HERTFORD 2058

Public Works Vision / Path Forward

Agenda

Assumptions for Growth

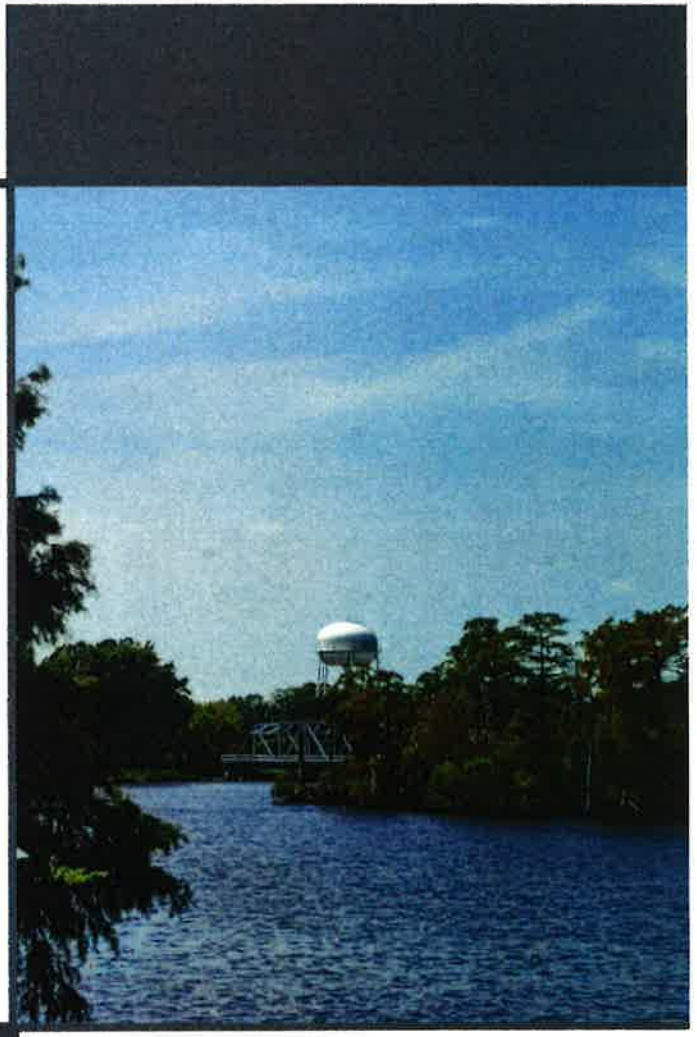
Assumptions of Capacity / Capabilities

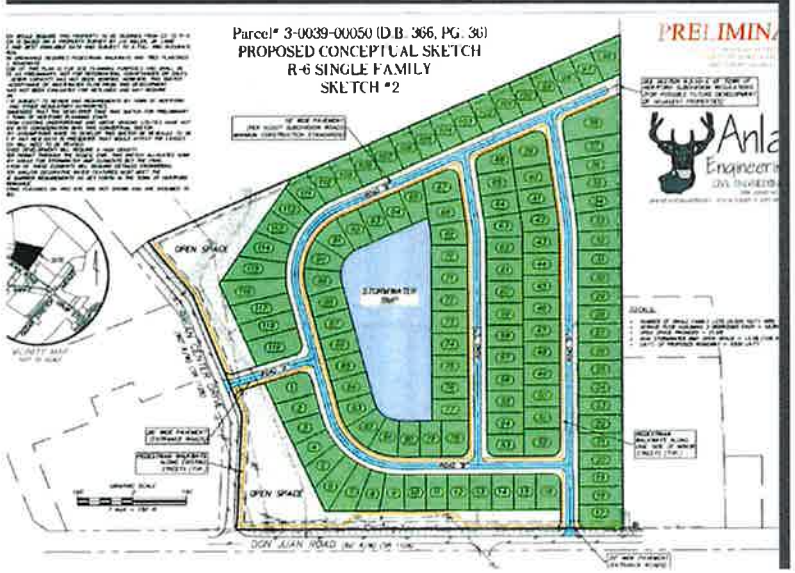
Future Capacities

Future Capabilities

First Steps to Vision

Unknowns / Constraints / Limitations



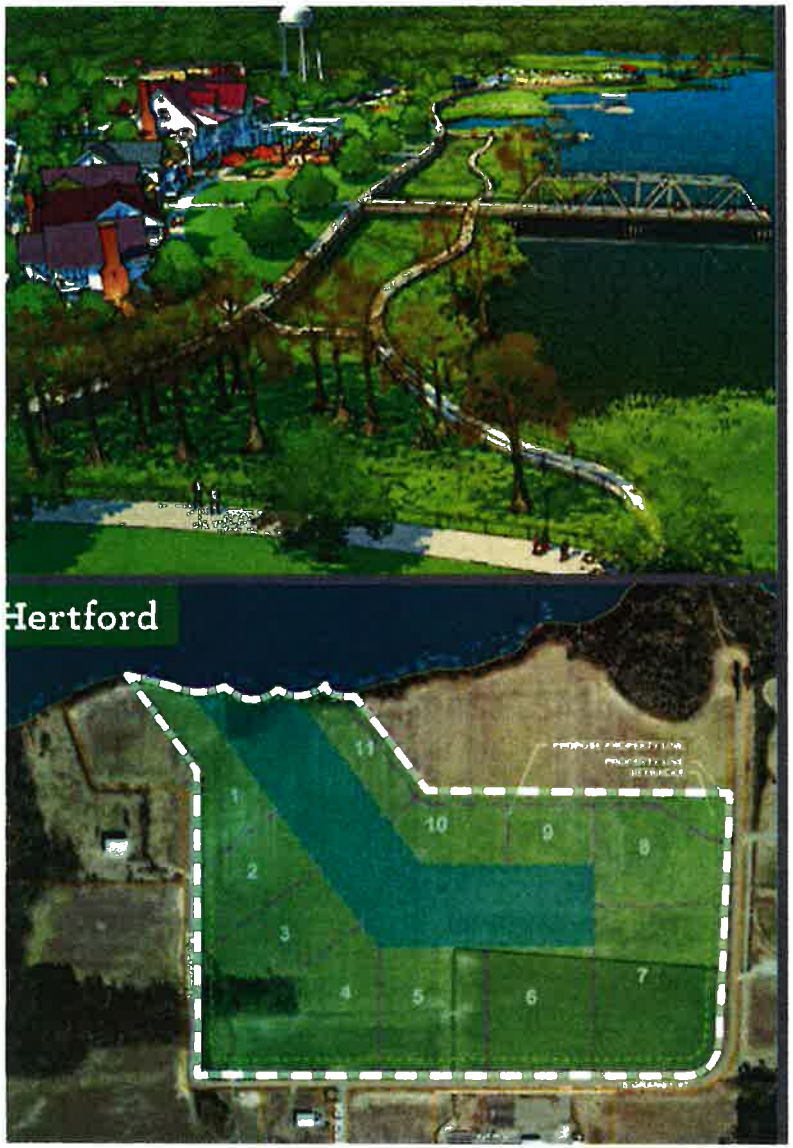


Assumptions for Growth

General Expectations – Housing Expansions

Customers need services, services cost money to install and then to maintain.

With a revitalization through the River Front Development and the expansion of new homes in areas such as the former WWTP Irrigation field and the former Don Juan factory site, or other locations along the existing Town limits, growth is both a boon and challenge. For the 2058 Vision, we assumed **500 additional homes** are within the Town limits.



