

Metropolitan Sewerage District of Buncombe County

Asheville, North Carolina



Presentation to: Asheville Rotary



March 3, 2021



1. MSD Organization



MSD HISTORY

- MSD was formed in 1962 by State Statute as a special District with the sole purpose to collect and treat wastewater and to eliminate the direct discharges to the surrounding rivers and streams.
- Between 1962 and 1989 MSD built over 100 miles of large interceptor lines and a 25 MGD treatment plant.
- In 1968 the Treatment Plant was completed and we began treating the wastewater from the various local governments in the region. The Treatment Plant was later upgraded to a 40 MGD Plant in the mid 1990's.
- In 1990 all the local governments and special districts gave all of their collection lines to MSD for ownership and maintenance in agreements we call "Sewer Consolidation."
- MSD assumed over 720 miles of these small local collection lines which were in poor condition, many of which were installed in the 1920's.



Consolidation of Fifteen Separate Sewer Systems in 1990

Five Municipalities

- City of Asheville
- Town of Biltmore Forest
- Town of Black Mountain
- Town of Montreat
- Town Of Weaverville



Over 170,000 people

Ten Special Districts

- Beaverdam Water and Sewer District
- Busbee Sanitary Sewer District
- Caney Valley Sanitary Sewer District
- Crescent Hill Sanitary Sewer District
- Enka-Candler Water and Sewer District
- Fairview Sanitary Sewer District
- Venable Sanitary District
- Skyland Sanitary Sewer District
- Swannanoa Water and Sewer District
- Woodfin Sanitary Water and Sewer District



MSD Board of Directors

Governed by a fourteen-member Board appointed by the following entities:

City of Asheville (3)

Buncombe County(3)

Henderson County (2)

Biltmore Forest

Black Mountain

Montreat

Weaverville

Woodfin Sanitary Water and Sewer District

Town of Woodfin

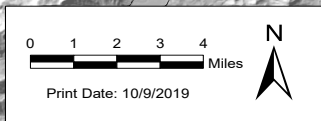


2. System Overview



METROPOLITAN SEWERAGE DISTRICT AND CANE CREEK WATER AND SEWER DISTRICT BOUNDARIES

EXHIBIT 2
PAGE 1 OF 2



Legend

- Buncombe County
- Henderson County
- Metropolitan Sewerage District Service Area
- CCWSD Service Area

MSD Service Area
= 215 sq. mi.

CCWSD Service
Area = 49 sq. mi.

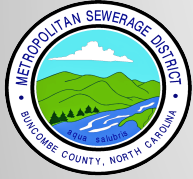


Collection System Overview

- The MSD service area includes both incorporated and the unincorporated parts of Buncombe County. The northern portion of Henderson County (CCWSD) .
- The MSD service area is over 264 square miles.
- Over 55,000 Customer Accounts.
- Since taking over the member agency collection systems in 1990, MSD has reinvested over \$400 Million in replacing more than 1,118,000 feet of sewer mains (over 25% of Original System).



3. MSD Operations



Collection System



- Over 1,120 miles of sewer mains
- 40 pump stations
- Over 33,000 manholes
- 264 square mile service area
- Preventative maintenance cleaning and CCTV 15% - 20% of system per year
- More than 1,118,000 feet of sewer line replaced since 1990.
- Replace 50,000 feet per year of sewer lines



Customer Service Response

The MSD service area is over 260 square miles.

- MSD created a First Response Team to cut down in response time to customer calls and system emergencies.
- In FY 2020 the average response time of 31 minutes to customer service requests during regular working hours.
- During this same time period the average response time was 38 minutes to customer service requests after hours with the Night First Responder and Night Crew.



MSD Treatment Plant



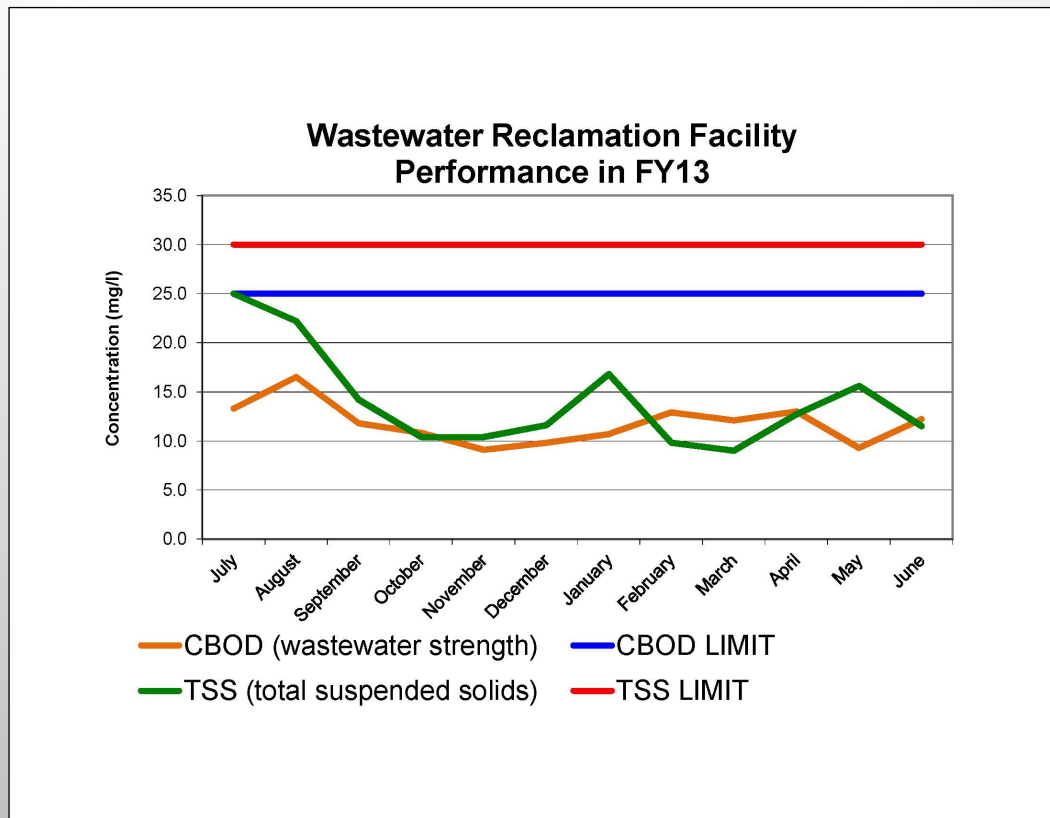


Treatment Plant

- 1987 Plant expansion to 40 MGD completed (65 MGD Peak)
- Current Average Daily Flow 20 MGD
- 152 Rotating Biological Contactors (RBC)—largest in world
- 2880 KW Hydroelectric Generation Facility
- 4 MW Diesel Generator Back-up



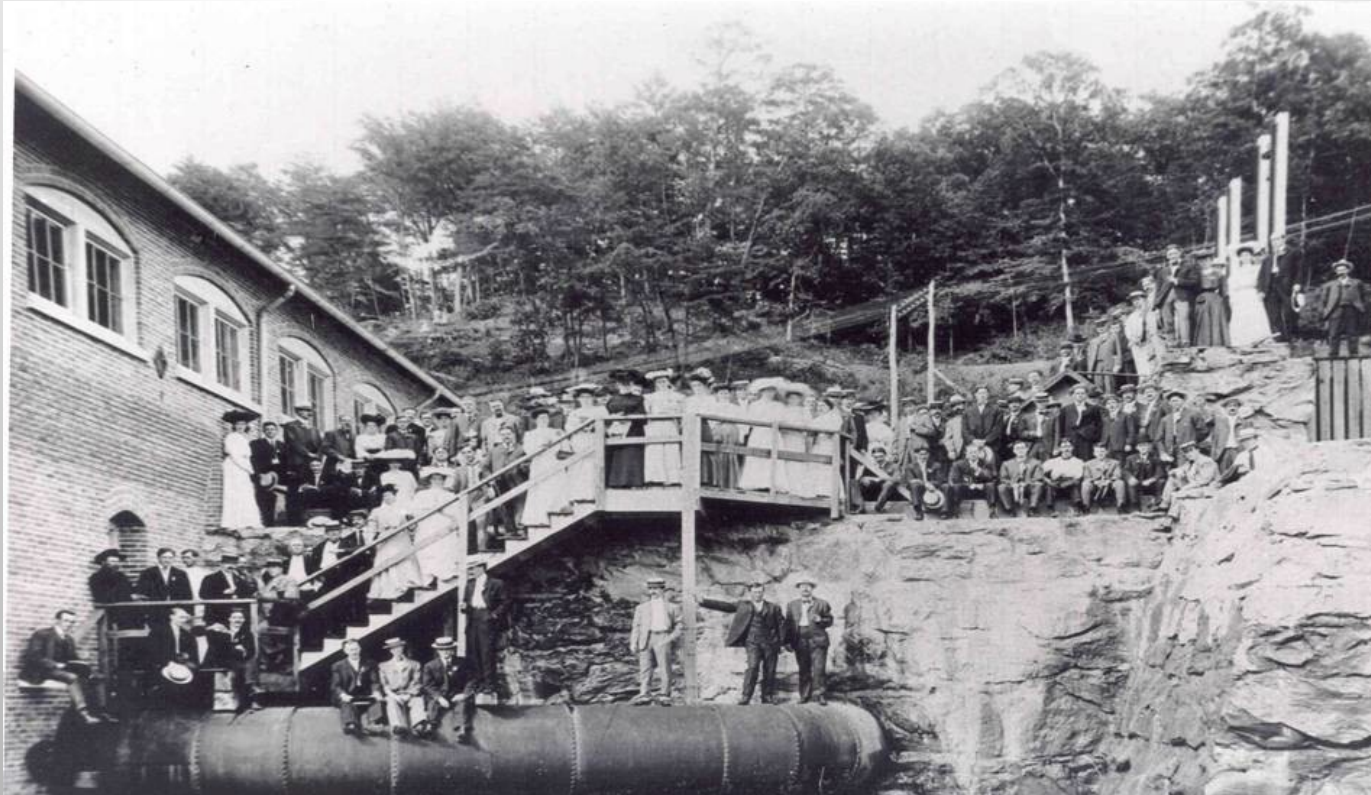
Regulatory Compliance at the Treatment Plant



