

Fauquier County Water & Sanitation Authority

Capital Improvement Program

FY 2018 Approved Budget

Project	5 Year Projections					TOTAL
	FY2018	FY2019	FY 2020	FY 2021	FY 2022	
New Baltimore						
Exploratory						
Exploratory well work (County)	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 500,000
Supply						
H-3 Connection		\$ 100,000				\$ 100,000
K well				\$ 2,596,872		\$ 2,596,872
Storage						
Baldwin Ridge 2nd Tank	Carryover	\$ 563,000				\$ 563,000
New Baltimore modeling	\$ 100,000					\$ 100,000
New Baltimore Automation	\$ 250,000					\$ 250,000
Treatment						
Rogues Road Treatment - Phase 1	\$ -	\$ 1,036,028				\$ 1,036,028
Howell Manor treatment - Iron/Mn - Greensand filters	Carryover					\$ -
Mill Run treatment - Iron/Mn - Greensand filters	Carryover					\$ -
High Rock treatment		\$ 275,000	\$ 50,000			\$ 325,000
Terranova treatment		\$ 275,000	\$ 50,000			\$ 325,000
Bealeton						
A-1 well (70 gpm), line (3,400 feet) and automation				\$ 1,354,360		\$ 1,354,360
A-3 well (135 gpm), line (4,000 feet) and automation				\$ 1,487,640		\$ 1,487,640
Marshall						
Project 1 - Rehabilitation Salem 4	\$ 664,000					\$ 664,000
Project 2 - Salem 3 to 4	\$ 867,000	\$ 867,000				\$ 1,734,000
Exploratory well work (County)	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 500,000
Vint Hill						
Interconnection NB water (Developer)		\$ 200,000				\$ 200,000
Water Reuse Project (County/Dev)	\$ 500,000					\$ 500,000
North End LS SCADA controls	\$ 250,000					\$ 250,000
Opal						
Phase 1A, 250 gpm well, 250,000 gal storage tank (County Funded)	\$ 500,000	\$ 2,700,000				\$ 3,200,000
Plains						
The Plains - Nitrate Treatment (Ion Exchange)			250,000			\$ 250,000
Bethel						
Nitrate Treatment (Ion Exchange)			\$ 300,000			\$ 300,000
Botha						
Nitrate Treatment (Ion Exchange)				\$ 300,000		\$ 300,000
FCWSA	\$ 700,000	\$ 750,000	\$ 750,000	\$ 400,000	\$ 100,000	\$ 2,700,000
Unsigned cash funds	\$ 50,000			\$ 350,000	\$ 650,000	\$ 1,050,000
County Funded	\$ 600,000	\$ 2,800,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 3,700,000
Loans	\$ 1,531,000	\$ 2,466,028		\$ 5,438,872		\$ 9,435,900
Unfunded						
Developer Funded	\$ 500,000	\$ 200,000				\$ 700,000
Total	\$ 3,331,000	\$ 6,216,028	\$ 850,000	\$ 5,938,872	\$ 200,000	\$ 16,535,900

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	New Baltimore

Project Description:

The New Baltimore Regional Water System consist of eleven (11) drilled wells, various pressure tanks, a 5,000 gallon baffled storage tank (Terranova), a 350,000 gallon storage tanks (Rogues Road), a 760,000 gallon storage tank (Baldwin Ridge), booster pumps and hypochlorination/sequestration treatment.

The waterworks is permitted for a design capacity of 1,105,600 gpd due to limited source capacity. The design capacity 1,105,600 gpd equates to approximately 2,764 equivalent residential connections (ERC).

Supply Summary

The following is a summary table of potential source supply wells.

Source	GPM	GPD	ERC
Mosby Woods Redrill	52	41,600	104
G-4	135	108,000	270
All Remaining Known Wells Require Treatment			
H-3	60	48,000	120
K	200	160,000	400
E-6	350	280,000	0
E-7	75	60,000	150
E-3	85	68,000	170
M 6A	100	80,000	200

Note that the Mosby Woods well was originally in the operating permit but was taken offline as of March 2009 due to the reduction of pumping due to grit and sand. The well is considered inactive by VDH regulations and has been redrilled as a new source.