Assumptions for Growth
General Expectations –RiverFront Development / Perquimans Industrial Marine Park

RiverFront

Private Development requires nominal upgrades;
Water / Sewer / Electrical
Within current Plant capacities

Marine Industrial Park

Current State funding provides for:
Water / Wastewater system utilities Expansion
Property access for 2nd access way

NO Electric transmission lines
NO 2nd Point of Distribution

Assumptions for Growth
General Expectations – Winfall Possibilities

- **Winfall Utilities inclusion;**
  - Via utilities merger or Town merger?
  - Wastewater already accepted via "Agreement"
  - Consideration of merging Wastewater in study.
  - Possible inclusion of Water system possible?

Slide 5

P0 The Hertford WWTP intake point for Winfall Sewer. Soon to be rebuilt
PublicWorks, 2024-02-27T16:00:39.681

Assumptions for Growth
Capacities / Capabilties

- **Water Treatment / Production**
  - Capacity = 500,000 gallons/day
  - Current flow = 240,000 gallons/day
  - Roughly 50% capacity (room for expansion)
  - 3 Water source wells - #2 Capacity limited
  - Grant work restores Controls
  - **Air driven control valve system failing**
  - **Chlorine system challenges/suppliers**
  - **4th Well assumed in Original Plant Design**

- **Water Distribution**
  - **Service lines aging out to failure**
  - **Lead Service line replacement prog. needed**
  - **Limited expansion via existing 14" forcemain**

Assumptions for Growth
Capacities / Capabilties

- **Wastewater**
  - **Treatment:**
  - Capacity = 750,000 gallons/day
  - Peak flow = 450,000 gallons/day Maximum
  - Average flow = 240,000 gallons/day
    - Impacted by Stormflows to 1 MGD!
    - Solids releases from heavy rains (NOVs?)
    - **Grant funded repairs forthcoming!**
    - **Documented WWTP repairs needed!**
  - **Collection:**
    - **Infiltration / Inflow significant (NOVs)**
    - Pump stations aging
    - Line failures due to age
    - Inadequate slopes leading to clogs
    - Instances of line damage by others

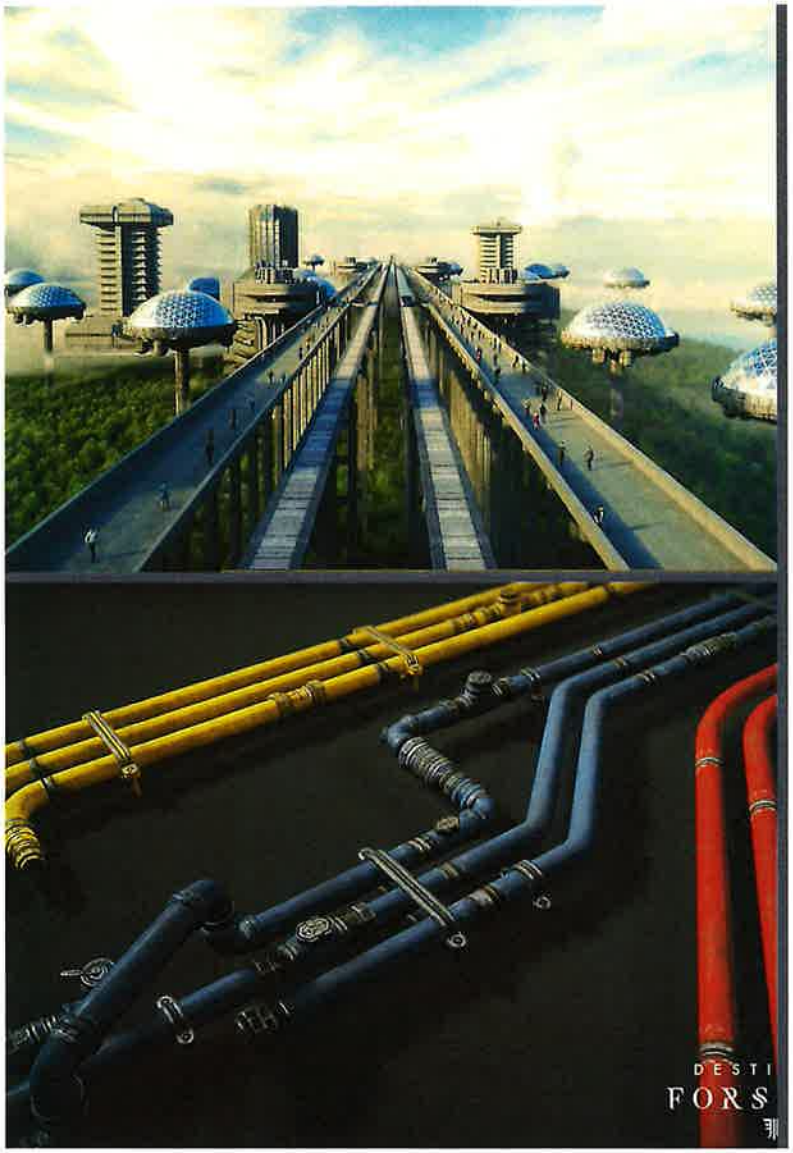
Assumptions for Growth
Capacities / Capabilities