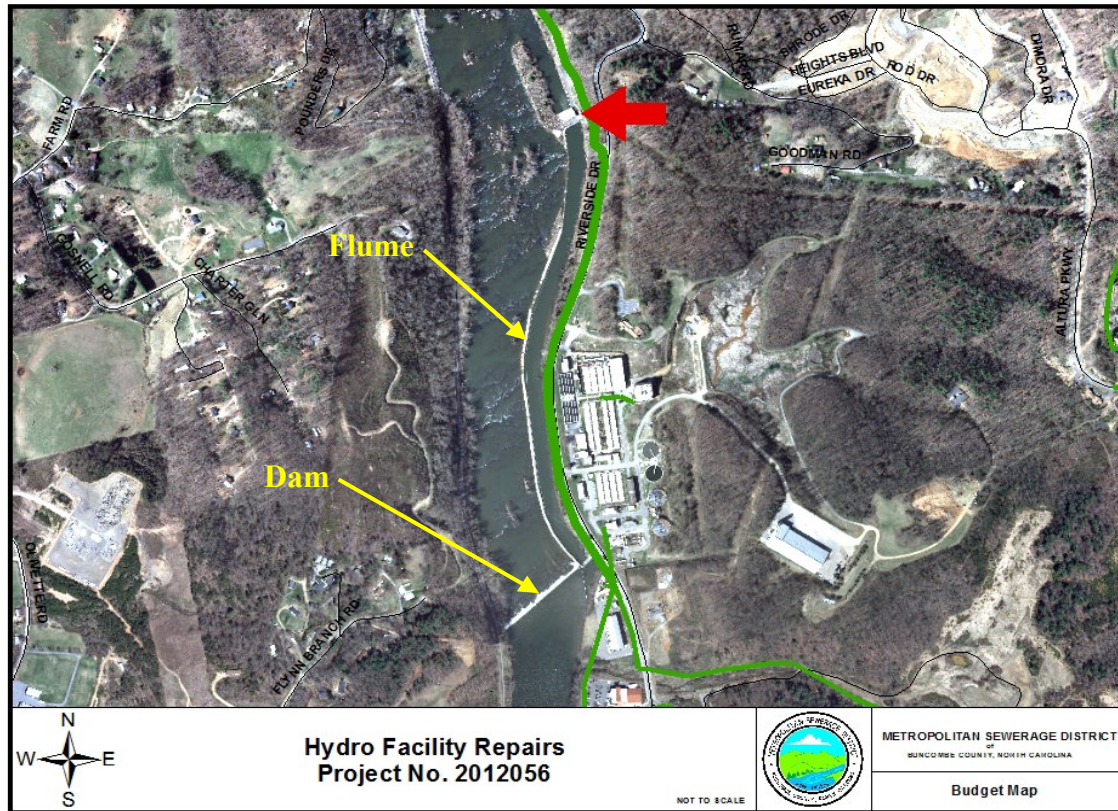
FY 2014 TSS average = 9.8 mg/l and FY 2015 TSS average = 8.7 mg/l



Hydroelectric Generation Facility



1986 Reconstructed Craggy Dam Hydro Plant (Originally Built 1903)



Hydro Facility Repairs
Project No. 2012056

NOT TO SCALE



METROPOLITAN SEWERAGE DISTRICT
BUNCOMBE COUNTY, NORTH CAROLINA

Budget Map



Current Hydroelectric Production



- Can Generate 2880 KW
- FY 2015 Avoided Power Cost \$435,000



One of three turbine blades - variable pitch.



4. Capital Improvement Program



Capital Improvement Program

Background

- A Capital Improvement Program Committee comprised of representatives of all of our member agencies makes annual recommendations to the Board regarding program priorities.
- The District has replaced or rehabbed nearly 25% of the entire system and has implemented a long-term asset management plan to rehab or replace a little over 1% of the system per year which translates to a little over 50,000 feet each year.
- Since Consolidation in 1990 the District has reinvested over \$400 Million on Capital Improvements for the system. This includes \$350 million for replacing and rehabbing sewer lines and \$50million on rehabilitation of the Treatment Plant and general infrastructure.



Future Growth Potential System Capacity

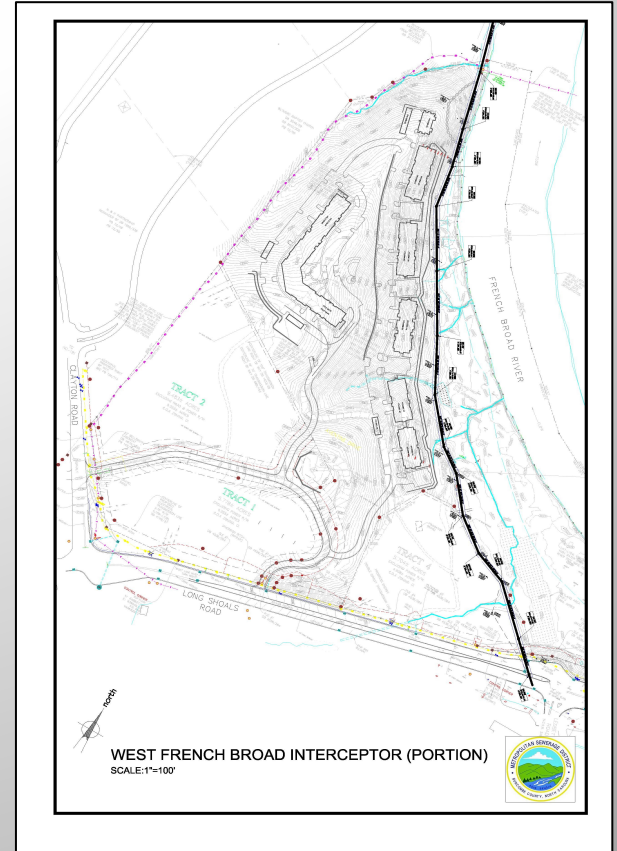
- Currently using about 20 MGD of 40 MGD capacity at the Treatment Plant.
- MSD's aggressive program of rehabilitation and replacement of existing lines include upgrades of lines sizes to provide for future growth.
- The MSD Collection System Master Plan has mapped out all the lines necessary to serve areas that are identified by our Member Agencies for future growth.





Economic Development Partner

- MSD provides incentives for the orderly growth of the sewer system into new areas as identified by Member Agencies and the Collection System Master Plan.
- MSD provides design services, ROW services, and financial contributions toward construction of new Master Plan lines.
- MSD also gives significant rebates for Affordable Housing projects.
- Developer to developer reimbursements.





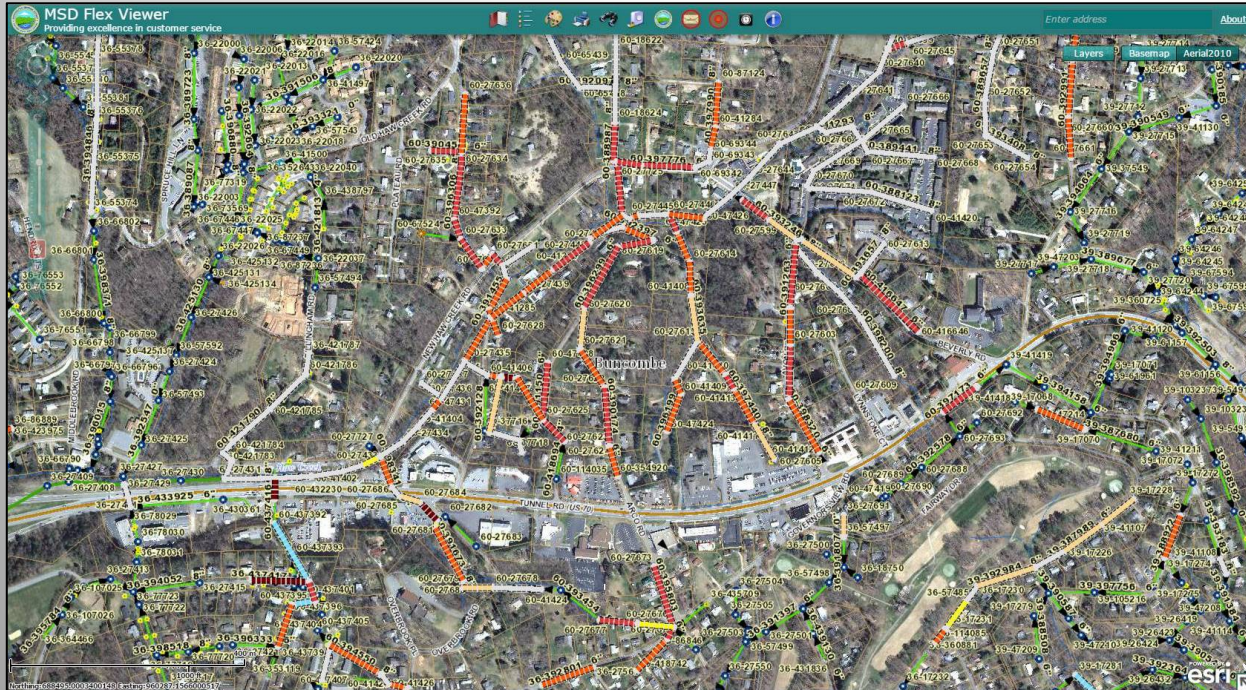
CAPITAL IMPROVEMENT PROGRAM **FY20 through FY29 (10 years)**

Interceptors/Wet Weather Rehab.	\$ 86.8 Million (26%)
Collection Rehabilitation	\$ 126.3 Million (38%)
Treatment Plant / P.S.	\$ 117.7 Million (35%)
Reimbursements	\$ <u>1.6 Million (< 1%)</u>
Total	\$ 332.4 Million

Since Consolidation in 1990 the District has reinvested over \$397.4 million for Capital Improvements.



Pipe Rating Program



- Proactive program to focus rehabilitation dollars where most needed
- Featured in February 2004 issue of “Water Environment & Technology” magazine
- Developed by interdepartmental team using off-the-shelf software