Another well G-4 has been identified as a new source. Finally, the most important issue is that there must be continued Phase III-V hydro-geological work to develop the groundwater in New Baltimore.

PROJECT DATA SHEET

Demand Summary

Over the next six years, the total projected demand is an additional 524 connections or 209,600 gpd.

Supply Projects

There are no supply projects scheduled in FY 2018.

Supply projects are scheduled in the 5 year CIP to include H-3 (FY 19) and the K or E Wells (FY20/21). These wells will require treatment systems.

The other options to increase supply capacity is to pursue exploratory drilling in areas I, N, and C. This is a 7 – 10 year timeframe to bring online a new water source given that there WSA will need to procure the land and easements for wells in these areas.

Storage

New Baltimore storage consists of a 5,000 gallon baffled storage tank (Terranova), a 350,000 gallon storage tank (Rogues Road), and a 760,000 gallon storage tank (Baldwin Ridge). The storage capacity is 1,327,000 gpd or 3,319 ERC.

Permit	3,319
Connections	2,885
Available	434

A co-located storage tank located at the Baldwin Ridge site will be built in FY17/18. While it will be a 750,000 gallon tank the effective added capacity will be approximately 350,000 gallons until the pump station is built in FY 19 to allow full tank usage for both tanks. Additional ERCs for storage tank capacity without the pump station is 1,750 ERCs.

Treatment

There are two types of treatment projects: those related to improving the water quality for existing wells and treatment related to bringing on additional supply capacity.

Water Quality Improvement Projects – Existing Wells

1. Howell Manor and Mill Run – FY 17/18

Howell Manor (161 gpm) and Mill Run (104 gpm) well treatment systems. These wells have water quality issues with iron and manganese. The wells are used only during high usage times and generally result in customer complaints for dirty water. A media based filtration system will be installed such as a green sand filter.

2. Terranova and High Rock – FY 19

Water Quality/Supply Projects

1. Rogues Road

WSA will be bringing on new capacity well G-4 into the centralized Rogues Road booster station which consists of G-2, G-3, H-1 wells. The G-2 well has high concentrations of total dissolved solids (TDS) and sulfate. Our permit requires running this well and blending this

PROJECT DATA SHEET

raw water with G-3 well. At this time we are looking at bringing on the G-4 well now and in the future H-1 well which had bacteria issues. Blending treatment option will be the first treatment option for the G-4 well. Additional chlorine and mixing option treatment may be the second step in the treatment to bring on H-1.

2. Baldwin Ridge Treatment

E wells (E7 – 75 gpm, back up wells E6 350 gpm, E3 – 85 gpm) or K Well (200 gpm)

If the K well is brought on line the well will need to be treated for high total dissolved solids, sulfates, manganese and hardness.

E wells: The High Rock well (312 gpm) has water quality issues with iron and slightly higher radionuclides. This well is currently pumped directly on a trunk line to Baldwin Ridge storage tank where it received blending treatment. Since this well discharge is on a trunk line to the storage tank and the well lot is of sufficient area this makes it a prime area for a centralized treatment system. WSA is reviewing the E area wells for the possibility to bring them on as additional capacity and to this site if treatment is needed. E-7 (75 gpm) is recommended to be blended with High Rock well. E-6 (350 gpm) interconnects with High Rock and has the same quality issues of Iron. E-3 (85 gpm) was recommended as a back up well and needs full testing.

WSA does not own any of the wells or property for the E or K wells.

