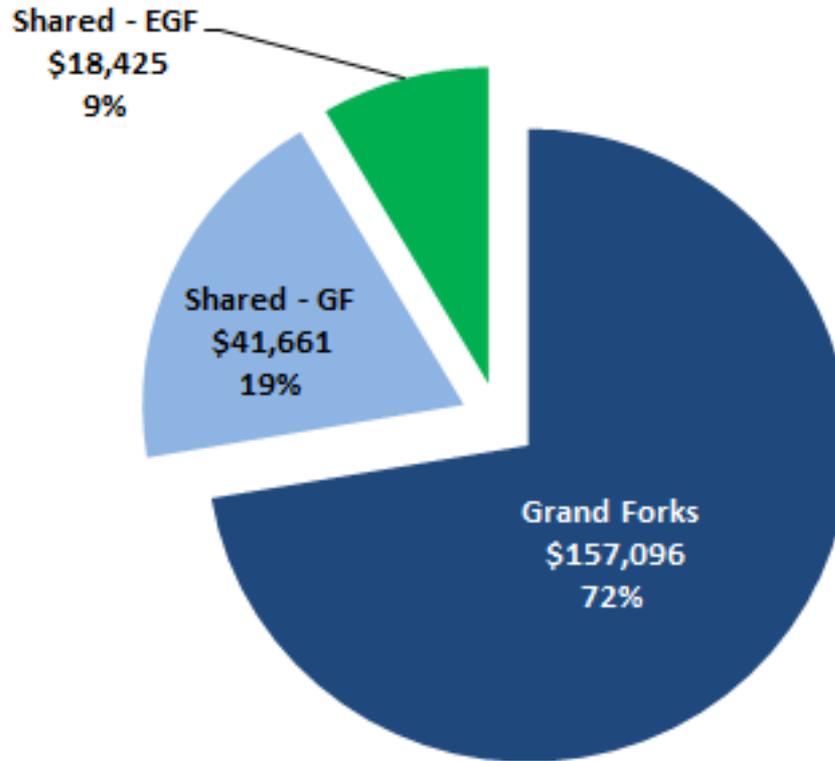
EGF Allocated 0.4% based on Design Flow

# Allocation : Pumping - Fixed



**Total Pumping Fixed Budget = \$2,062,814**  
EGF Allocated 0.5% based on Fixed Flow

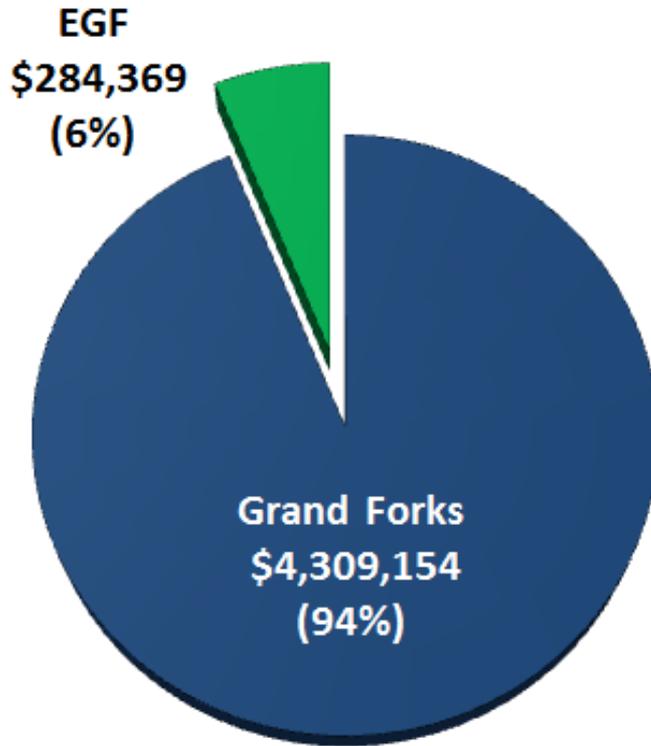
# Allocation : Pumping - Variable



**Total Pumping Variable Budget = \$217,183**

EGF Allocated 9% based on Variable Flow

# Allocation : Treatment - Fixed



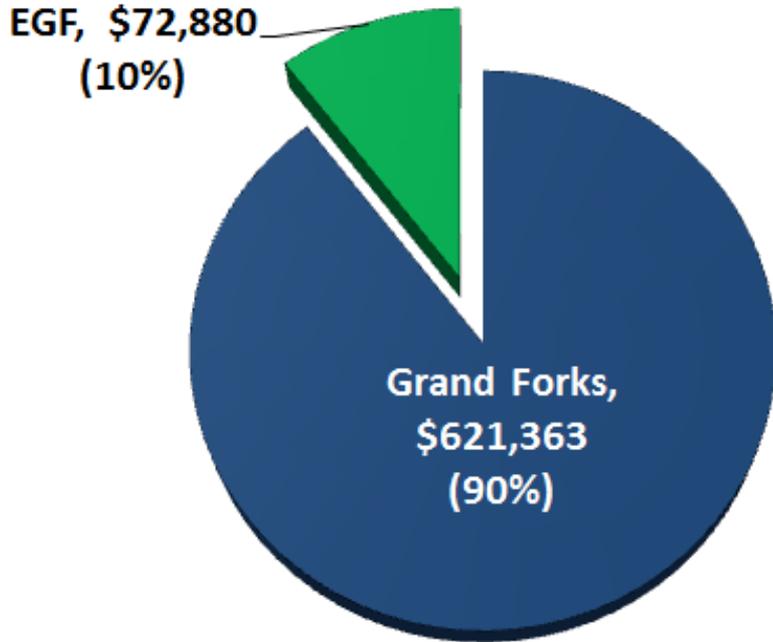
Treatment Fixed Allocation	Grand Forks	EGF
% of Fixed Flow	89.2%	10.8%
% of Fixed BOD	93.7%	6.3%