- **Electric**
  - Single Point of Distribution (POD)
    - Capacity @ perhaps 80%
    - Security Concerns for substation
    - **Aging Poles, lines,** transformers
  - Adding single homes intermittently

- **Streets**
    - **Storm drain repairs needed**
      - Failing lines
      - Flooding
    - Mowing with Contract help
    - Paving / patching - minimal
    - Emergency Servicing - Adequate
    - Park Maintenance

Future Capacity

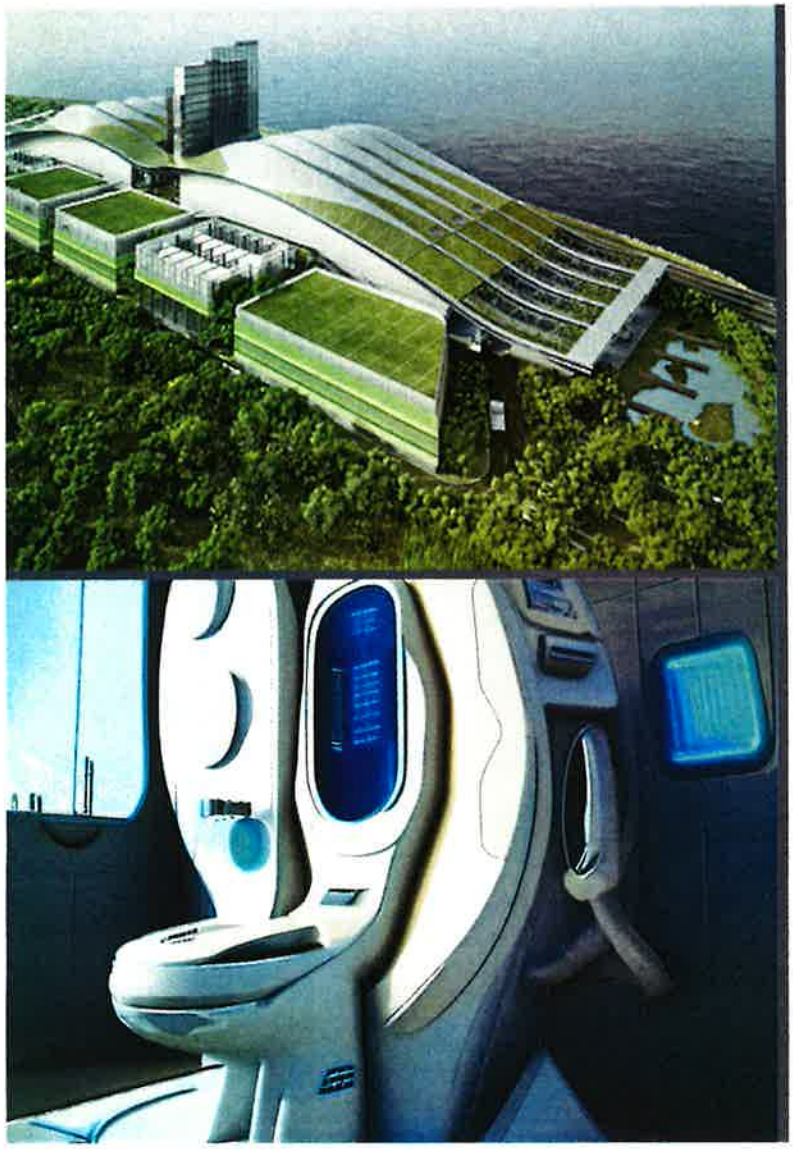
What our Town & System will look like in 2058!



