Water Reuse Ad Hoc Committee Meeting

January 28, 2016

Agenda

1. Selection of Chair and Vice Chair
2. Approval of minutes
3. Reuse Water Project
   - Feasibility Study
   - Project Overview – Financials
   - Direct Potable Reuse
4. Committee Discussion
5. Future meeting dates
6. Items for future meetings

Review

<u>Existing Conditions</u>

- Existing Water System
- Water Management Policies
- Water Sources

<u>Tours</u>

- Water Plant
- Wastewater Plant
- Proposed Reuse Pond Site

Project Background

April 15, 2013 –Presentation to EIC on storage pond concept as requested by board

June 17, 2013 – Presentation on Reuse Pond Feasibility Study scope of work.

June 25, 2013 – City Council authorization to apply for funding through the EIC for Reuse Pond Feasibility Study

July 22, 2013 – Presentation to EIC for the funding application.

September 10, 2013 – City Council authorized Professional Services Agreement for the Reuse Pond Feasibility Study

June 10, 2014 – FNI presented results of the Reuse Pond Feasibility Study to the City Council

June 23, 2014- Staff presented the results of the Reuse Pond Feasibility Study to the EIC

July 2014 – City Council considered and approved the Reuse Pond Design funds during the CIP budget process

October 28, 2014 – City Council authorized Professional Services Agreement for the Reuse Pond Design

May 12, 2015 – City Council authorized Professional Services Agreement for the Direct Potable Reuse Contract

November 10, 2015 – City Council created an Ad Hoc Committee to evaluate the Reuse Pond project

December 15, 2015 – City Council appoints members to the Ad Hoc Committee

January 7, 2016 – Ad Hoc Committee meeting – Water 101 Presentation

January 21, 2016 – Ad Hoc Committee meeting – Tours

January 28, 2016 – Ad Hoc Committee meeting – Project Overview

Articles in newspaper

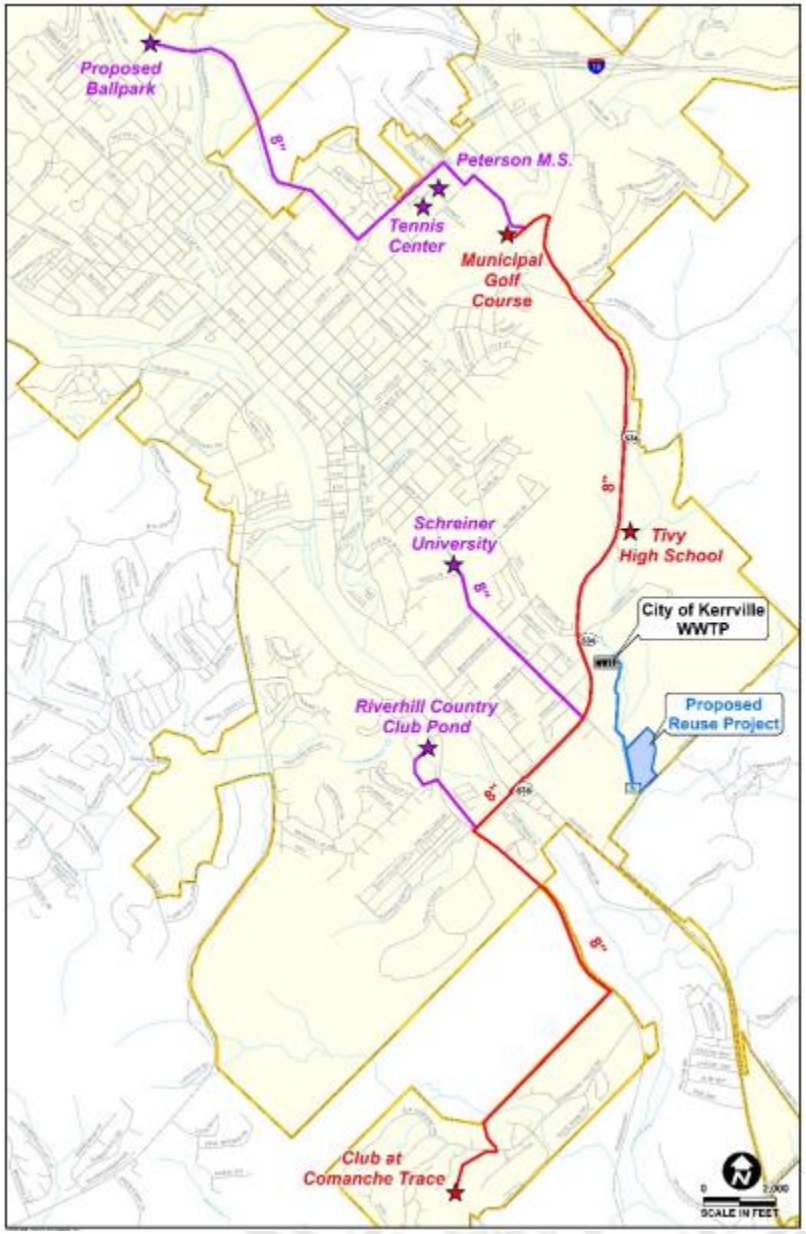
<u>Kerrville Daily Times</u>
03/15/02 – Treated wastewater may be good option
4/17/13 – Feeling Flushed
6/14/13 – EIC to look at effluent ponds
6/18/13 – Effluent pond gets EIC blessing
8/29/14 – City moves toward pond construction
10/28/15 – City looks to use reuse
11/19/15 – City forms reuse advisory committee
12/10/15 – Treated effluent water is valuable
12/16/15 – 9 names to city's water reuse ad hoc committee
1/04/16 – First meeting on tap for water reuse committee
1/08/16 – Reuse committee evaluates Kerrville water system
1/11/16 – Big night planned Tuesday at City Hall
1/13/16 – Sparks fly during city council water talks
1/22/16 – Committee, city officials tour site for $21M water project

<u>Hill Country Community Journal</u>
10/29/14 – City addresses water
10/28/15 – Council discusses plans for effluent pond, water reuse
11/25/15 – City taking applications for RWAC
1/20/16 – Pond will ease stress of water availability
1/20/16 – Council approves added $10M in CO bond debt