% of Fixed TKN	96.1%	3.9%
% of Fixed Inert Solids	95.9%	4.1%
% of Fixed Volatile Solids	97.4%	2.6%

**Total Treatment Fixed Budget = \$4,593,522**

EGF Allocated 6% based on Fixed Flow and Strength



# Allocation : Treatment - Variable

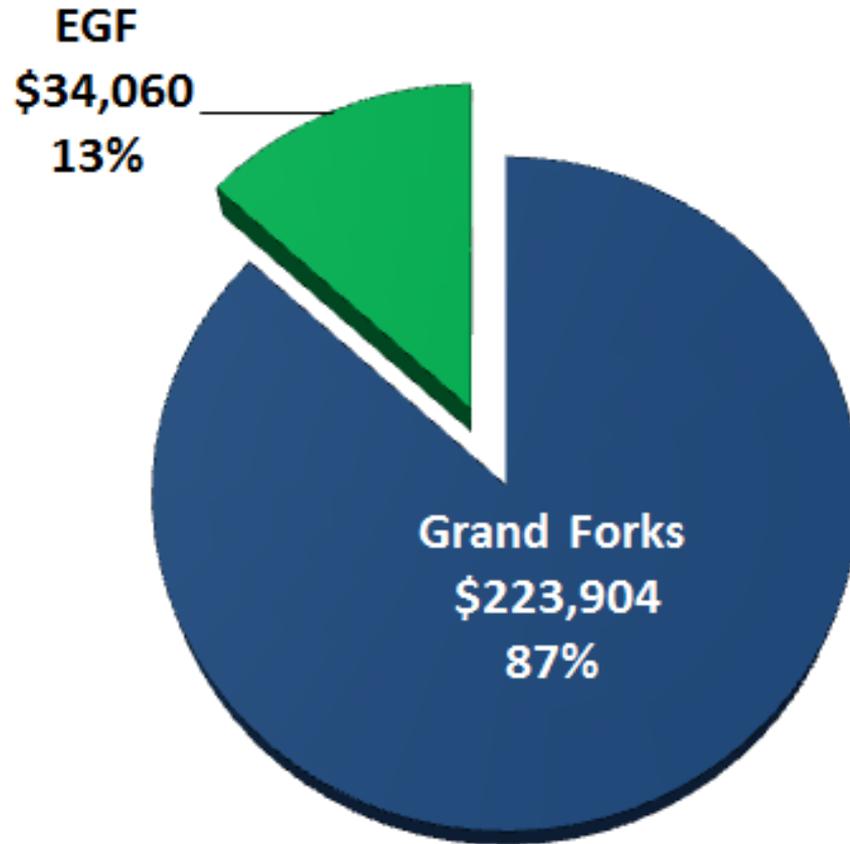


Treatment Variable Allocation	Grand Forks	EGF
% of Variable Flow	86.1%	13.9%
% of Variable BOD	86.8%	13.2%
% of Variable TKN	92.9%	7.1%
% of Variable Inert Solids	90.8%	9.2%
% of Variable Volatile Solids	92.8%	7.2%
% of Variable FOG	99.2%	0.8%