Future Capacity
Utilities Systems in 2058

- **Water Treatment / Production**
  - Capacity = 500,000 gallons/day
  - Current flow = 450,000 gallons/day
  - **4th Well drilled / added to the system**
  - **New transmission forcemains along W. Grubb st / Church st.**
  - **Town preparing for Water Plant upgrade**

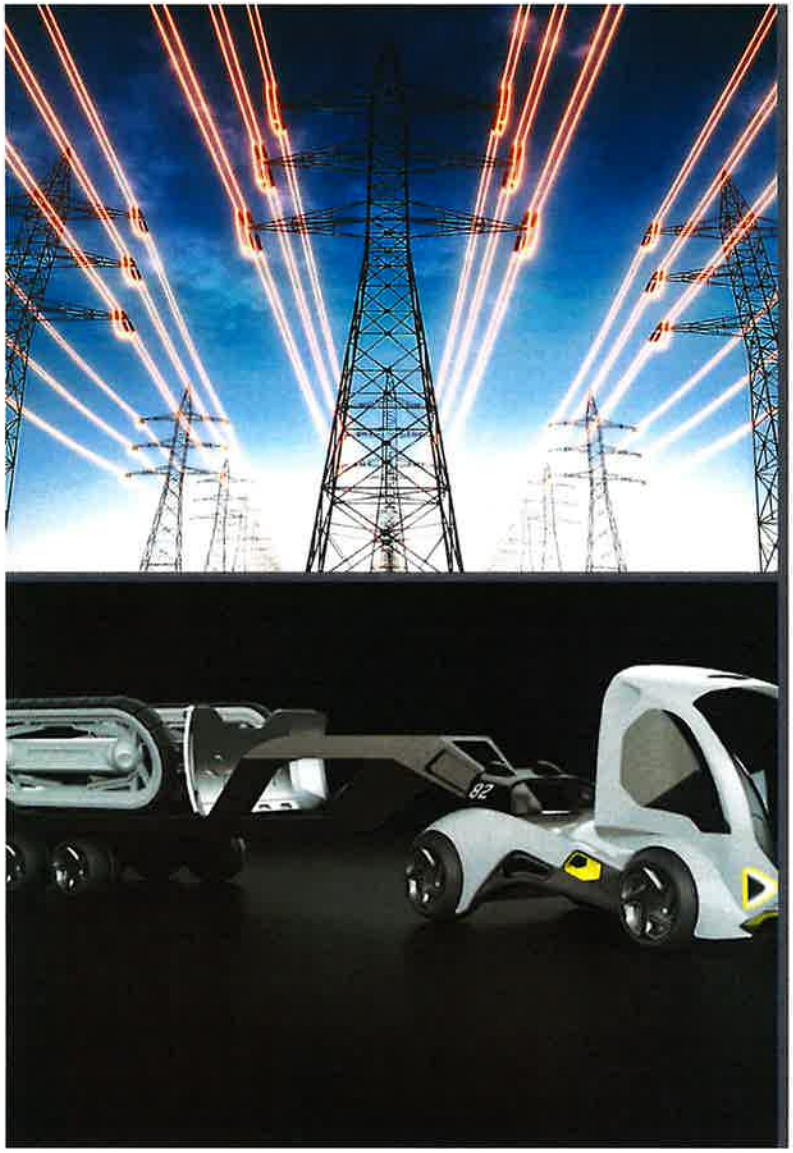
- **Water Distribution**
  - **No Water Distribution service lines older than 20 years.**
  - **Lead Service line replacement complete**
  - **New Elevated Water Tank located near Harvey Point / Rt 17 Intersection**