Reuse Pond feasibility study

Reuse Pond
Project Drivers

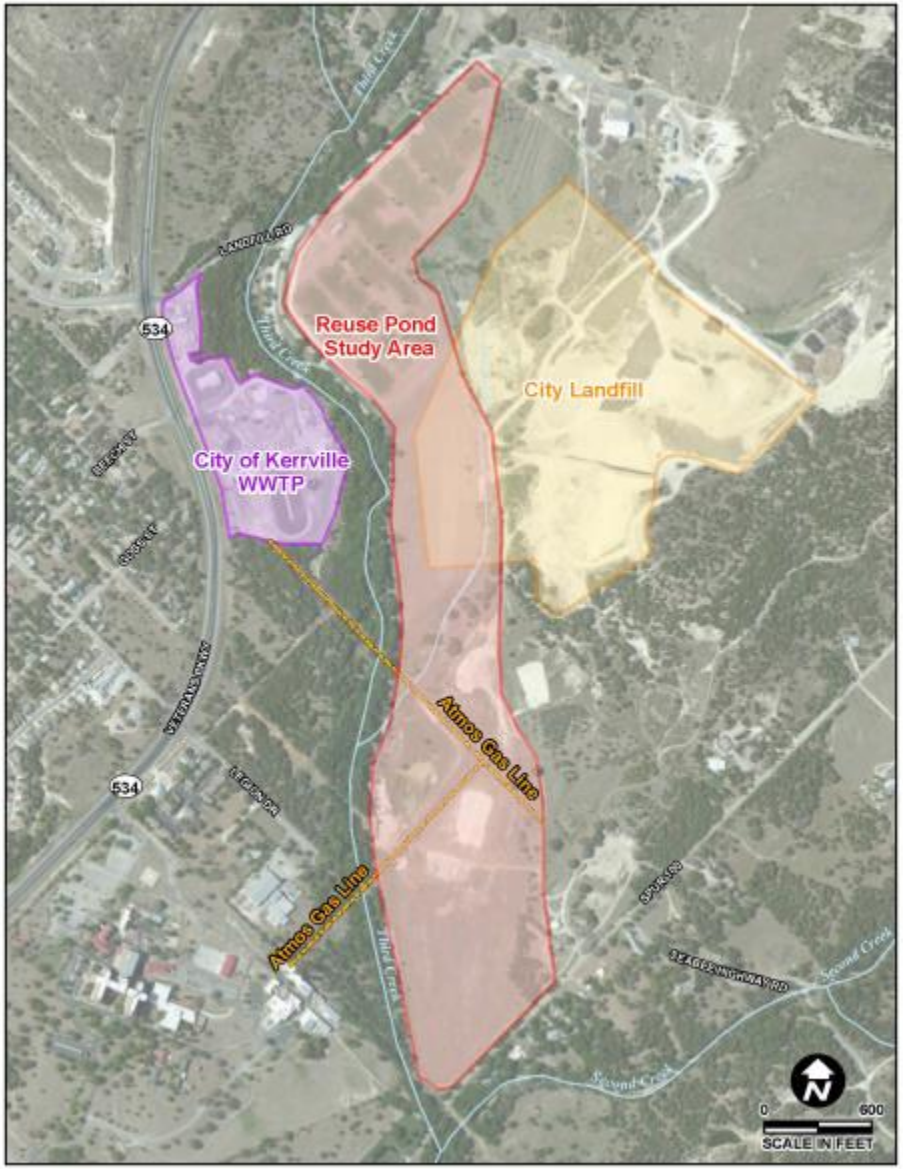
- The City provides 100% of its summertime WWTP effluent as reuse water to current irrigation customers
- Potential reuse customers requesting reuse water from City
- Additional reuse storage would allow flexibility to match year-round reuse water supply and demand
- Historical Drought



Reuse Pond
2013 Feasibility Study

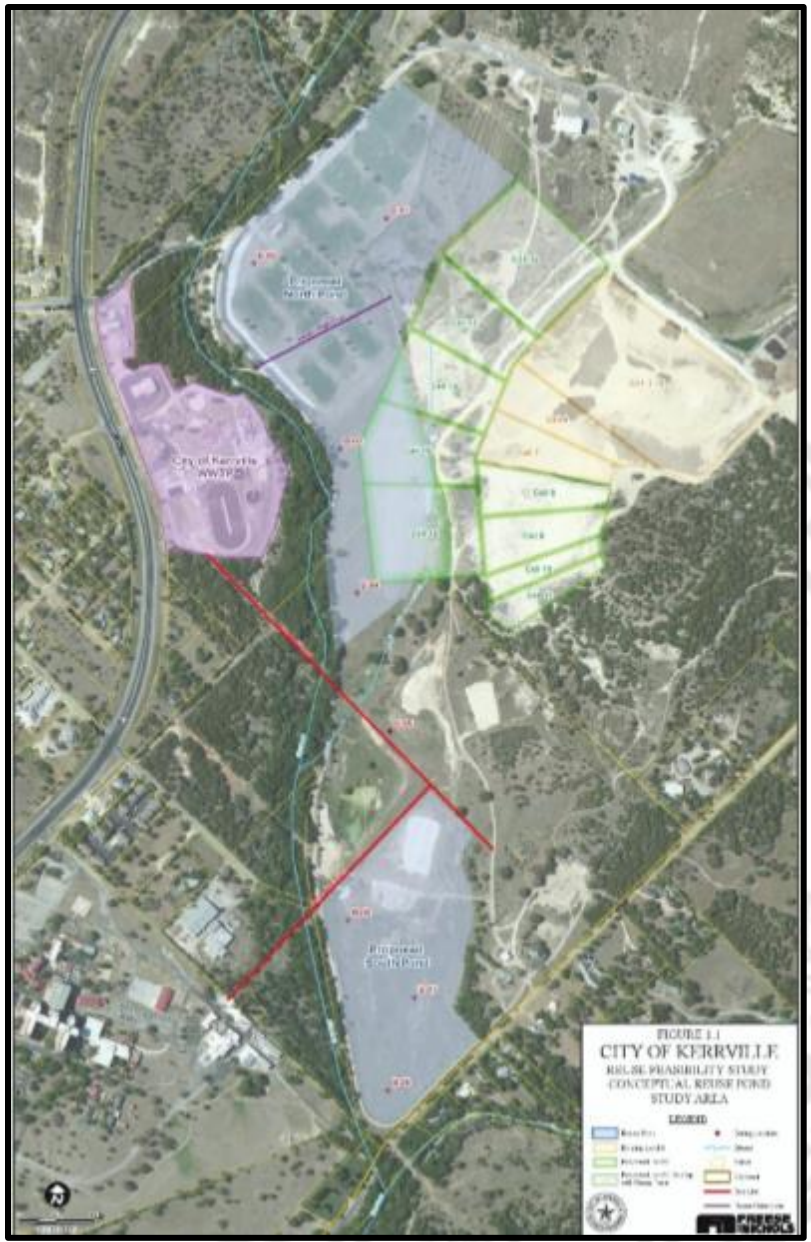
Study Considerations

- Identified potential obstacles or fatal flaws in concept
- Maximized Pond Storage Volume
- Minimized Costs
- Coordinated with the City Landfill Master Plan
- Provided City with a Reuse Program path forward



Reuse Pond
2013 Feasibility Study

- Topographic Survey
- Environmental Site Investigation
- Geotechnical
- Floodplain Analysis
- Regulatory Requirements
- Infrastructure Requirements