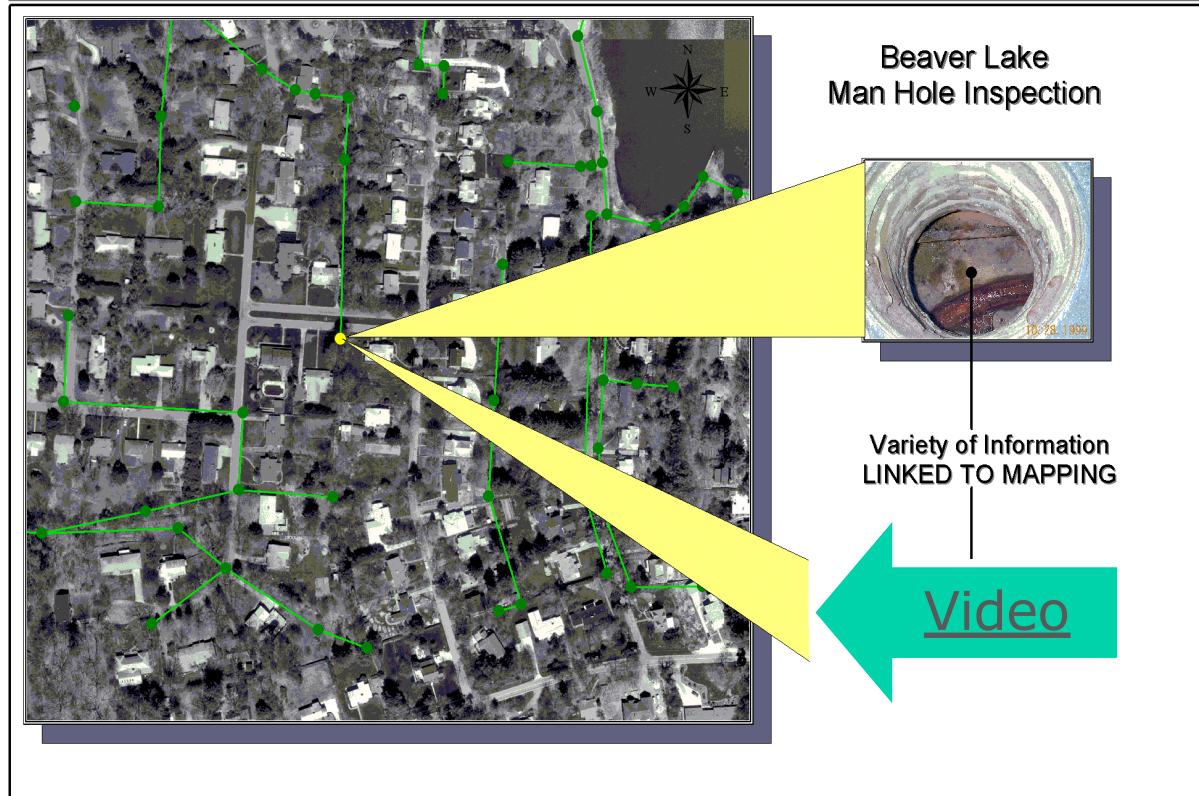


Line cleaning and CCTV & Defect Coding





GIS Capabilities





CCTV, Defects, SSO's, Work Orders

Microsoft Access

File Edit View Insert Format Records Tools Window Help

pipe score 4in 97 format - Database

Tables Queries Forms Reports Macros Modules

select form view of pipe scoring

Open Design New


select form view of pipe scoring

PipeID	Mean Pipeline score	Mean Defect score	Peak Defect
24500	9.2647	45	45
Length	34	Slope	0.076516
UPMHNO	26507	DSMHNO	26506
Pipe Video hyperlink \\video_server\video\Basin47\26507 to 26506.mpg			
Drain_B	Royal Pines		
Basin #:	47		

Record: 14 of 788

\\video_server\video\Basin47\26507 to 26506.mpg

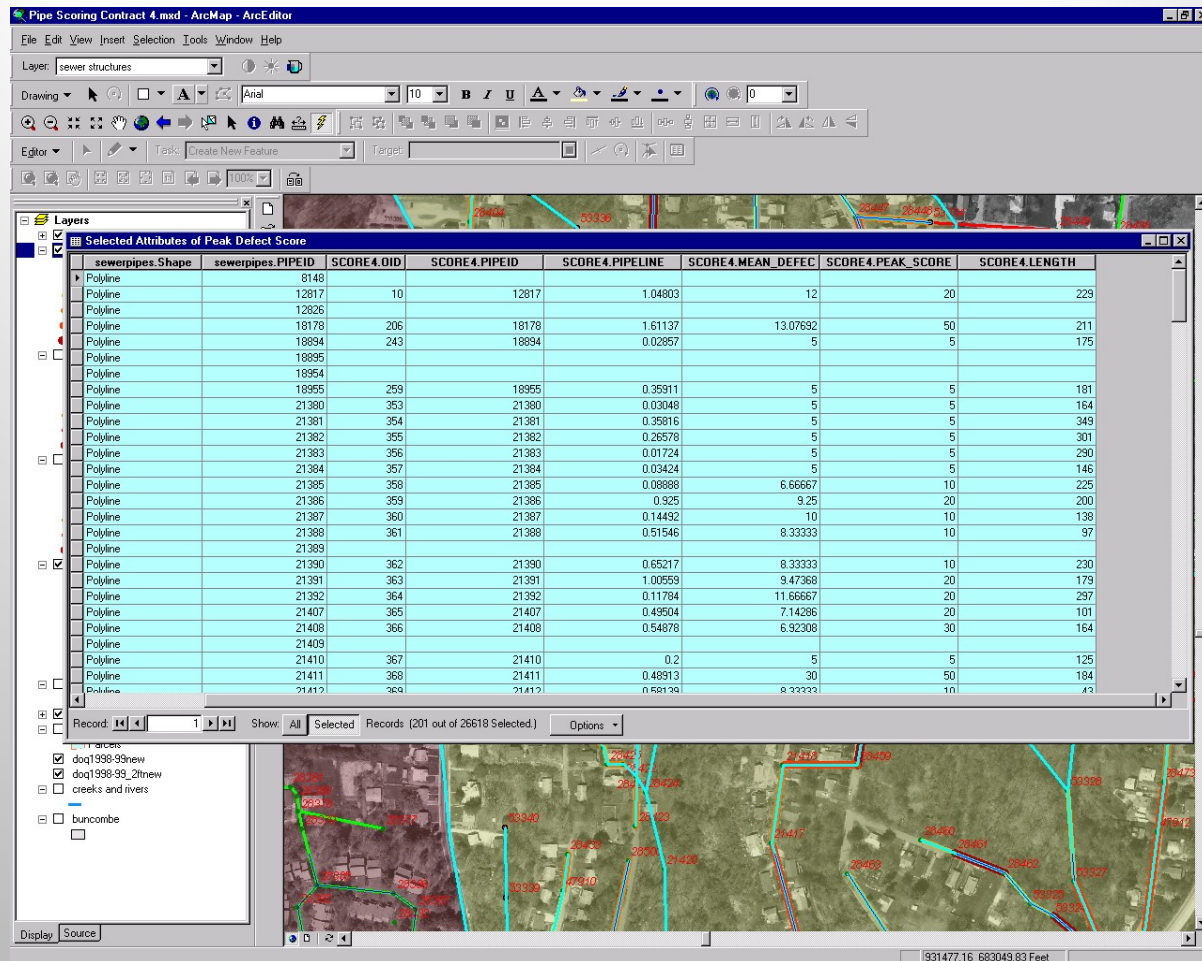
NUM



UPS. 33.7 Ft>
16426>16425



Integrated Data





Pipe Rating Program



Proactive program to focus rehabilitation dollars where most needed



AMSA Award for Pipe Rating Project



- In May of 2003, MSD received an AMSA National Environmental Achievement Award for the Pipe Rating Program
- Developed in-house with a vertical team using off-the-shelf software
- MSD and Los Angeles only two US utilities to receive this award