**Total Treatment Variable Budget = \$694,243**

EGF Allocated 10% based on Variable Flow and Strength

# Allocation : IPP



**Total IPP Cost Budget = \$257,964**

EGF Allocated 13% based on Variable BOD

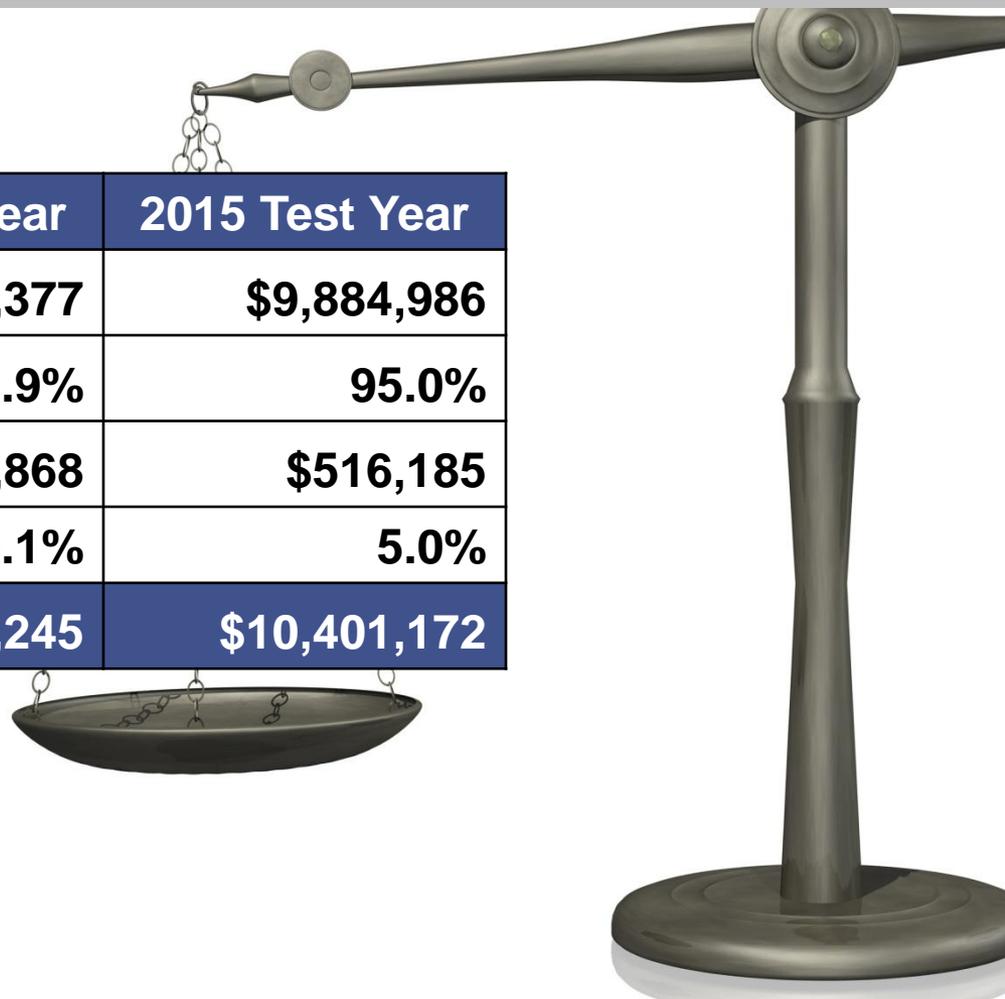
# COSA RESULTS :