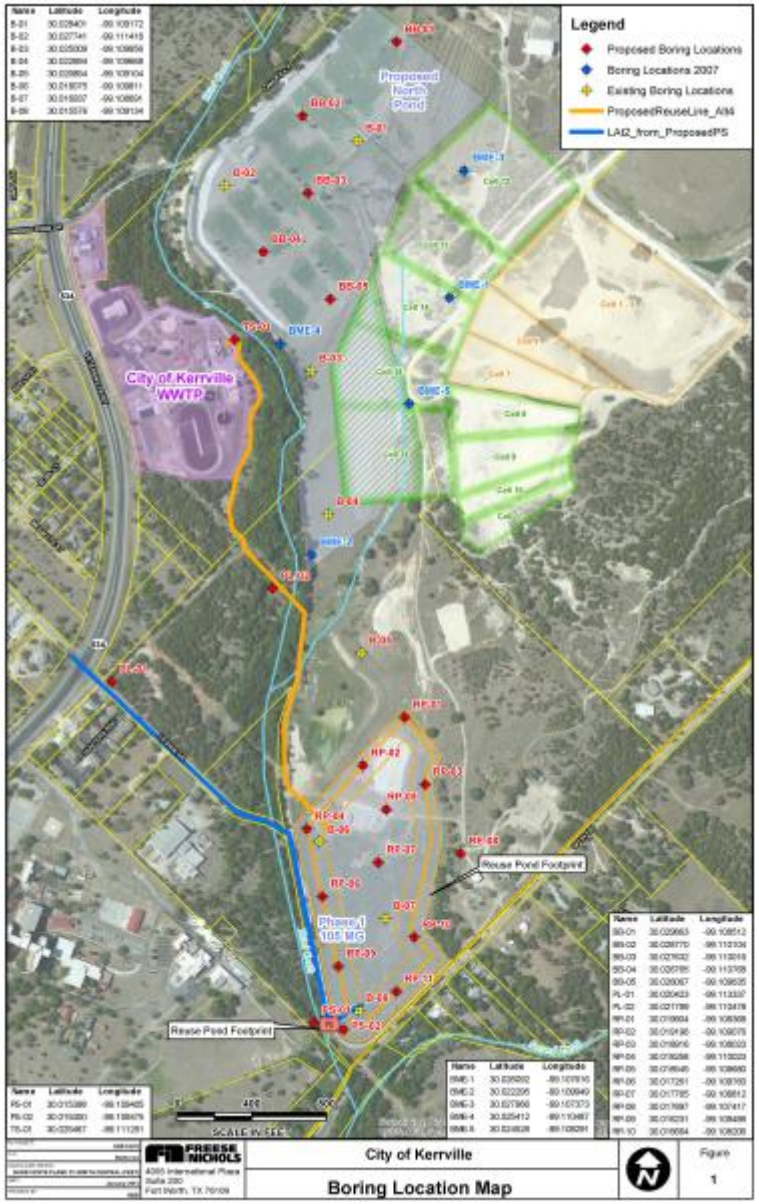


Environmental Site Visit

- Site Visit on October 22, 2013
- Summary of Findings:
  - Proposed System could be designed under USACE Nationwide Permit
  - No endangered species
  - No endangered flowering plants

Geotechnical Investigation

- 8 soil boring locations
- Max excavation depths for ponds based on groundwater and rock
- Suitable material is available for pond construction
- Recommend low permeability liner system



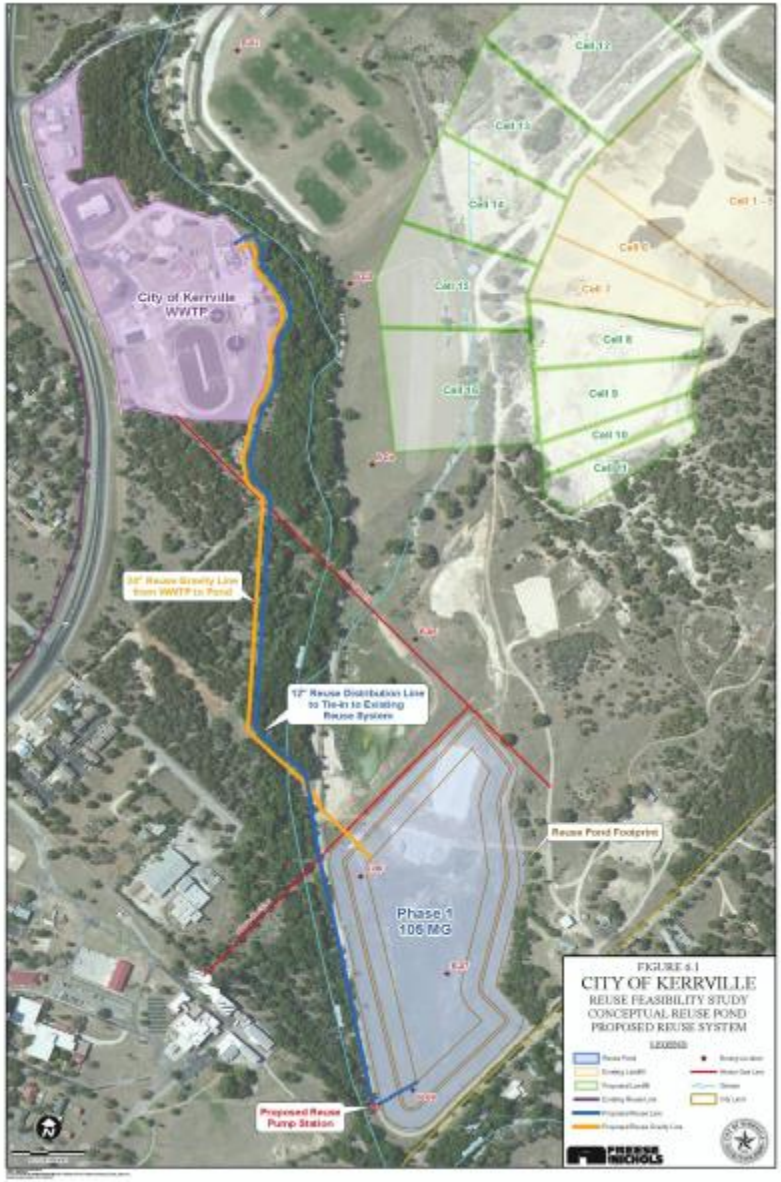
Floodplain Analysis

- Determine impacts of Ponds on 100-year floodplain
- Proposed North Pond flood stage increases would affect additional property
  - Floodplain or pond layout modifications would be required
- South Pond flood stage increases are contained on City property