Recent and Current Treatment Plant Projects

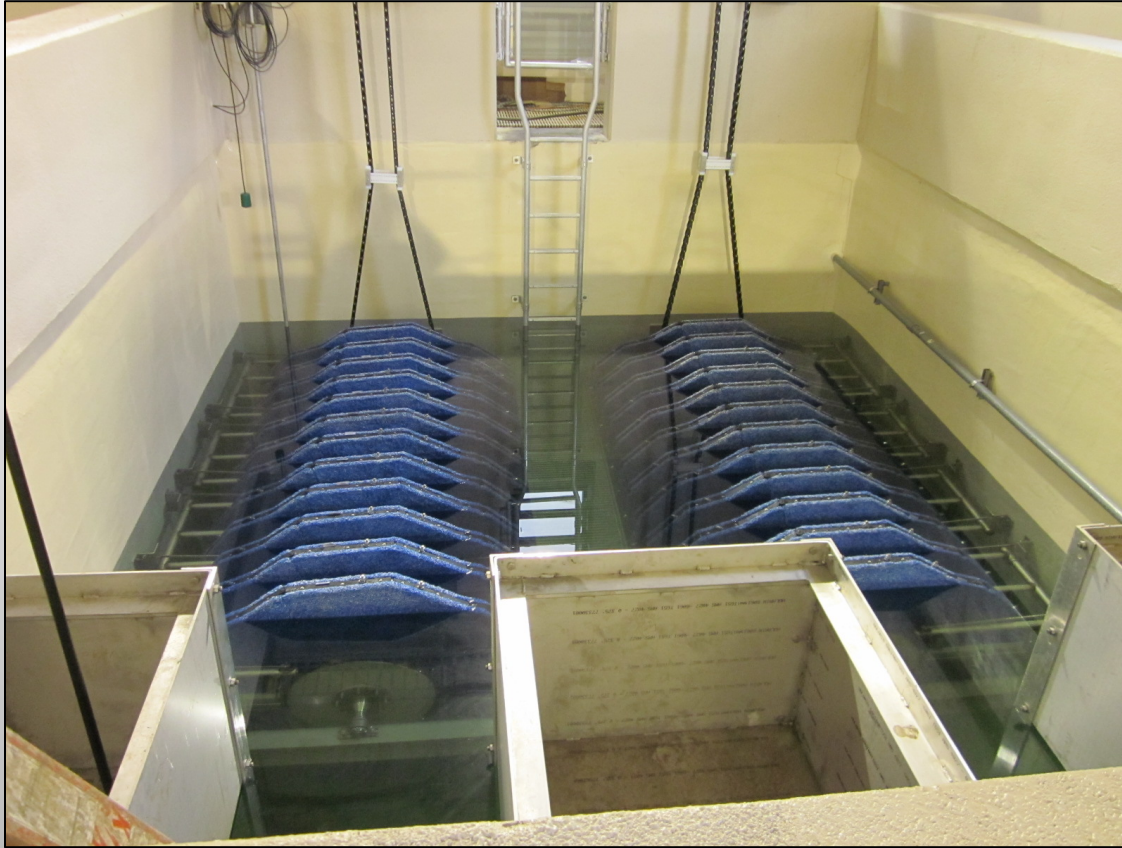


New \$10 Million Aqua Disk Filters





Initial Testing of New Filters





Filter Installation Project

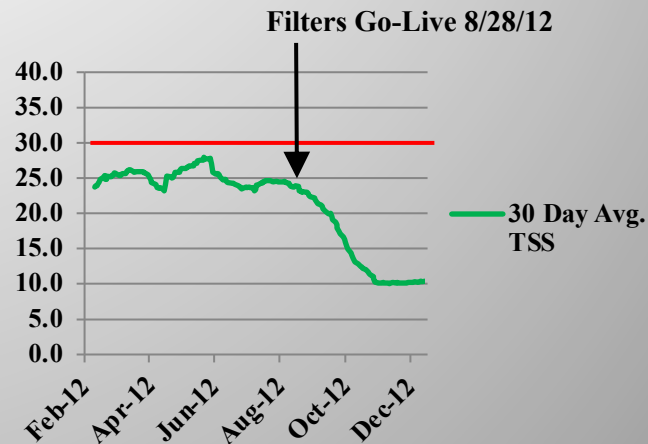
Old System

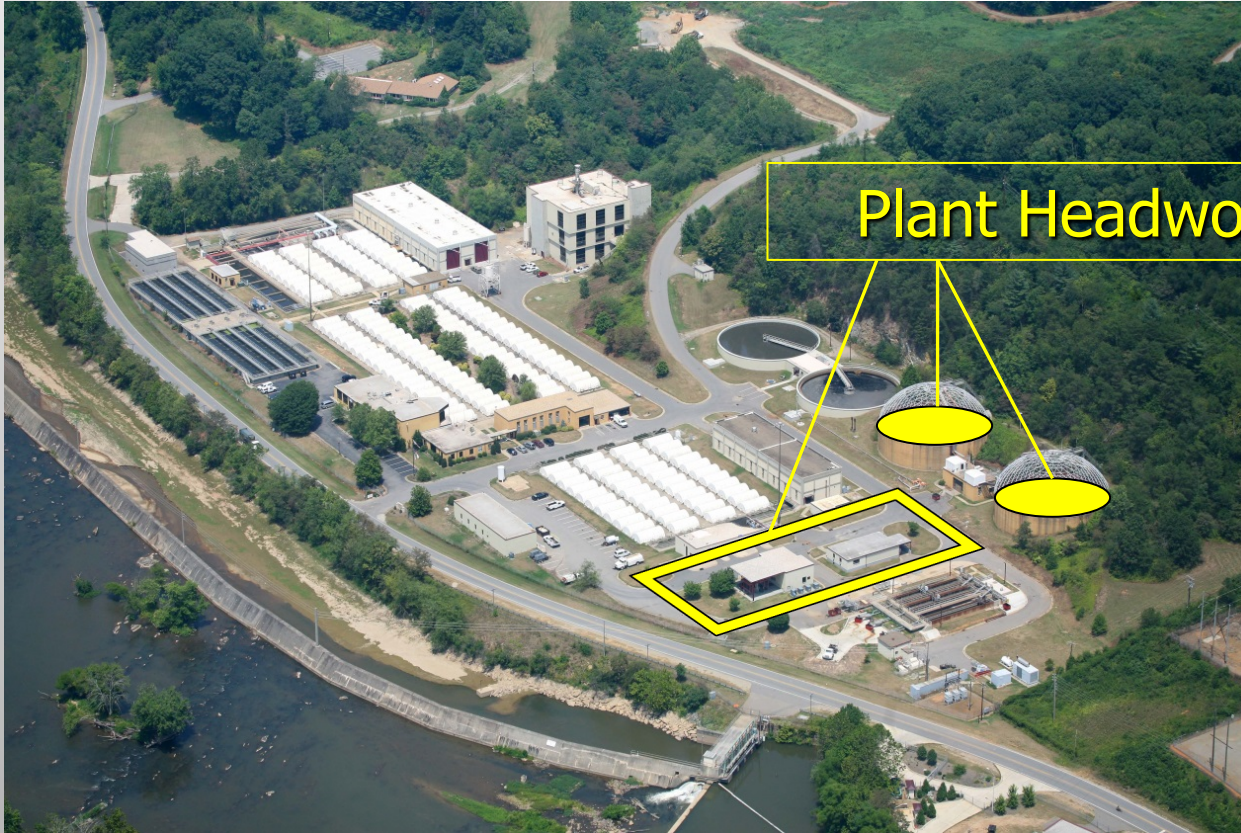
- *18 existing "Microscreens" – all problematic.*
- *Performance failure – very little suspended solids removal*

New System

- *Board awarded construction contract in October 2010.*
- *\$9.2M construction cost, over three fiscal years.*
- *Facility startup August 2012.*

Excellent Results





Plant Headworks Project

- New Bar Screens
- Improved Fine Screens
- Grit Removal
- Surge System for Peak Flows
- Construction complete
- Total Project cost approx. \$9.6 Million

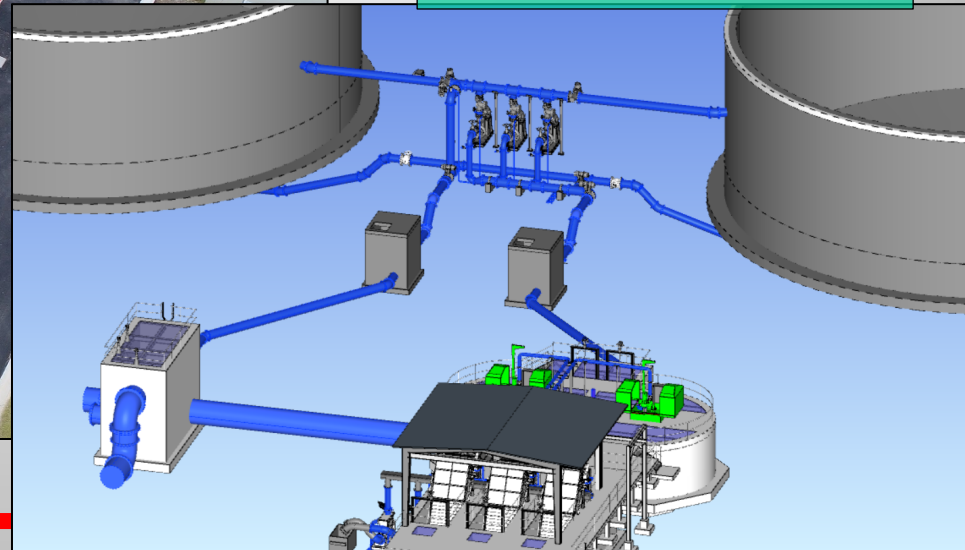
Influent bar screens - 1/2"

Fine Screens - 1/4"