Future Capacity
Utilities Systems in 2058

- **Waterwater treatment**
  - Capacity = 1,000,000 gallons/day
  - Current flow = 750,000 gallons/day
  - **3rd Clarifier in-place**
  - **Preparing to add additional Oxidation ditch.**
  - **Remote monitoring of entire treatment process w/ SCADA**
  - **No Notices of Violation (NOVs) in past 10 years!**

- **Wastewater Collection**
  - **Inflow/Inflitration rate down to 15%** (previous high of 400% during storms)
  - No sewer lines greater than 35 years old
  - All Pump stations functioning with limited fail rate
  - All Pump Stations connected to SCADA system
  - **No Notices of Violation (NOVs) in past 5 years**



Future Capacity
Utilities Systems in 2058

- **Electric Utility Grid**
  - 2 Points of Distribution (PODs)
    - 1 W. Grubb st.
    - **2 Wynne Fork Road**
  - No Poles older than 15 years
  - No lines older than 20 years
  - No outages due to Tree line clearance
  - No outages due to circuit overburden
  - Marine Industrial Park largest Customer
  - Power Generation at 175% of 2023

- **Electric Grid Support / Equipment**
  - Large Line truck less than 8 years old
  - Small Line truck less than 5 years old
  - Support truck less than 3 years old
  - Staff includes;
    - 1 Lineman class 3
    - **1 Lineman class 2**
    - 1 Lineman trainee

Future Capacity
Streets /Drainage in 2058

- Pavement / Street Maintenance
  - Town street recurring paving program
    - 2 blocks paved annually
    - Powell bill supplements for additional
  - Repairs/patches performed within 72 hours of report

- Drainage
  - Repairs / Construction
    - Recurring repair program for inlets/lines
    - Collapses/sinkholes repaired with 72 hrs
  - Stormwater flow
    - Rainwater run-off with minimal note
    - No obvious flooding for 5 yr storm event
    - No leakage into Sewer collection system

Future Capability

What Tools we use to maintain our Town & System in 2058!

Future Capabilities in 2058

- Electronic Systems
  - GIS Database
    - Water / Wastewater
    - Electric Grid
  - Work Order tracking / issuing system
    - Inventory / ordering maintained
    - Location tracking for predictive repairs
  - Handheld units
    - Instant access to data
    - Instant reporting of repairs
    - Trend data collection
    - Photos of work
  - SCADA or Equivalent
    - Monitoring Plant / Pump Station OPS
    - Emergency Notifications

Future Capabilities in 2058

- **Large Equipment**
  - Vacuum Truck
  - Grappler Truck
  - Street Sweeper
  - Grass Mowers
  - Backhoe
  - Excavator
  - Dump Trucks
  - Forklift
  - Tractors
  - Golf cart / UTV
  - Electric Pick-up trucks
- **Small Equipment**
  - Tablets
  - Sewer CCTV / mapping tools
  - Magnatometers for water line locating
  - Portable lampsets / flood lights

Future Capabilities in 2058

- Staffing
  - Leadership
    - Public Works Director
    - Assistant Public Works Director
    - Utilities Director
      - WTP Superintendent
      - WWTP Chief Operator
      - Electric Department Head
    - Street Department Supervisor
  - Staff
    - Dispatcher
    - 4 man maintenance staff
    - 5 man street team
    - WWTP assistant ORC
    - WTP Operator
    - Meter maintenance / repair

First Steps to Our Vision

What Actions we can begin to take to move us towards this future!