✓ South Pond is most feasible alternative

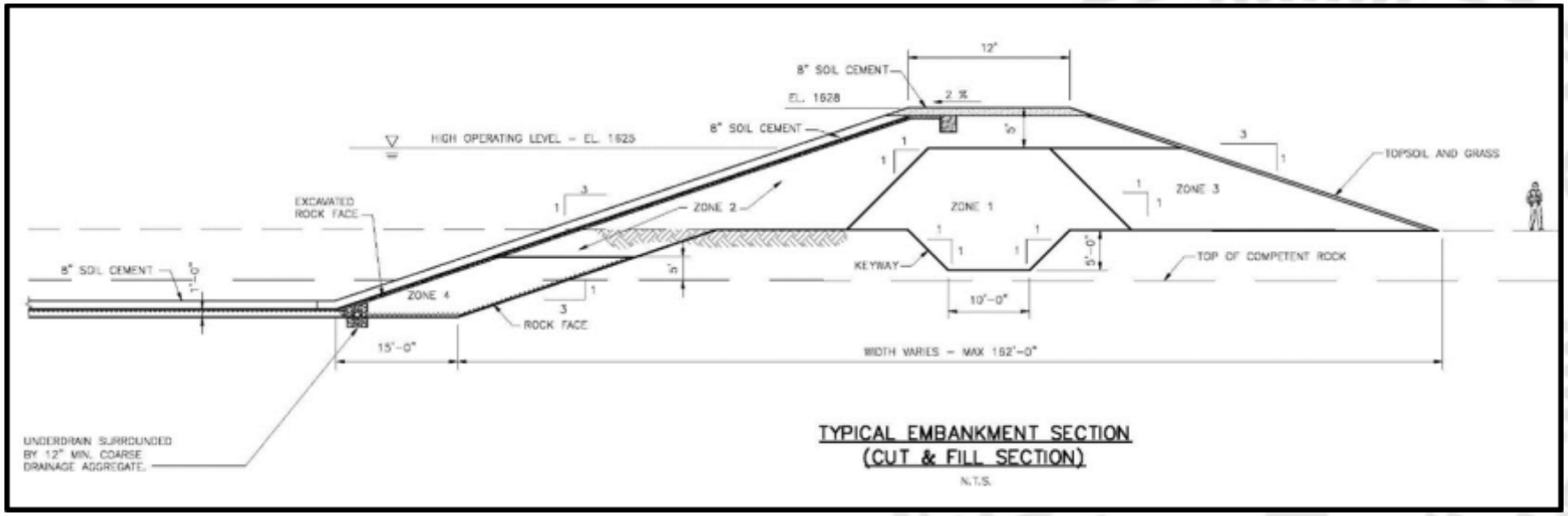
Water Reuse
Infrastructure Requirements

- 105 MG Storage for Proposed South Pond
  - Berm Elevation: 1628’
  - Max Berm Height: 26’
- 24” Gravity Pipe from WWTP
- Reuse Pump Station
- 12” Transmission Pipe to Existing Reuse System



Reuse Pond Embankment

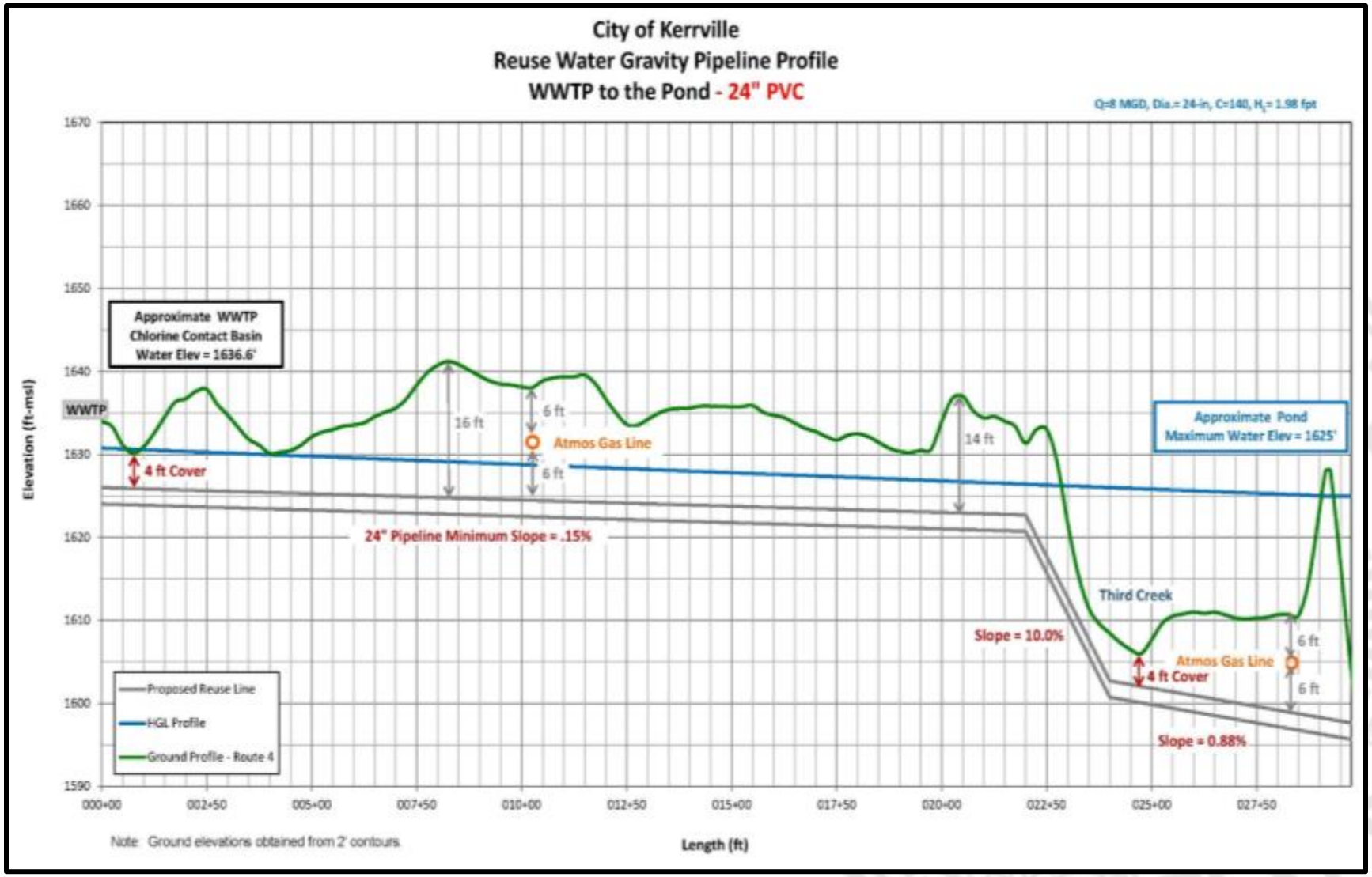
- Remove the Reuse Storage Ponds from the Floodplain
  - Berm Elevation = 1628’
  - Max Height above natural ground = 26’