Vortex grit
removal units



Surge Pump Station



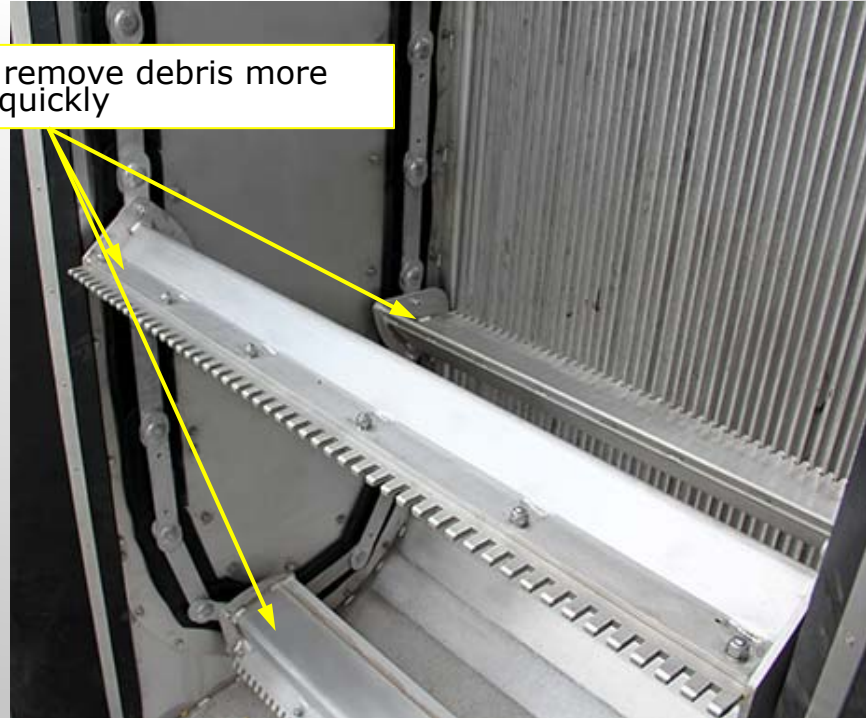


Influent Bar Screens

Bar Screens capture large debris upstream of Influent Pumps

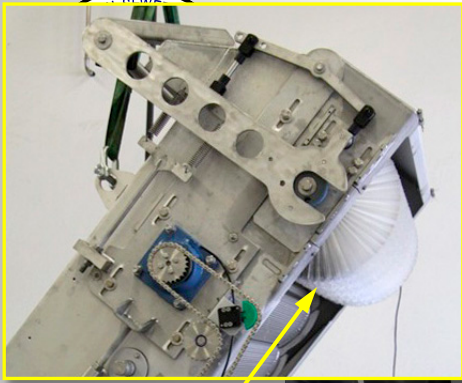


Multiple rakes remove debris more quickly



$\frac{1}{2}$ " bar separation

Fine Screens



Mechanical brush
removes debris



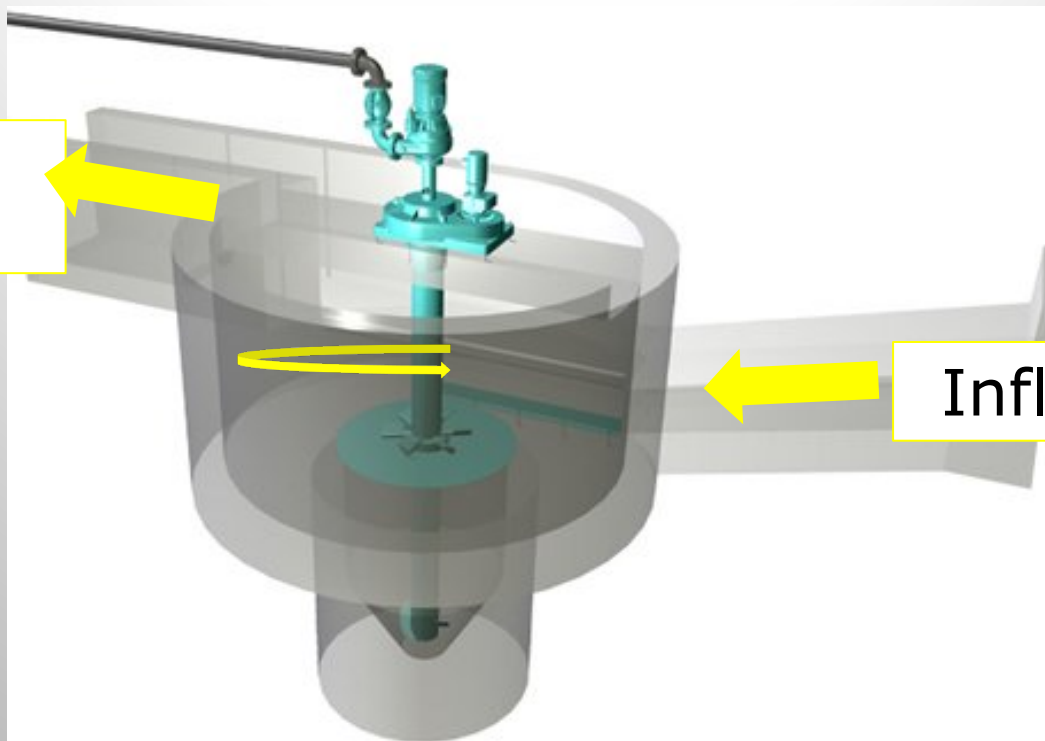
1/4" perforated
plate





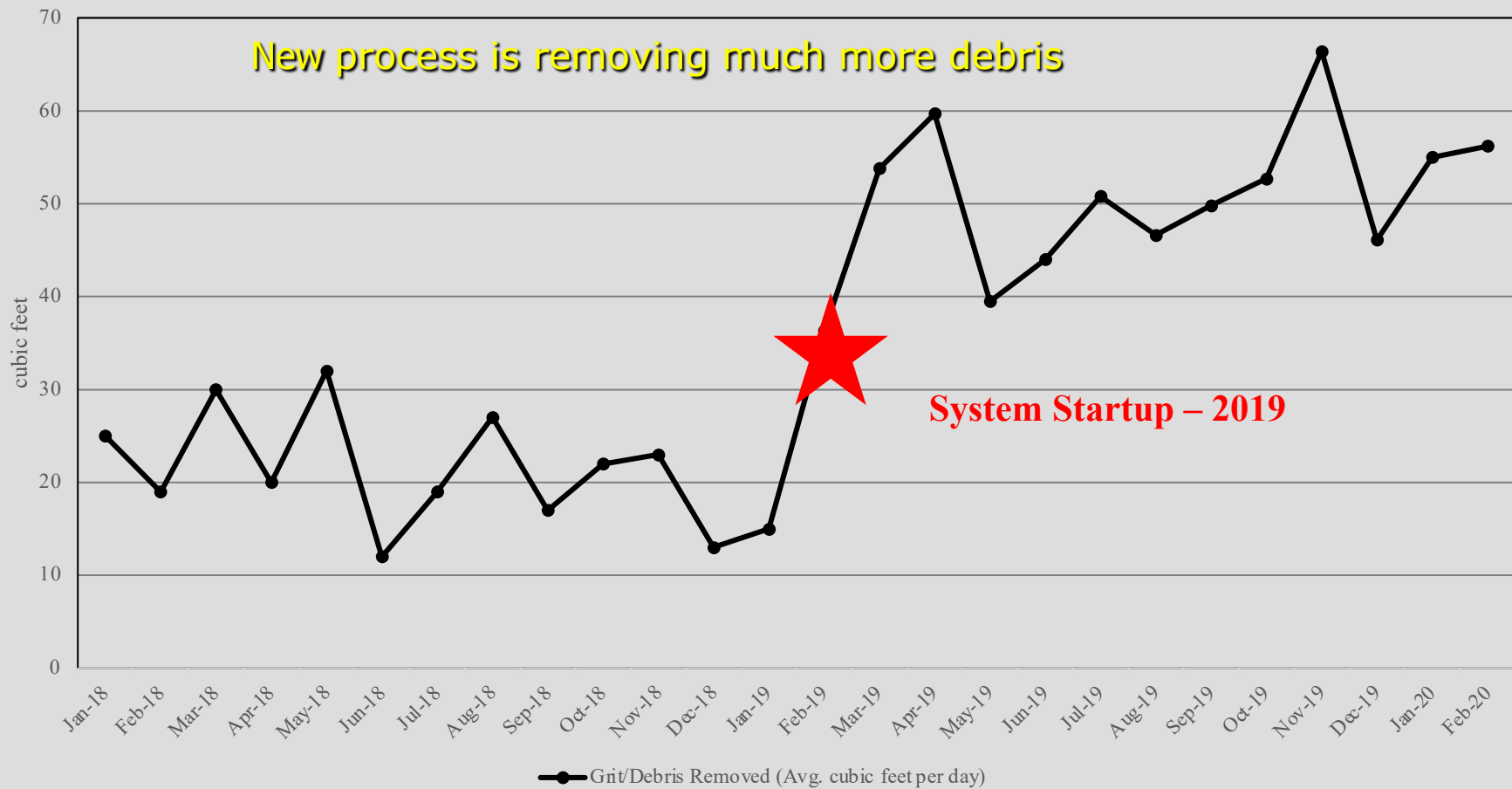
Vortex Grit Removal basins

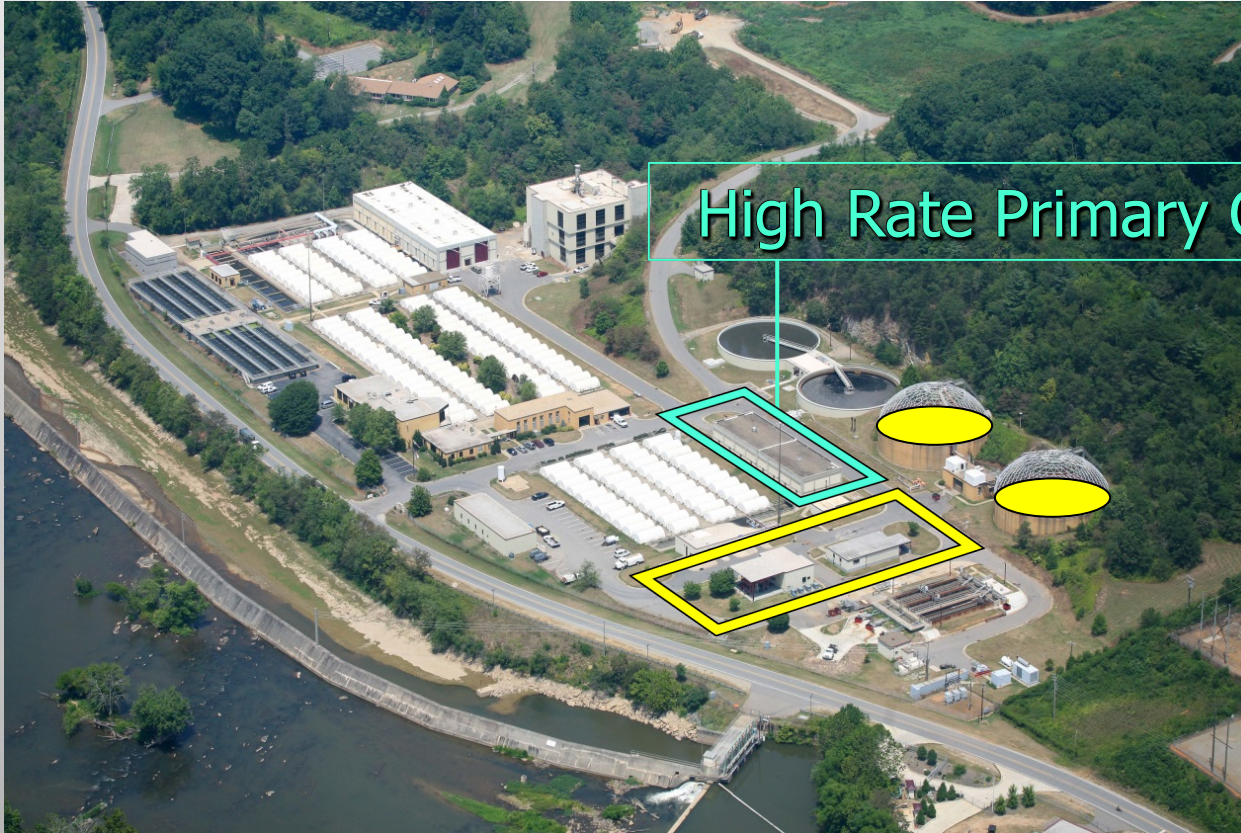
Effluent
flow



Influent flow

New process is removing much more debris





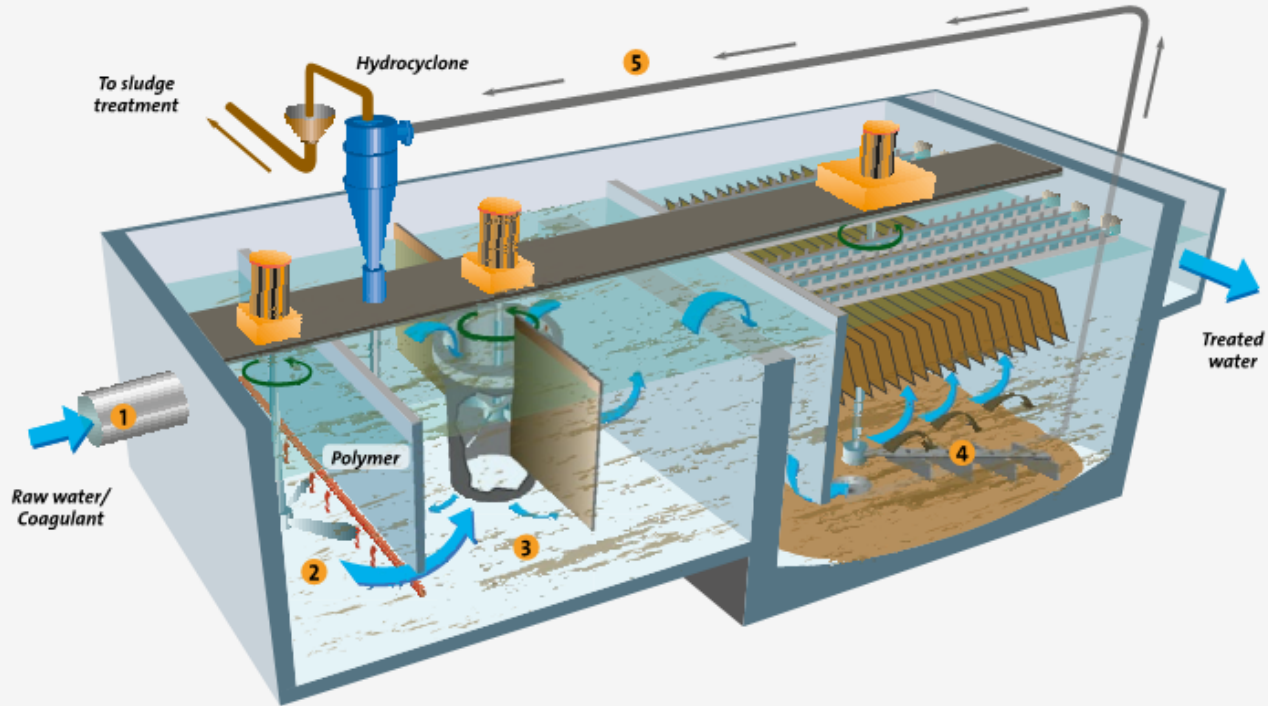
High Rate Primary Clarification

- New clarification process, there is none currently.
- Will significantly improve treatment process.
- Under Construction till January 2021.
- Total Project Cost \$15 Million