Capital Improvements Planning (CIP)

The Living Document!

Tab #	Description	FY2025 Capital Request	Total
E1	Replace Electric Bucket Truck	$160,000	$260,000
E2	2nd Point of Distribution (POD)	$0	$2,650,000
E3	Repair 2 Reclosers	$0	$26,000
E4	Electric Smart meters	$240,000	$960,000
E5	Housing Development Expansion Infrastructure		$300,000
F1	Construct new Fire Department building	$200,000	$2,400,000
PW1	New Public Works Building Build out/Fit out	$100,000	$400,000
PW2	New Public Works Garage structure	$0	$300,000
PW3	New Public Works Compound Fencing, lighting, and Security	$0	$220,000
PW4	Revolving Truck / Equipment replacement	$150,000	$1,500,000
PW5	Utilities construction Commerce Park	$0	$2,920,000
ST1	Replace Grappler Truck	$0	$400,000
ST2	Jennies Gut storm water repairs	$0	$510,000
ST2a	Repairs to Storm Water Inundation Points in the Town of Hertford		$3,060,000
ST3	Rehabilitation of Barrows Alley	$0	$1,050,000
ST4	Z-Mower replacement	$20,000	$100,000
ST5	Repave cemetary roads	$150,000	$430,000
ST6	Missing Mill Pier Access Ramp		$42,500

Capital Improvements Planning (CIP)

The Living Document!

Tab #	Description	FY2025 Capital Request	Total
WD1	Fire Hydrant Replacement and repair	$35,000	$140,000
WD2	Replacement of existing Water lines	$125,000	$500,000
WD3	Smart Water Meters	$100,000	$500,000
WWC1	Sewer line clean outs	$0	$1,750,000
WWC2	Replace/Upgrade Feed and Seed pump station	$0	$275,000
WWC3	Replace/Upgrade Cemetary pump station	$0	$510,000
WWC4	Replace/Upgrade Willow pump station	$0	$410,000
WWC5	Sewer line replacements	$80,000	$320,000
WWT1	Waste water Mechanical Operations structure	$50,000	$50,000
WWT2	WWTP Operational Controls and Monitoring repairs	$35,000	$720,000
WWT3	3rd Clarifier plant expansion	$0	$1,100,000
WWT4	WWTP Operations Recovery Rehabilitation	$0	$500,000
WWT5	WWTP Conversion of Gas to Solid Chlorination system	$0	$220,000
WWT6	WWTP Effluent System Recovery	0	$700,000

Capital Improvements Planning (CIP)

Possible additions to CIP Update

Waste Water Treatment

- Influent Pump Station rehabilitation
- Disc Filter Removal / Permit Modifications
- WWTP Security Improvements

Street

- S. Edenton Rd street Culvert repairs

Electric

- Commerce Park Service Extension

Water

- Main 14" Forcemain (W.Grubb st.)
- Conversion of Pneumatic valves to Electric

Upcoming Actions

Our Grant work coming to fruition

Waste Water $3.7M

- Sewer Line repairs / reconstruction
- New Meads Pump Station
- Treatment Plant Repairs
    - New Bar Screens (rag removal)
    - Grit Removal (sand removal)

Water $11.2M

- Water line replacements
- Treatment Plant repairs
    - Control systems / monitoring
    - Water Softening System
        - Media (filter material)
        - Brine system

Upcoming Actions

In-house actions

Water System

- Limited but complete Line replacements (targeting perhaps one Street block per year)
- Fire Hydrant replacements (CIP)

Sewer System

- **Inflow / Infiltration Investigation**
- **Oxidation Ditch Bearing replacements**
- Limited but complete line replacements (targeting perhaps one street block per year)
- Manhole rehabilitation
- Limited Clean-out Installations

Stormwater System (street dept.)