105 MG Reuse Pond
Under Design

Reuse Pond Pump Station Under Design

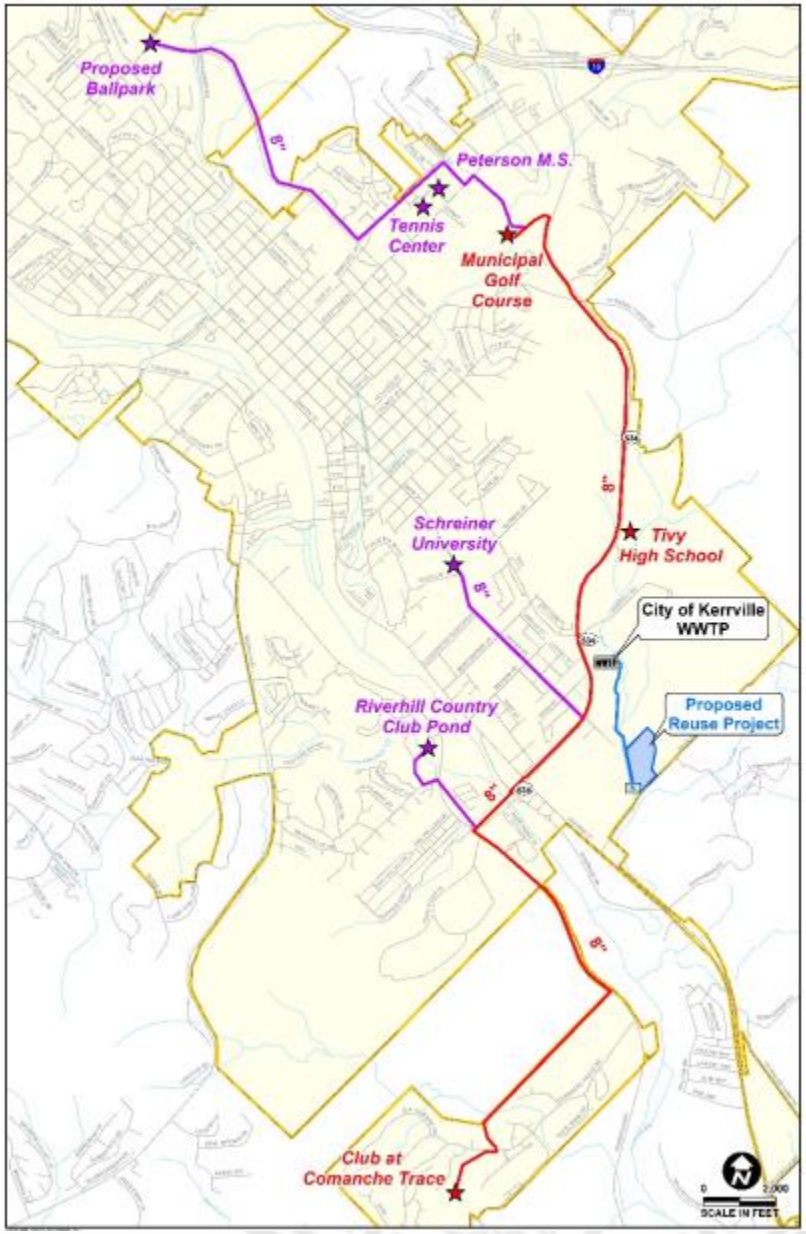
Reuse Pond Gravity Pipeline



Extension of Reuse Pond Pipelines

Distribution System Extension

- Developed a reuse system hydraulic model
- Identified potential future non potable reuse customers
- Evaluated preliminary routes for reuse line extensions
- 6 miles of new 8”/10” pipeline
- Additional pressure plane
- SCADA controlled delivery



Reuse Pond Infrastructure Costs

Item	Reuse Infrastructure Components	Cost (2014 $)
1	105 MG Reuse Pond	$9,389,000
2	3000 LF of 24” Gravity Line from WWTP	$767,000
3	Reuse Pump Station	$1,611,000
4	4500 LF of 12” Pipeline to Existing Reuse System	$620,000
5	30000 LF Extension of 8”/10” Reuse Distribution Pipeline	$2,784,000
6	Construction Contingency @ 20%	$3,034,200
	Total:	*$18,205,200*

Reuse Pond
Design and Construction Schedule

Pond and Pump Station

- Design 60% completed
- Construction plans ready for bid in June
- City will bid Pond Construction in June 2016
- City will bid Pump Station Construction in 2017

Distribution Lines Extensions

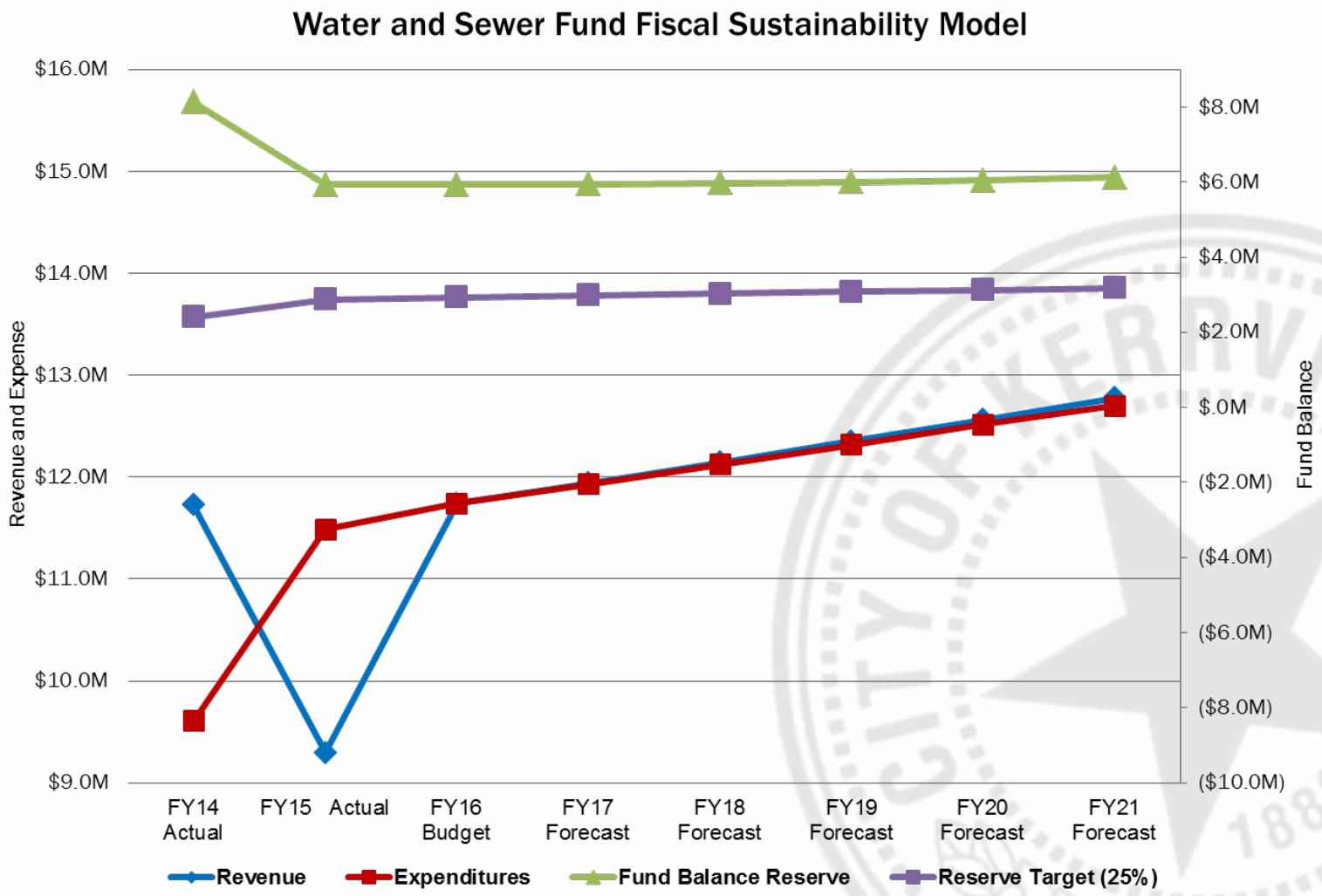
- Design to be awarded in spring 2016
- Construction to be bid with Pump Station project