High-Rate Primary Treatment Project Overview

Ballasted
Flocculation



Spring of 2020



Fall of 2020

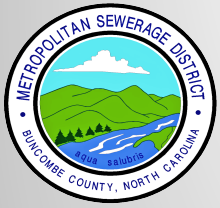


Biltmore Estate

Asheville Outlets

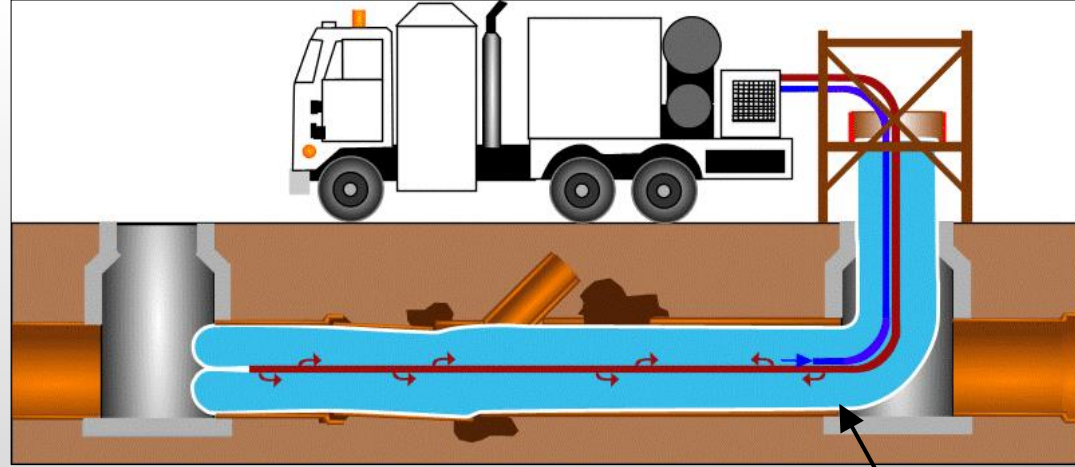
Lined Section – 21,913 LF

Biltmore House

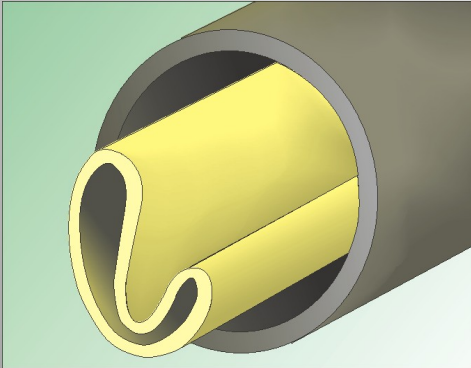


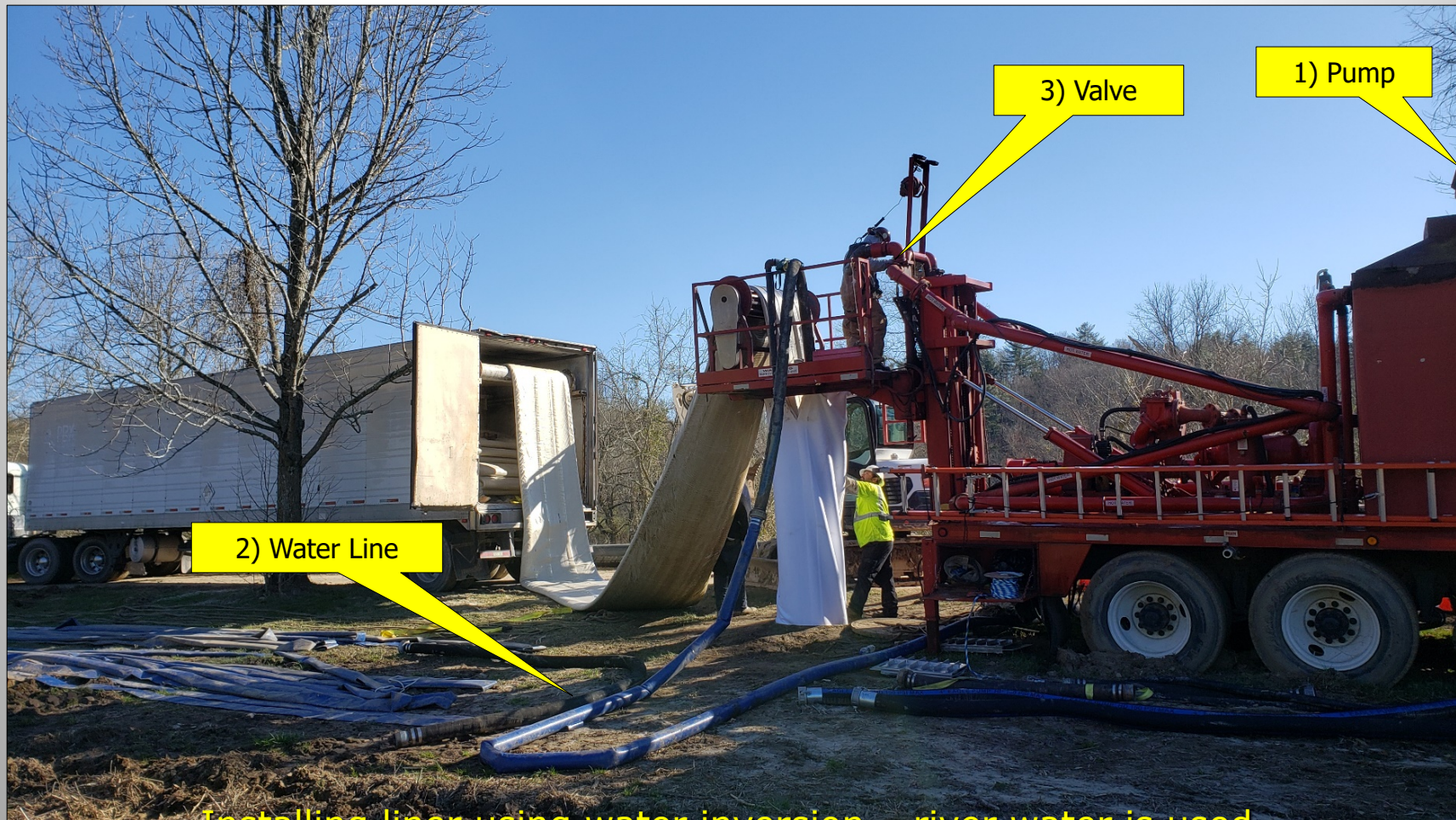
Trenchless Technologies

Pipe Lining



Liner is "inverted" when installed, water is used to insert liner and keep it in place until curing.





1) Pump

3) Valve

2) Water Line

Installing liner using water inversion – river water is used.



Bypass pumping setup (two pumps for redundancy)

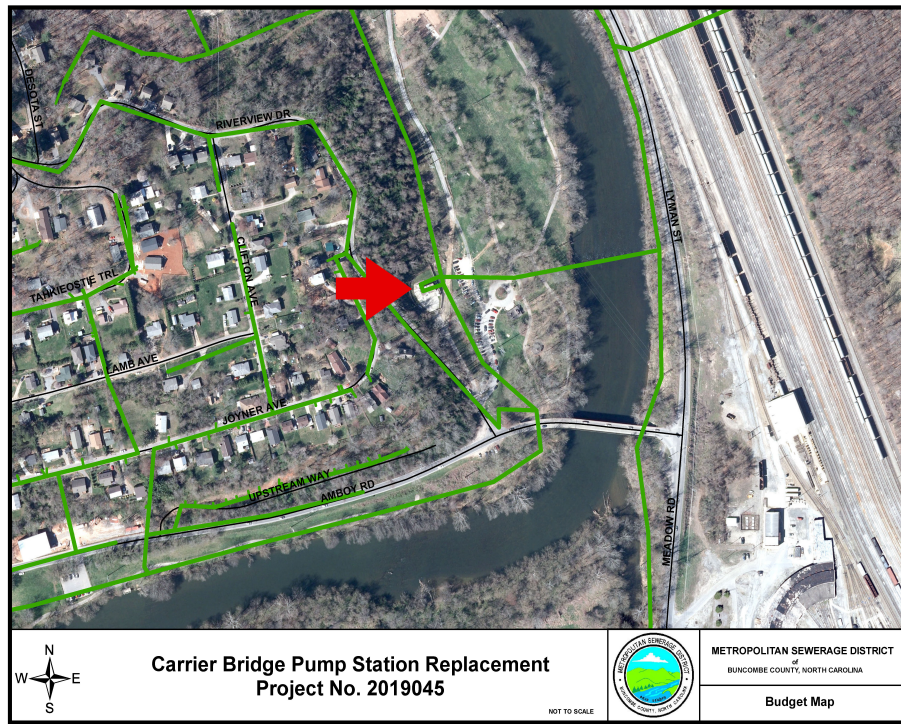
Stream crossing using I-Beam.





Upgrade of Carrier Bridge Pump Station

- Serves large areas of Asheville, Southern and Western Buncombe County, and CCWSD.
- Original station constructed in 1960's and upgraded multiple times.
- Capacity increased utilizing 50-year growth projections, to 34 mgd.
- \$35 M Construction Cost
- Design underway, construction to begin in FY22.