## Total 2015 Test Year Cost

Total Costs	Grand Forks	East Grand Forks	Total
<b>Customer</b>	<b>\$1,073,756</b>	<b>\$9,708</b>	<b>\$1,083,464</b>
<i>Customer %</i>	<i>99.1%</i>	<i>0.9%</i>	<i>100%</i>
<b>Collection</b>	<b>\$1,405,738</b>	<b>\$5,787</b>	<b>\$1,411,525</b>
<i>Collection %</i>	<i>99.6%</i>	<i>0.4%</i>	<i>100%</i>
<b>Pumping</b>	<b>\$2,251,072</b>	<b>\$28,925</b>	<b>\$2,279,996</b>
<i>Pumping %</i>	<i>98.7%</i>	<i>1.3%</i>	<i>100%</i>
<b>Treatment</b>	<b>\$4,930,517</b>	<b>\$357,248</b>	<b>\$5,287,765</b>
<i>Treatment %</i>	<i>93.2%</i>	<i>6.8%</i>	<i>100%</i>
<b>Solids</b>	-	-	-
<i>Solids %</i>	-	-	-
<b>Assigned – IPP</b>	<b>\$223,904</b>	<b>\$34,060</b>	<b>\$257,964</b>
<b>Assigned – EGF</b>	<b>\$0</b>	<b>\$80,457</b>	<b>\$80,457</b>
<b>Total Cost</b>	<b>\$9,884,986</b>	<b>\$516,185</b>	<b>\$10,401,172</b>
<i>Total % Cost</i>	<i>95.0%</i>	<i>5.0%</i>	<i>100%</i>

# COSA RESULTS :

## Summary



	2013 Test Year	2015 Test Year
<b>Grand Forks (\$)</b>	<b>\$9,119,377</b>	<b>\$9,884,986</b>
<i>Grand Forks (%)</i>	<b>94.9%</b>	<b>95.0%</b>
<b>East Grand Forks (\$)</b>	<b>\$490,868</b>	<b>\$516,185</b>
<i>East Grand Forks (%)</i>	<b>5.1%</b>	<b>5.0%</b>
<b>Total</b>	<b>\$9,610,245</b>	<b>\$10,401,172</b>

# Future/Other Rate Considerations

## Resulting EGF Cost of Service is based on:

1. 2015 dollars and operations
2. EGF Anticipated Needs/Size for 2015

### *Future Rate Considerations include:*

- Escalation of Operating Costs
- Existing Debt Service Retirement
- Future Capital Improvements Needs
- EGF Reserved Capacity for growth and/or business attraction
- GF Fertilizer Plant Considerations



# Existing Debt Service

	Annual Payment	Final Maturity Date	Function
<b>2008C Sewer Res Rev Ref Bond</b>	\$104,000	2015	Pumping
<b>SRF Loan #1 Sewer Res Rev Bond</b>	\$877,625	2018	Treatment
<b>SRF Loan #2 Sewer Rev Bond</b>	\$885,375	2021	Treatment
<b>SRF Loan #3 Sewer Rev Bond</b>	\$440,500	2021	Treatment
<b>SRF Loan #1 Biosolids Rev Bond</b>	\$288,625	2025	Treatment
<b>2009B Sewer Res Rev &amp; Ref Bond</b>	\$324,650	2029	Pumping
<b>2011 Sewer Res Rev Bond</b>	\$186,088	2031	Collection