Construction Schedule

- Pond construction July 2016 to December 2017
- Pump station/ Line construction February 2017 – December 2017

Project Overview Financials

5 Year Fiscal Forecast



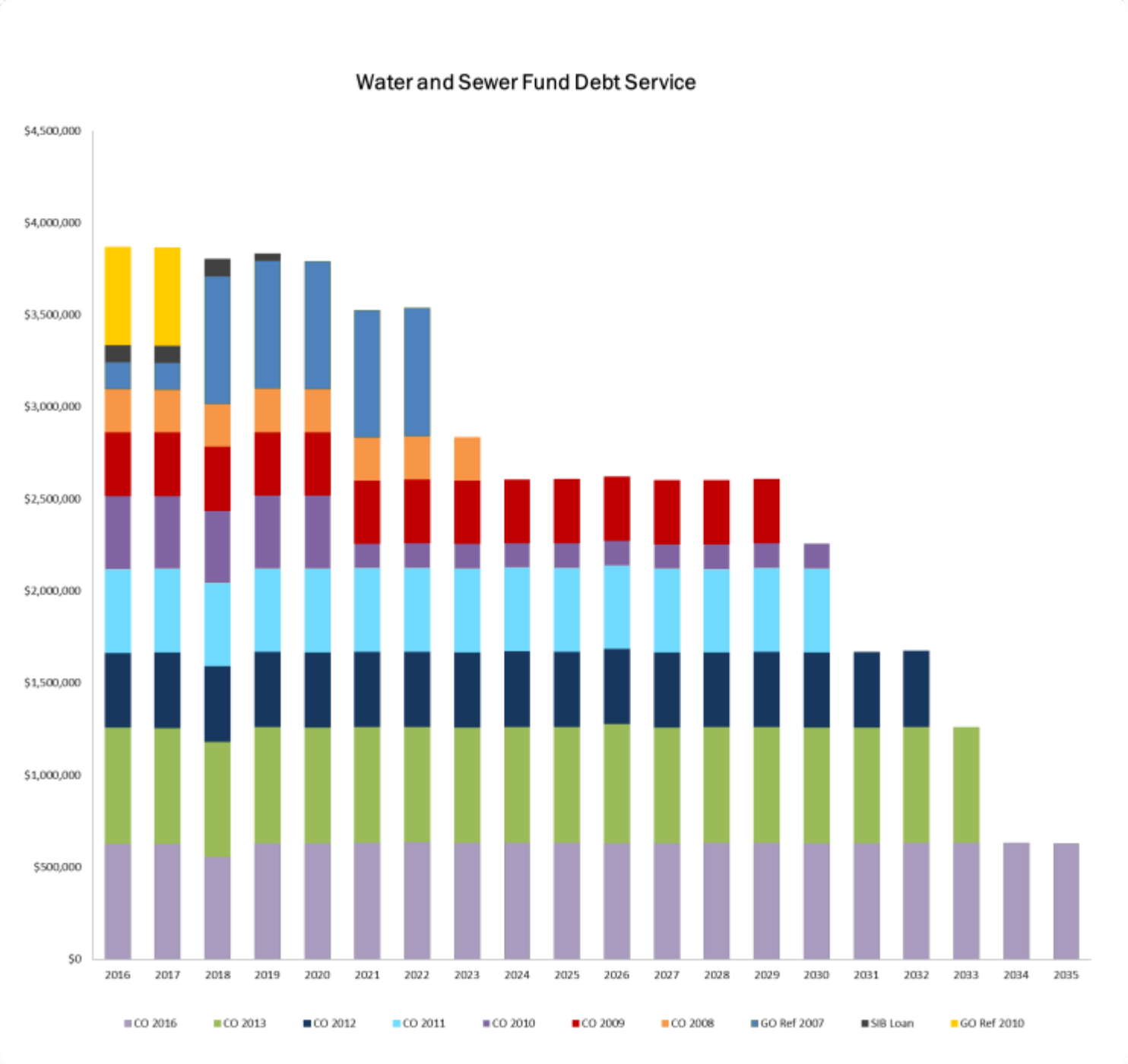
WATER AND SEWER FUND - FIVE YEAR FISCAL FORECAST

	FY15 Preliminary Actual	FY16 Budget	FY17 Forecast	FY18 Forecast	FY19 Forecast	FY20 Forecast	FY21 Forecast
BEGINNING FUND BALANCE	$ 8,127,701	$ 5,935,945	$ 5,935,945	$5,947,342	$ 5,970,194	$ 6,004,551	$ 6,050,453
REVENUES							
Service Revenues	9,076,406	11,542,286	11,738,505	11,938,059	12,141,006	12,347,404	12,557,309
Interest and Miscellaneous	191,919	199,875	203,273	206,729	210,243	213,817	217,452
Transfer In	23,802	-	-	-	-	-	-
TOTAL REVENUES	9,292,128	11,742,161	11,941,778	12,144,788	12,351,249	12,561,221	12,774,761
EXPENDITURES							
Personnel	2,834,714	2,964,265	3,038,372	3,114,331	3,192,189	3,271,994	3,337,434
Supplies	614,081	699,449	708,542	717,753	727,084	736,536	746,111
Maintenance	777,962	595,953	603,700	611,548	619,499	627,552	635,710
Services	818,944	834,399	845,246	856,234	867,365	878,641	890,064
Other Expenses	114,295	471,969	478,105	484,320	490,616	496,994	503,455
Capital Outlay	156,515	166,150	168,310	170,498	172,714	174,960	177,234
Operating Transfers Out	6,167,373	6,009,976	6,088,106	6,167,251	6,247,425	6,328,642	6,410,914
TOTAL EXPENDITURES	11,483,884	11,742,161	11,930,380	12,121,936	12,316,893	12,515,319	12,700,922
CHANGE IN NET POSITION	(2,191,756)	-	11,397	22,852	34,357	45,902	73,840
ENDING FUND BALANCE	$ 5,935,945	$ 5,935,945	$ 5,947,342	$ 5,970,194	$ 6,004,551	$ 6,050,453	$ 6,124,292
Reserve Target (25%)	2,870,971	2,935,540	2,982,595	3,030,484	3,079,223	3,128,830	3,175,230
Over (Under) Reserve	3,064,974	3,000,404	2,964,747	2,939,710	2,925,328	2,921,623	2,949,062
Actual Reserve %	51.7%	50.6%	49.9%	49.3%	48.8%	48.3%	48.2%

FUND BALANCE indicates only UNRESTRICTED fund balance.