Upgrade of Carrier Bridge Pump Station



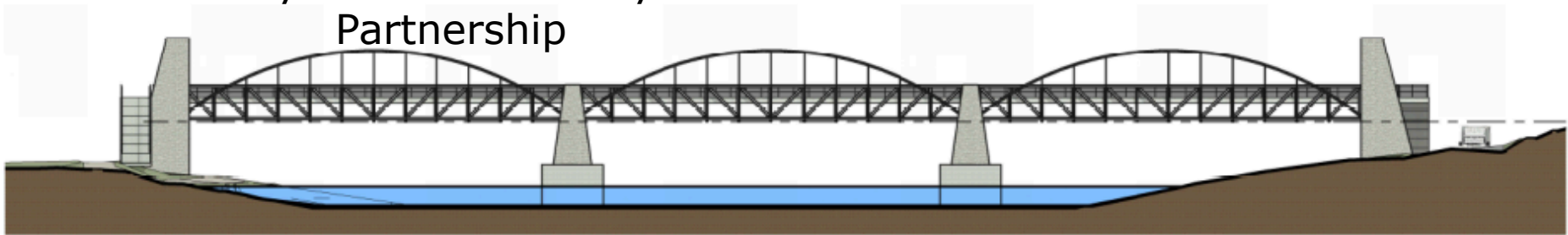
New station will be 70-75
feet deep

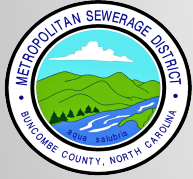






Sewer crossing/Pedestrian Bridge for
Wilma Dykeman Greenway – COA
Partnership

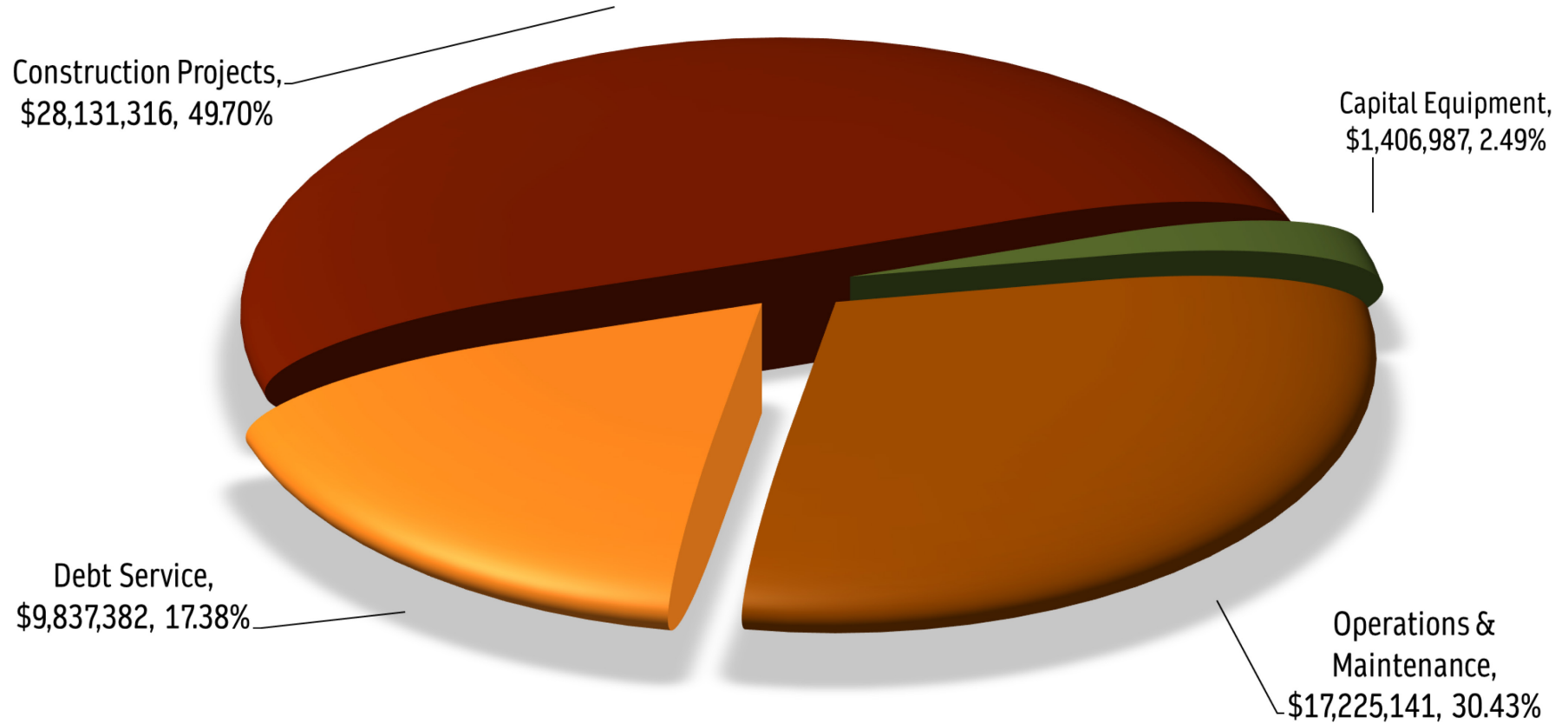




5. Financial Overview of District

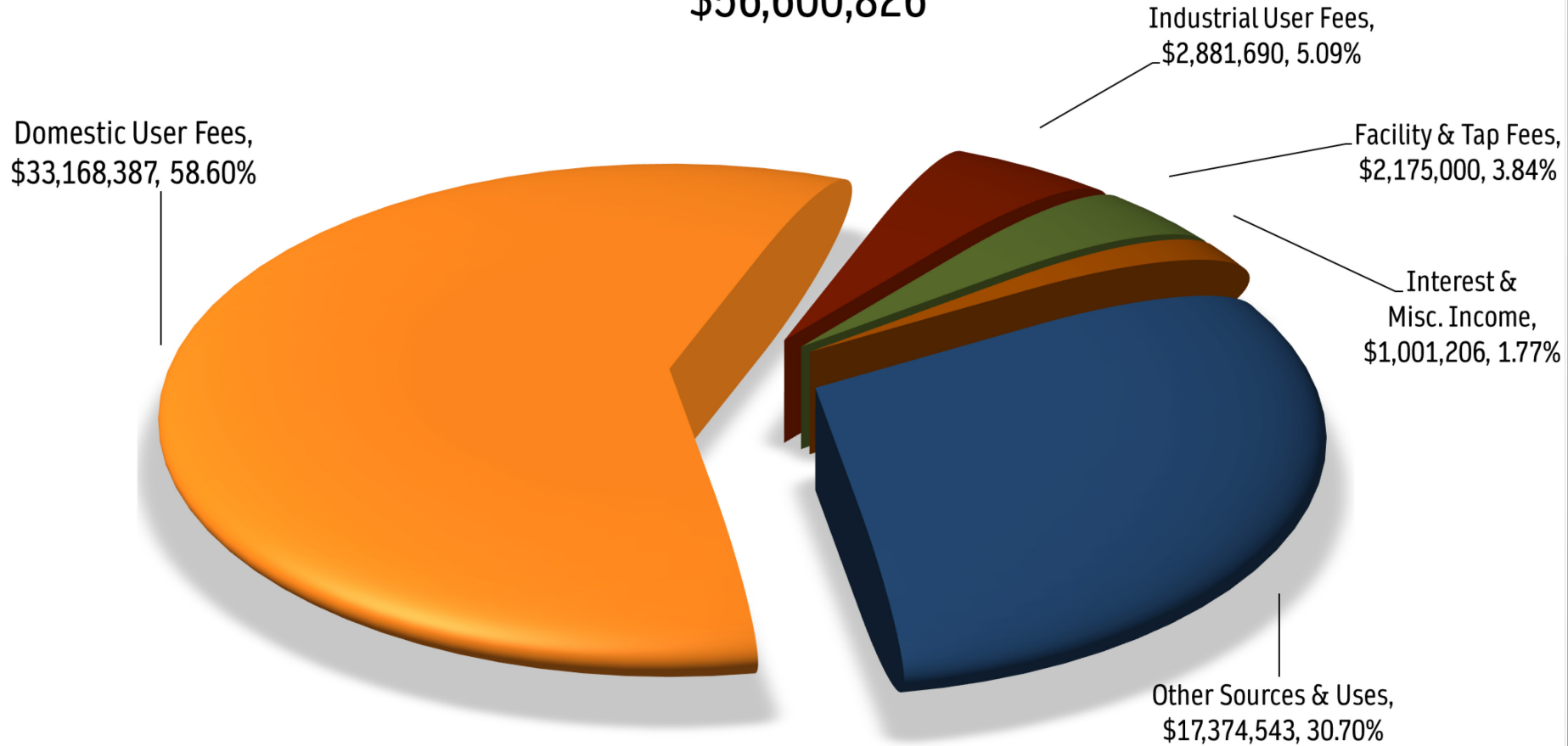
FY21 Budget Expenditures

\$56,600,826

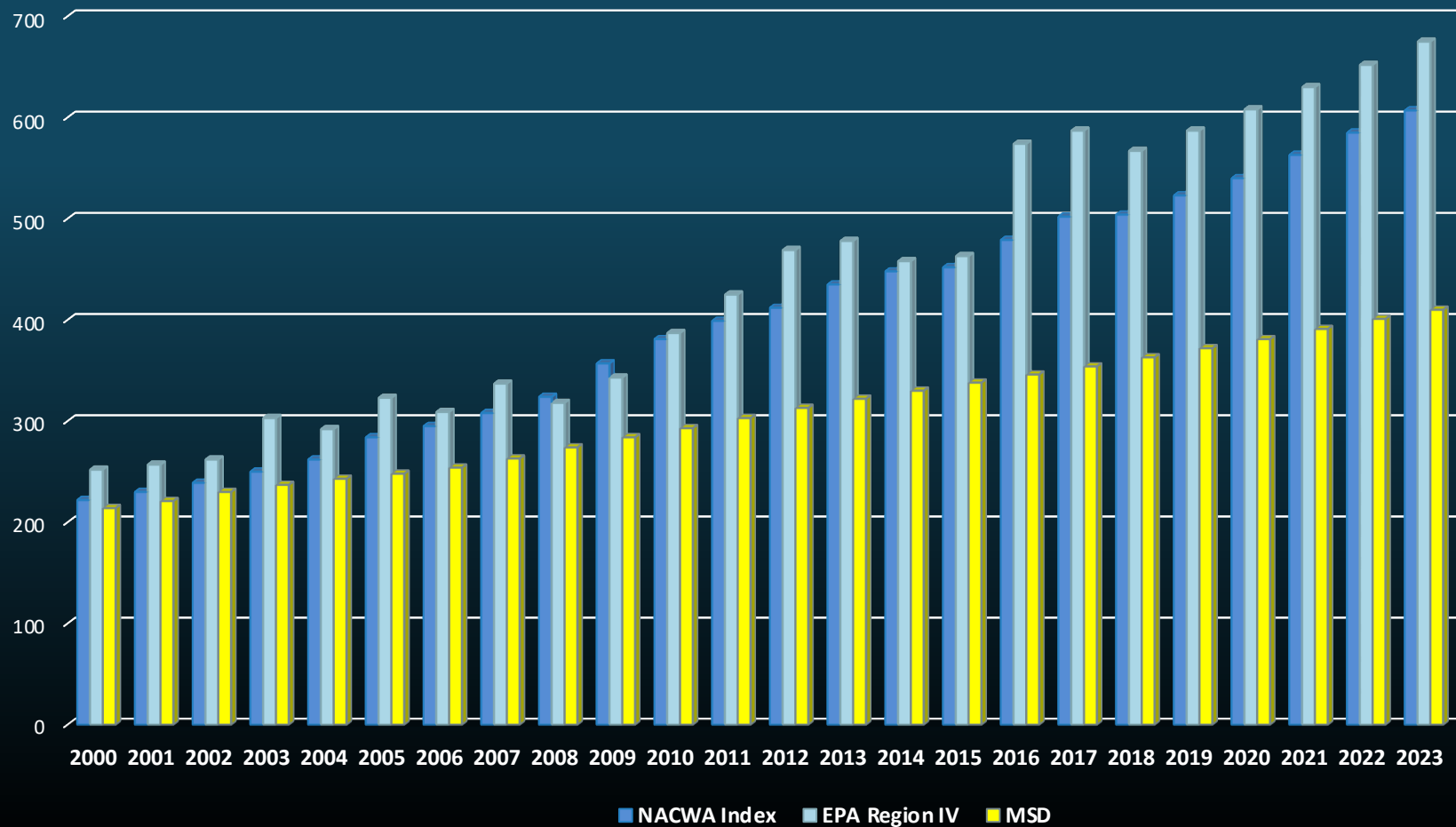


FY21 Budget Revenues

\$56,600,826



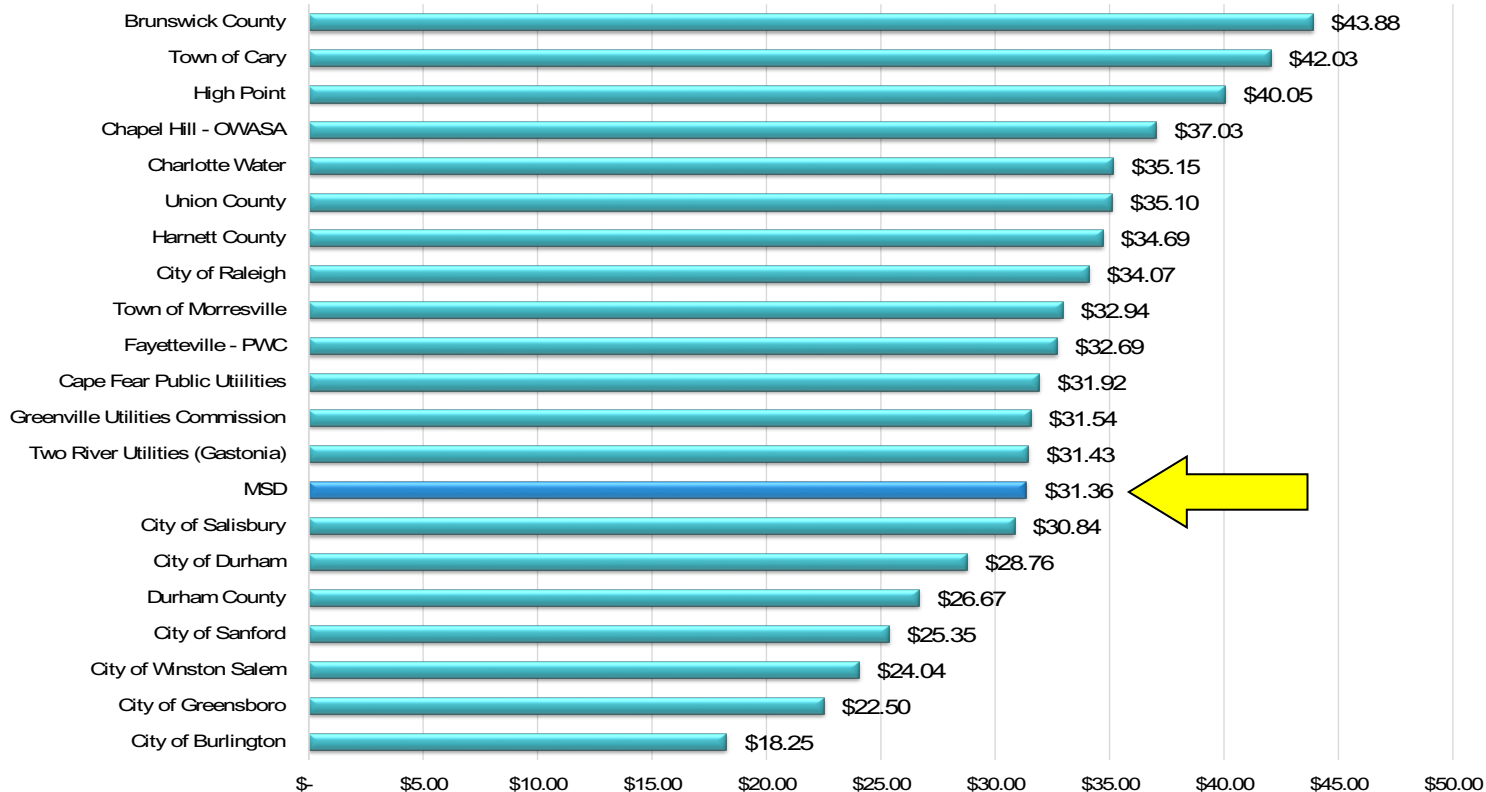
Average Annual Service Charge





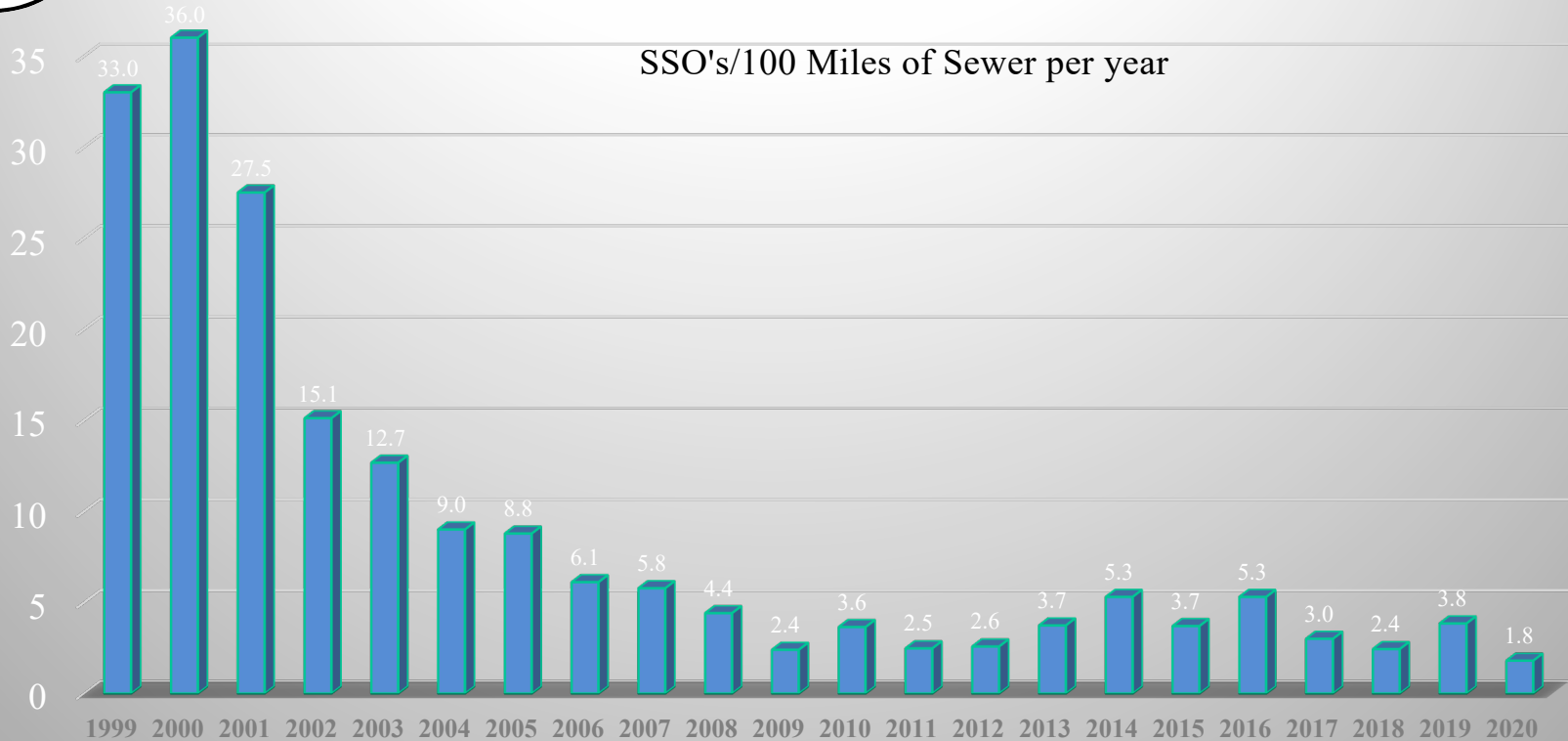
Comparative Monthly Residential Bills

5 CCF Customer Bill Comparison to AA& AAA NC Units of Government





Significant progress



Metropolitan Sewerage District

of Buncombe County, North Carolina

2028 Riverside Drive, Asheville, NC 28804



Thursday, April 13, 2017, 10:25:56 am

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[Rates ▶](#)

[Sewer Maps](#)

[Street Interruptions](#)

[Survey Standards](#)

If you dig, call 811 first.
[Click here](#) for more
information.

WELCOME TO MSD!

Holiday Closing

MSD offices will be closed on Friday, April 14, 2017 for the Good Friday Holiday.

As always, emergency services are available at the number below, 24/7 - 365 days a year.