Supply/Demand Assessment Summary

In the next five (5) years, the following source, storage and treatment facilities will need to be brought on line to meet the development demand:

1. H-1 well – complete FY 15
2. Mosby Woods well rehabilitation – FY 17
3. G-4 well – in progress, FY 17
4. Howell Manor and Mill Run well treatment, FY 17
5. Baldwin Ridge Storage Tank #2, FY 17/18
6. Rogues Road Treatment, FY 19
7. High Rock and Terranova well treatment, FY 19
8. Storage pumping FY 19
6. H-3 well, FY 19
7. K well (or E wells) plus treatment, FY 20/21

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Supply Budget Breakdown		
	FY 18	FY 2019 – FY2022
Exploratory	\$100,000	\$400,000
H-3 Well connection	\$ 0	\$100,000
K well or E wells	\$ 0	\$2,596,872
Total:	\$100,000	\$3,096,872

Supply Projects Total = \$3,196,872

Storage System Breakdown		
	FY 18	FY 2019 – FY2022
BR Storage Tanks Pump Station	\$ 0	\$563,000
System Automation	\$ 250,000	\$ 0
Modeling	\$ 100,000	
Total:	\$ 350,000	\$563,000

Storage Projects Total = \$ 913,000

Treatment Systems Budget Breakdown		
	FY 18	FY 2019 – FY2022
Rogues Road	\$ 0	\$1036028
Howell Manor	carryover	
Mill Run	carryover	
High Rock		\$250,000
Terranova		\$250,000
Total:	\$ 0	\$1,536,028

Treatment Projects Total = \$ 1,686,028

Service District Total = \$ 5,795,900

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	Bealeton

Project Description:

The Bealeton Regional Water System is supplied with groundwater from five (5) production wells; Mintbrook 1 (B-3), Mintbrook 2 (B-1), Mintbrook 4, (B-4), Meadowbrook 2 (MS-5) and Miller School for a total capacity of 569,600 gpd. There is a 500,000 gallon elevated storage tank, microfiltration treatment facility that includes hypochlorination/sequestration.

The waterworks is permitted for a design capacity of 569,600 gpd due to limited source capacity. The design capacity 569,600 gpd equates to approximately 1,424 ERC. The actual connections to the system are 1,324 making the current availabilities 100.

Supply

Meadowbrook #1 which is out of service due to arsenic exceedances will be redrilled and require 2,000 foot of line to be installed to the microfilter treatment facility. This work will be performed in FY 2017/8.

Future wells to be brought on due to demand will be A-1 and A-3 wells. These wells are anticipated to be brought online in FY 2020 and FY 2021, respectively.

PROJECT DATA SHEET

Supply

The water supply for Bealeton is detailed below with all hydrogeological work complete for this service district.

The future demand for the next 5 years is for an additional 415 connections or 166,000 gpd. In order to meet this supply the following wells will need to be brought into production:

FY 17/18 MS-3
 FY 20 A-1
 FY 21 A-3

This will provide the following additional capacity.

Wells	Capacity	ERC
MS-3	80,000	200
A-1	56,000	140
A-3	108,000	270
Total	244,000	610

Supply Budget Breakdown		
	FY 18	FY 2019 – FY2022
Meadowbrook Well 1	carryover	\$0
Meadowbrook Line	carryover	\$0
A-1 Well	\$0	\$1,354,360
A-3 Well	\$0	\$1,487,640
Total:	\$ 0	\$2,842,000

Project Total = \$2,842,000

Service District Total = \$2,842,000

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	Marshall

Project Description:

The waterworks consists of seven drilled wells (4 are inactive); treatment facilities consist for hypochlorination, corrosion control, sequestration, filtration for removal of iron and manganese; and storage facilities. This waterworks is permitted for a design capacity of 355,920 gpd or 889 ERC. The effective capacity due to inactive wells is 307,920 gpd or 770 ERC.

Supply

The water supply for Marshall is detailed below. Current connection is 713.