Key assumptions for FY17 - FY21:

1. Utility rates held for each fiscal year.
2. Revenues grows at 1.7% annually
3. Personnel expenses grow by 2.0 to 2.5% annually (average annual increase of 3.0%), other expenses by 1.3% annually


Water and Sewer Fund Debt Service
$4,500,000
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
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2016
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CO 2016
CO 2013
CO 2012
CO 2011
CO 2010
CO 2009
CO 2008
GO Ref 2007
SIB Loan
GO Ref 2010

Water and Sewer Fund Debt Schedule

	SIB Loan	GO Ref 2007	CO 2008	CO 2009	CO 2010	GO Ref 2010	CO 2011	CO 2012	CO 2013	CO 2016	Total Payments
2016	$93,536	$146,465	$233,780	$345,625	$401,148	$530,358	$451,744	$406,615	$629,925	$629,213	$3,868,407
2017	$93,536	$145,688	$232,786	$344,250	$396,998	$532,134	$454,094	$411,115	$628,250	$628,150	$3,866,999
2018	$93,536	$694,250	$231,625	$347,650	$392,698		$451,144	$410,415	$626,500	$557,050	$3,804,867
2019	$36,045	$695,526	$235,298	$345,825	$396,673		$450,344	$409,615	$629,675	$632,750	$3,831,751
2020		$693,084	$233,638	$343,263	$400,123		$454,144	$408,715	$627,700	$630,900	$3,791,566
2021		$692,474	$231,812	$344,863	$133,048		$452,344	$407,715	$630,650	$633,750	$3,526,654
2022		$696,303	$234,819	$345,475	$134,898		$455,144	$406,615	$628,450	$636,150	$3,537,853
2023			$232,493	$345,075	$136,573		$452,344	$408,865	$626,175	$633,100	$2,834,624
2024				$344,275	$132,822		$454,144	$410,865	$627,600	$634,750	$2,604,456
2025				$347,975	$134,073		$455,344	$407,615	$627,600	$635,950	$2,608,556
2026				$346,175	$134,873		$450,944	$409,240	$647,400	$631,450	$2,620,081
2027				$343,975	$135,473		$451,144	$410,615	$627,000	$631,850	$2,600,056
2028				$346,113	$135,758		$450,744	$406,740	$626,400	$635,825	$2,601,579
2029				$347,225	$135,838		$454,744	$407,740	$629,250	$633,200	$2,607,996
2030					$135,525		$452,944	$408,490	$626,763	$632,750	$2,256,471
2031								$409,750	$627,638	$631,850	$1,669,238
2032								$410,000	$628,138	$635,500	$1,673,638
2033									$626,775	$633,550	$1,260,325
2034										$631,150	$631,150
2035										$628,300	$628,300

Capacity Analysis for Utility Supported Improvements
Projected Debt Service Including Series 2016 Bond Issuance and Projected Series 2017 Bond Issuance

FYE	Net Revenues Available for Debt Service	Estimated Growth	Prior Utility Supported Debt Service	New 2016 Debt Service ($9,590,000)	2017 Debt Service Added ($8,500,000)	Projected Total Debt Service	Projected Total Debt Service Coverage
2015	$ 7,723,600	0.00%	$ 3,235,731	$ -	$ -	$ 3,235,731	2.39
2016	$ 7,723,600	0.00%	$ 3,239,194	$ 629,213	$ -	$ 3,868,407	2.00
2017	$ 7,723,600	0.00%	$ 3,238,849	$ 628,150	$ 550,000	$ 4,416,999	1.75
2018	$ 7,723,600	0.00%	$ 3,247,817	$ 557,050	$ 550,000	$ 4,354,867	1.77
2019	$ 7,723,600	0.00%	$ 3,199,001	$ 632,750	$ 550,000	$ 4,381,751	1.76
2020	$ 7,723,600	0.00%	$ 3,160,666	$ 630,900	$ 550,000	$ 4,341,566	1.78
2021	$ 7,723,600	0.00%	$ 2,892,904	$ 633,750	$ 550,000	$ 4,076,654	1.89
2022	$ 7,723,600	0.00%	$ 2,901,703	$ 636,150	$ 550,000	$ 4,087,853	1.89
2023	$ 7,723,600	0.00%	$ 2,201,524	$ 633,100	$ 550,000	$ 3,384,624	2.28
2024	$ 7,723,600	0.00%	$ 1,969,706	$ 634,750	$ 550,000	$ 3,154,456	2.45
2025	$ 7,723,600	0.00%	$ 1,972,606	$ 635,950	$ 550,000	$ 3,158,556	2.45
2026	$ 7,723,600	0.00%	$ 1,968,631	$ 631,450	$ 550,000	$ 3,150,081	2.45
2027	$ 7,723,600	0.00%	$ 1,968,206	$ 631,850	$ 550,000	$ 3,150,056	2.45
2028	$ 7,723,600	0.00%	$ 1,965,754	$ 635,825	$ 550,000	$ 3,151,579	2.45
2029	$ 7,723,600	0.00%	$ 1,974,796	$ 633,200	$ 550,000	$ 3,157,996	2.45
2030	$ 7,723,600	0.00%	$ 1,623,721	$ 632,750	$ 550,000	$ 2,806,471	2.75
2031	$ 7,723,600	0.00%	$ 1,037,388	$ 631,850	$ 550,000	$ 2,219,238	3.48
2032	$ 7,723,600	0.00%	$ 1,038,138	$ 635,500	$ 550,000	$ 2,223,638	3.47
2033	$ 7,723,600	0.00%	$ 626,775	$ 633,550	$ 550,000	$ 1,810,325	4.27
2034	$ 7,723,600	0.00%	$ -	$ 631,150	$ 550,000	$ 1,181,150	6.54
2035	$ 7,723,600	0.00%	$ -	$ 628,300	$ 550,000	$ 1,178,300	6.55
2036	$ 7,723,600	0.00%	$ -	$ -	$ 550,000	$ 550,000	14.04
	TOTAL		**$ 43,463,110**	**$ 12,577,188**	**$ 11,000,000**	**$ 67,040,298**	

Direct Potable reuse

Direct Potable Reuse

- Long term water supply
- Recovery of remaining effluent supply (200MG)
- Potential cost analysis of 2nd pond vs DPR
- Project Deal Killers
  - Ability to inject treated water into ASR
  - No blending requirement for injection
- Project Philosophy
  - Step or phasing approach

Direct Potable Reuse (DPR)

WHAT IS DIRECT POTABLE REUSE?

- Incorporation of wastewater-derived water into the source of a drinking water supply without an “environmental barrier”

WHO IS USING DPR IN TEXAS?