Important Information

If you have an emergency, call MSD first at 828-255-0061.

Don't throw grease or trash down the drain! Learn more about what you can do with your grease and trash by [clicking here](#).

New information on Flushable wipes from the NACWA. [Click here](#) for more information. Be sure to watch the short clips from *The Dr. Oz Show* in the link.

All documents on this website require a pdf reader. You may download one by visiting [FoxIt Software](#) or [Adobe](#).

Street Interruptions

Street interruption information due to MSD construction is now available. [Click here](#) for more information.

Preventive Cleaning

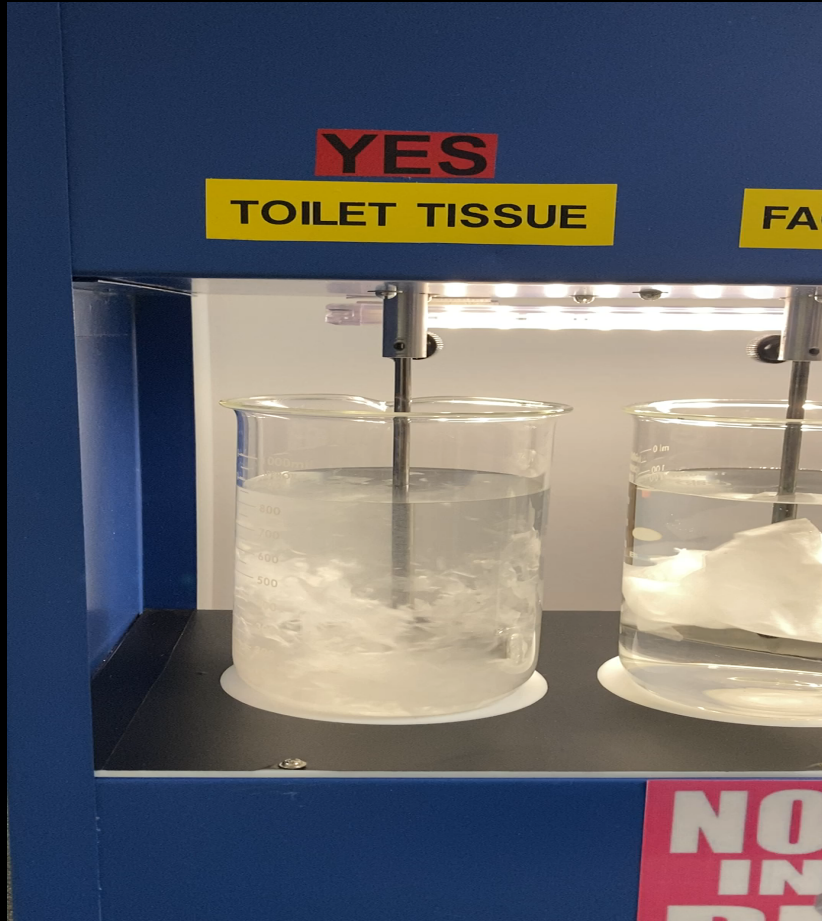
Preventive cleaning areas. [Click here](#) for more information.

Wastewater Treatment Plant (Click picture for plant tour.)



Can your
grease,
let it cool,
and
throw in
trash.
NOT
down the
drain





“Flushable Wipes”
are NOT flushable

The Pumps and pipes in the public sewer system get clogged and fail.

Trash, hair, grease, and wipes in the sewer pipes create overflows which can be a hazard for the public health and the nearby streams and rivers.



Your own Private service may fail as well causing back-ups





Our End Product



Questions ?

www.msdbc.org