Source	GPM	GPD	ERC
Permitted and online			
Salem	50	72000	180
17/66 (2)	150	217200	543
Piedmont	13	18720	47
Permitted and Offline			
Lawrence (TCE)	35	20000	0
Potential New Sources			
Salem 3	125	100000	250

The future demand for the next 5 years is for an additional 572 connections or 228,800 gpd. Note that a developer will be responsible for bringing on supply for 350 ERC or 140,000 gpd. To address current supply issues Salem 3 well will be brought online and Salem 4 will be rehabilitated to ensure continuous operation and supply.

FY 17 Rehab Salem 4
 FY 18 Salem 3

PROJECT DATA SHEET

Marshall Status		
Permit	355,920	
Effective Supply	307,920	
Add Salem 3	100,000	
Total Supply	407,920	
Current Demand		285,200
Future Demand		108,800
Total Demand		394,000
Do Nothing	(86,080)	
Add Salem 3	13,920	

In addition, hydrogeological work will continue for this service district and needs to continue.

Supply Budget Breakdown		
	FY 18	FY 2019 – FY2022
Exploratory	\$ 100,000	\$ 400,000
Salem 4 Rehabilitation	\$ 664,000	\$ 0
Salem 3 Well	\$ 867,000	\$ 867,000
Total:	\$1,631,000	\$ 1,267,000

Project Total = \$ 2,898,000

Service District Total = \$2,898,000

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	Vint Hill Water System

Project Description:

The Vint Hill water system is privately owned and WSA is contracted to operate the system. The owner and WSA are exploring the possibility of hydraulically connecting the Vint Hill and New Baltimore water systems.

A preliminary engineering report (PER) is being developed based off a technical feasibility memorandum. The cost for this preliminary engineering is being jointly shared between the owner and WSA.

Engineering Project Budget Breakdown		
	FY 18	FY 2019 – FY2022
Total:	\$ 0	\$ 200,000

Project Total = \$ 200,000

Service District Total = \$ 200,000

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	Vint Hill Sewer System

Project Description:

The Vint Hill wastewater collection system is comprised of private and WSA owned lines and pump stations. When the private collection system is replaced it is agreed that WSA will assume ownership. The North End pump station will be a new pump station that a developer is building and the SCADA controls will be integrated into the WSA system. The developer will pay for the controls via availabilities and WSA will manage the SCADA project.

SCADA Project Budget Breakdown		
	FY 18	FY 2019 – FY2022
Total:	\$0	\$250,000

Project Total = \$ 250,000

Service District Total = \$ 250,000

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	Opal

Project Description:

The Opal Gateway was approved by the County Board of Supervisors on 2/21/14. Development approved for hotel, restaurant, office and stores totaling 200,000 square feet, 175 RV park and campground.

The water supply will be the first infrastructure project. A hydrogeological study was performed in May 2005 and a preliminary engineering report (PER) was performed in August 2008.

In August 2016, an Opal Public Water System Funding Agreement was signed between WSA and County BOS for \$ 500,000. WSA has 18 months to complete a design (February 2018).

In August 2016, permission was requested from the property owner to test the well.

In October 2016, authorization was approved and WSA located the well site.

In December 2016, a yield and drawdown test of the well was completed and a complete Water quality tests were performed. Report received March 2017.

In FY 18, WSA will complete the Preliminary Engineering Report and Design.

This water system will be County funded and is in their Capital Improvement Budget.

Phase 1A Well and Storage Tank (County Funded) Budget Breakdown		
	FY 18	FY 2019 – FY2022
Total:	\$500,000	\$2,700,000