- Colorado River Municipal Water District (In service since April 2013)
- City of Wichita Falls (Operated 12 months during drought)
- City of Brownwood (Approved but not implemented yet)
- City of El Paso (Pilot testing in progress)

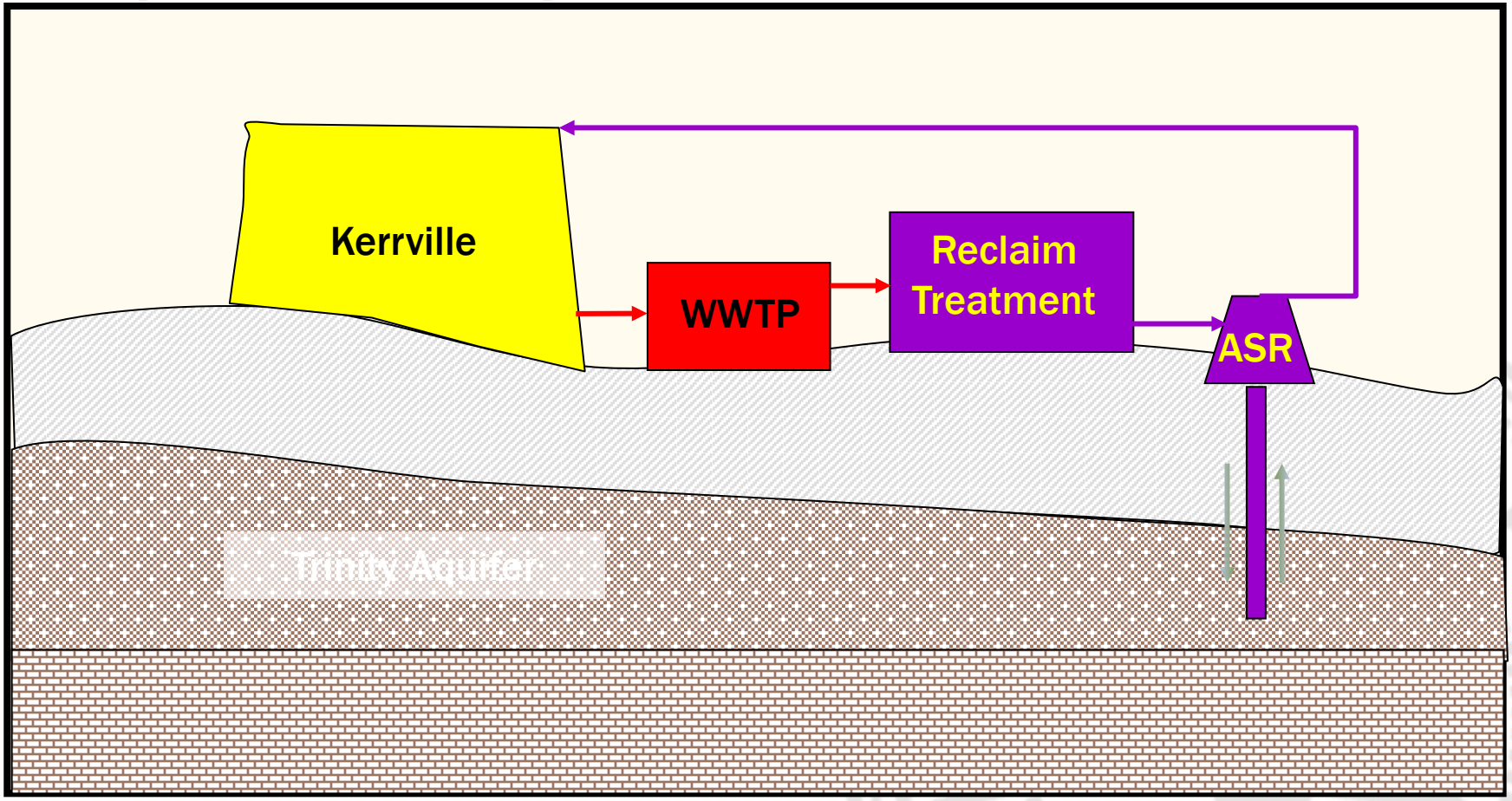
City of Wichita Falls - Cypress Water Treatment Plant

Direct Potable Reuse: Current Regulatory Requirements

- City has existing non-potable reuse authorization from Texas Commission on Environmental Quality (TCEQ)
- No regulatory guidelines or rules published for potable reuse in Texas
- TCEQ has developed a recommended DPR sampling plan
- Direct reuse projects considered on case-by-case basis
- City met with TCEQ in Oct 2014

Colorado River MWD – Big Spring Raw Water Production Facility

Direct Potable Reuse: City of Kerrville Proposed Concept



- **Keys to Kerrville DPR Concept:**
  - Have to be able to use ASR
  - No blending with other water

Direct Potable Reuse: Implementation Plan

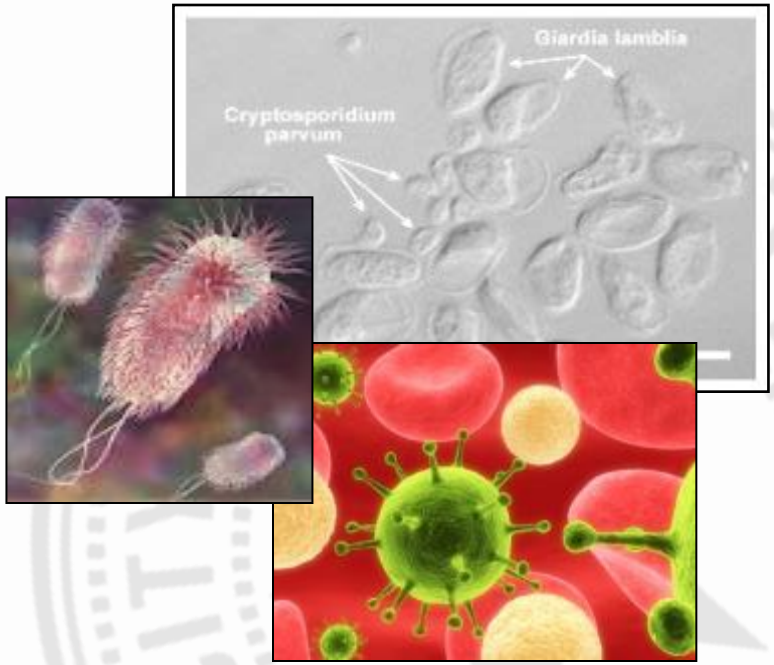
- **KERRVILLE DPR PHASE 1**
  - Water Quality Testing and Analysis
  - Evaluation of Treatment Concept
  - Regulatory/Public Coordination
- **KERRVILLE DPR PHASE 2**
  - ASR Evaluation
  - Treatment
    - Pilot testing
    - Residuals handling plan
  - Determine Monitoring and Operations Plan
  - Application for Approval of Source Water
  - Regulatory/Public Coordination

Direct Potable Reuse: Water Quality Sampling Plan

- One year of sampling for appx 60 parameters
- $75,000 sampling cost

What to Test for?

- **Microbes**
  - Bacteria
  - Viruses
  - Protozoans
- **Chemicals**
  - Disinfection By-products
  - Inorganics and Organics
- **Other Constituents**
  - TDS, TSS, pH, etc



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