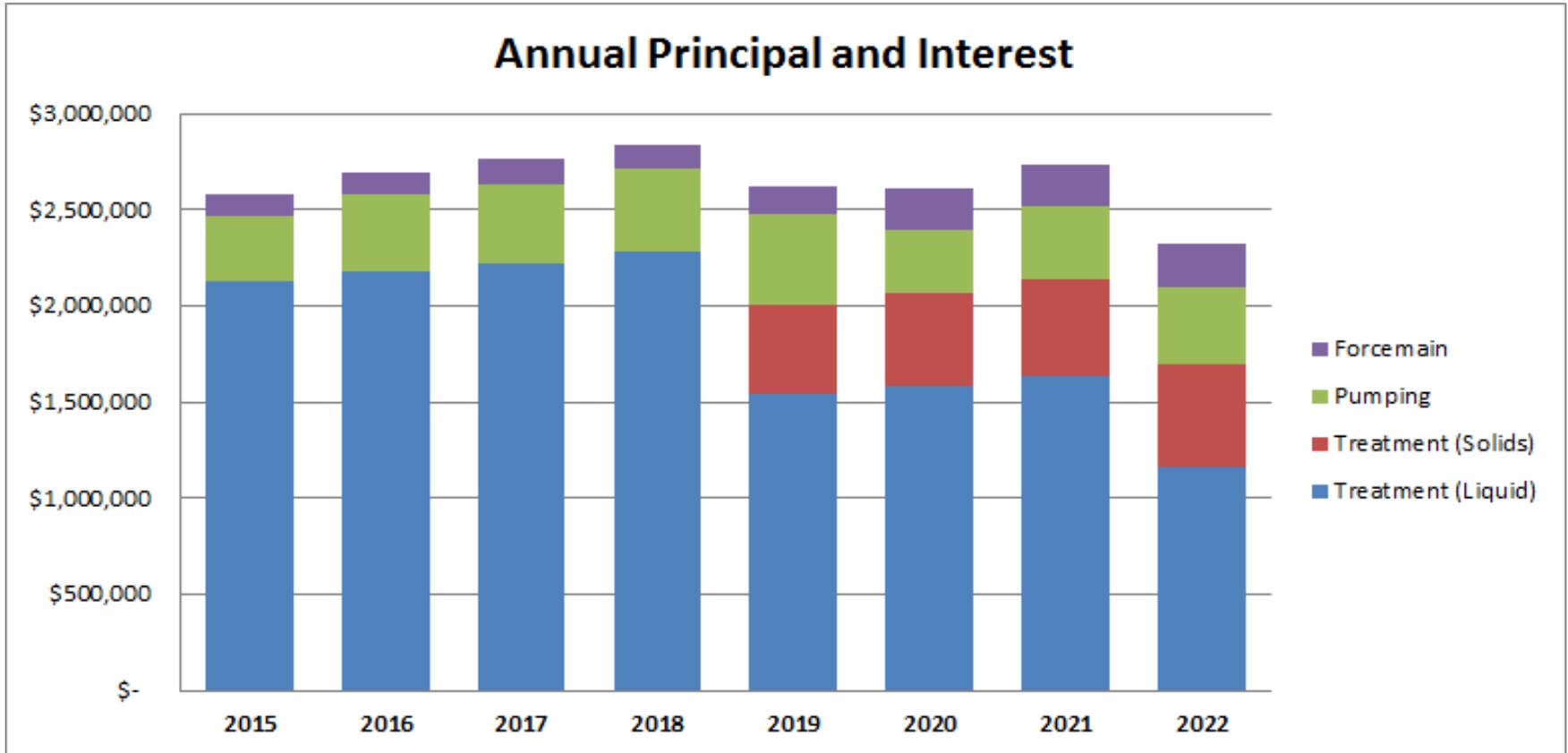
# Future Capital Improvements

	CIP YEAR	Total Project Cost	Function
Pumping & Forcemain Improvements	2015	\$3,708,512	Pumping & Collection
Pumping & Forcemain Improvements	2016	\$562,248	Pumping & Collection
Biosolids Facility Capital	2016-2018	\$15,269,139	Solids
Pumping & Forcemain Improvements	2018	\$1,092,727	Pumping & Collection
Primary Cell No 2 Sludge Disposal	2018	\$2,663,270	Treatment – Excluding EGF
Pumping & Forcemain	2019	\$2,356,192	Pumping & Collection
Continuous Discharge Capital*	2019-2021	\$26,000,000	Treatment
Pumping & Forcemain	2021	\$1,194,052	Pumping & Collection

*\*Subject to review as part of service to NPN or regulatory impacts*



# Projected WW Utility Debt Profile



# The Benefit of Reserved Capacity

1. 1.2 MGD (and corresponding domestic strength loadings) is basis for fixed cost allocation to EGF for 2015 Cost of Service Presented
2. EGF could elect to request an option to reserve additional capacity for its future use/benefit (i.e. domestic growth or new business attraction)
3. Fixed cost allocation would be adjusted accordingly to assign EGF its appropriate share of fixed cost based on elected capacity

# QUESTIONS?



# Additional Background Slides



# Allocation : Collection System

Collection Cost Allocation	Total Cost	Grand Forks	EGF
Collection – GF (MGD)*	\$1,323,246	6.60	0
% of Collection – GF		100%	0%
Collection – GF/Simplot/WP/EGF Shared (MGD)	\$50,644	18.66	1.20
% of Collection – GF/Simplot/WP/EGF Shared		93.96%	6.04%
Collection – GF/WP/EGF Shared	\$37,635	15.36	1.20
% of Collection – GF/WP Shared		92.75%	7.25%