Project Total = \$ 3,200,000

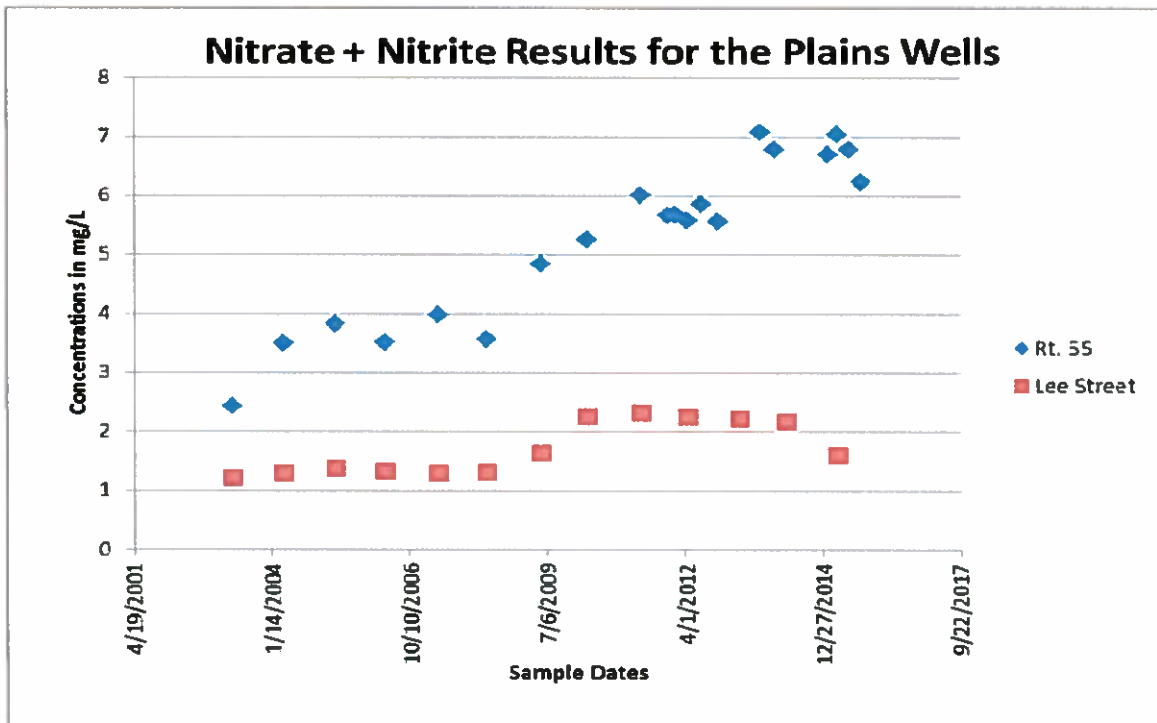
Service District Total = \$3,200,000

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	The Plains

Project Description:

The Route 55 well has nitrate/nitrite levels that are approaching the Virginia Department of Health's maximum contaminant level of 10 mg/l.



Treatment

A treatment system will be installed to reduce the nitrates and improve the water quality.

Treatment System Budget Breakdown		
	FY 18	FY 2019 – FY2022
Total:	\$0	\$ 250,000

Project Total = \$ 250,000

Service District Total = \$ 250,000

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	Bethel

Project Description:

Bethel water system has a nitrite/nitrate that is greater than half the Virginia Department of Health's primary maximum contaminant level (PMCL) (10 mg/l).

A treatment system will help to remove/reduce the nitrate/nitrite levels and improved the overall quality of the water.

Treatment System Budget Breakdown		
	FY 18	FY 2019 – FY2022
Total:	\$ 0	\$300,000

Project Total = \$ 300,000

Service District Total = \$ 300,000

PROJECT DATA SHEET

Type:	CIP
Title:	System Overview
Fiscal Year:	2018-2022
Service District:	Botha

Project Description:

The Botha system is being tested on a monthly basis since 2004 per an agreement with the operational agreement with the County. The nitrate levels are approximately half the primary maximum contaminant limit (PMCL) of 10 mg/l. A treatment system to remove/reduce nitrates may be necessary in the future.

This water system is owned by Fauquier County and operated by WSA. If a treatment system is necessary then it would be funded by the County.

Treatment System Budget Breakdown		
	FY 18	FY 2019 – FY2022
Total:	\$0	\$300,000

Project Total = \$ 300,000

Service District Total = \$ 300,000