\*Does not include forcemain from M17 to Plant



# Allocation :

## Pumping - Fixed

Pumping Cost Allocation	Total Cost	Grand Forks	EGF
Pumping GF – Fixed (GPM)	\$1,821,180	49,987	0
% of Pumping GF – Fixed		100%	0%
Pumping GF/WP/EGF M17 Shared – Fixed (GPM)	\$144,890	10,667	833
% of Pumping GF/WP/EGF M17 Shared - Fixed		92.75%	7.25%
Pumping GF/WP Shared – Fixed (GPM)	\$41,222	712	0
% of Pumping GF/WP Shared - Fixed		100%	0%

# Allocation :

## Pumping - Variable

<b>Pumping Cost Allocation</b>	<b>Total Cost</b>	<b>Grand Forks</b>	<b>EGF</b>
<b>Pumping GF – Variable (MGD)</b>	<b>\$124,569</b>	<b>8.02</b>	<b>0</b>
<b>% of Pumping GF – Variable</b>		<b>100%</b>	<b>0%</b>
<b>Pumping GF/WP/EGF M17 Shared – Variable (MGD)</b>	<b>\$60,086</b>	<b>2.63</b>	<b>1.16</b>
<b>% of Pumping GF/WP/EGF M17 Shared - Variable</b>		<b>69.34%</b>	<b>30.66%</b>
<b>Pumping GF/WP Shared – Variable (MGD)</b>	<b>\$2,717</b>	<b>0.17</b>	<b>0</b>
<b>% of Pumping GF/WP Shared - Variable</b>		<b>100%</b>	<b>0%</b>

# Allocation :

## Treatment - Fixed

Treatment Design Allocation	Total Cost	Grand Forks	EGF
Flow (MGD)	<b>\$1,134,932</b>	<b>9.94</b>	<b>1.20</b>
% of Fixed Flow		<b>89.2%</b>	<b>10.8%</b>
BOD (lbs/day)	<b>\$1,326,679</b>	<b>30,011</b>	<b>2,002</b>
% of Fixed BOD		<b>93.7%</b>	<b>6.3%</b>
TKN (lbs/day)	<b>\$800,051</b>	<b>8,627</b>	<b>350</b>
% of Fixed TKN		<b>96.1%</b>	<b>3.9%</b>
Inert Solids (lbs/day)	<b>\$901,133</b>	<b>17,599</b>	<b>751</b>
% of Fixed Inert Solids		<b>95.9%</b>	<b>4.1%</b>
Volatile Solids (lbs/day)	<b>\$430,727</b>	<b>66,635</b>	<b>1,751</b>
% of Fixed Volatile Solids		<b>97.4%</b>	<b>2.6%</b>

# Allocation :

## Treatment - Variable

Treatment Actual Allocation	Total Cost	Grand Forks	EGF
Flow (MGD)	\$118,143	7.21	1.16
% of Variable Flow		86.1%	13.9%
BOD (lbs/day)	\$220,742	12,741	1,938
% of Variable BOD		86.8%	13.2%
TKN (lbs/day)	\$155,398	3,801	291
% of Variable TKN		92.9%	7.1%
Inert Solids (lbs/day)	\$120,762	7,216	727
% of Variable Inert Solids		90.8%	9.2%
Volatile Solids (lbs/day)	\$72,271	21,933	1,696
% of Variable Volatile Solids		92.8%	7.2%
FOG (lbs/day)	\$6,927	257	2
% of Variable FOG		99.2%	0.8%

# Allocation :

## Solids Fixed

Solids	Total Cost	Grand Forks	EGF
	<i>Future Test Year Cost Allocation</i>		
TSS (lbs/day)		38,666	2,502
% of Fixed TSS	-	93.9%	6.1%

# Allocation :

## Solids Variable

Solids	Total Cost	Grand Forks	EGF
	<i>Future Test Year Cost Allocation</i>		
TSS (lbs/day)		29,149	2,423
% of Variable TSS		92.3%	7.7%

# Allocation :

## IPP

IPP Allocation	Total Cost	Grand Forks	EGF
BOD (lbs/day)	\$257,964	12,741	1,938
% of Variable BOD		86.8%	13.2%