- Limited culvert/drop inlet repairs

Upcoming Actions

Needs/Requests

Water System

- Control Valve Compressor replacement
- Trenchbox for Excavations (safety need)
- Pavement Saw
- Portable Floodlight Lampsets

Sewer System

- Additional by-pass pump (to deal with aging Pump Stations – see CIP)
- Smoke Test machine (Inflow/Infiltration study need)
- CCTV with Magnetic locator (sewer line investigations/repairs)
- Strobe/Hazard lights for vehicles (safety need)

Stormwater System (street dept.)

- Limited culvert/drop inlet repairs
- Barricades / Signage (safety need)

Upcoming Actions

Needs/Requests

Streets

- Leaf Mulcher/Vacuum
- 1 New Z-Mower (CIP)
- Back pack Blowers

Electric

- Security measues - CCTV monitoring substation / Screening materials
- Safety Lighting (blue light tripods)
- Nexgrid meters with remote Disconnect function

Unknowns/ Constraints/ Limitations

What can't we really plan for?

Unknowns / Constraints / Limitations

Unknowns

- Unexpected failures of equipment / water or sewer lines / Treatment facilities
- Staffing / Vacancies / recruitment
- Weather events
- Regulatory changes

Constraints

- Available contractors / Available Training / Available work force
- Licensing / Permitting – (CDL, Operator licensing requirements)

Limitations

- Tax base / affordability
- Lead times (pipeline extensions / transformers for substation / in-house expertise)
- Others?

Backup slides

Wastewater Treatment Plan Repairs

Included in current Grant Applications

Indicate construction costs by line item (e.g., linear feet of different-sized lines, each type of stormwater control measure, each stream restoration reach). Include a more detailed construction cost budget if needed.	Division Funding Requested	Other Secured Funding Source(s)	Total Cost Amount
Construction Costs			
SCADA and Instrumentation Process Monitoring	$ 491,000		$ 491,000
Influent Pump Station Rehab	$ 393,000		$ 393,000
Effluent Pump Station Rehab	$ 285,000		$ 285,000
Grit Chamber Equipment Replacement	$ 600,000		$ 600,000
Disc Filters Removal and Disposal	$ 108,000		$ 108,000
Process Control Valves and Gates Replacements	$ 300,000		$ 300,000
Coarse Bubble Aeration System Replacement	$ 240,000		$ 240,000
Oxidation Ditch Inspection and Repair	$ 100,000		$ 100,000
Conversion from Chlorine and SO2 Gas Feed Systems	$ 293,000		$ 293,000
WWTP Security System Improvements	$ 80,000		$ 80,000
Generators Automatic Transfer Switches	$ 450,000		$ 450,000
Contingency (10% of construction costs)	$ 334,000		$ 334,000
Construction Subtotal:	***$ 3,674,000***		***$ 3,674,000***

Stormwater Repairs

Grant Application estimate – Jennie's Gut

Hyde Park Street Culvert

Description	Unit	Quantity	Unit Cost	Total Cost
Design and Permitting	Lump Sum	1	$50,000.00	$50,000.00
Mobilization	Lump Sum	1	$25,000.00	$25,000.00
Clearing and Grubbing	Acre	0.25	$25,000.00	$6,250.00
Earthwork	Cubic Yard	1,500	$25.00	$37,500.00
Demolition	Lump Sum	1	$10,000.00	$10,000.00
Roadway Improvements	Lump Sum	1	$100,000.00	$100,000.00
Traffic Management	Lump Sum	1	$50,000.00	$50,000.00
Erosion Control	Acre	1	$50,000.00	$50,000.00
Culvert Structure	Lump Sum	1	$150,000.00	$150,000.00
Vegetation	Acre	0.25	$5,000.00	$1,250.00
			CONSTRUCTION TOTAL	**$480,000**
			CONTINGENCY (25%)	**$120,000**
			TOTAL PROJECT COST OPINION (LOW)	**$420,000**
			TOTAL PROJECT COST OPINION (HIGH)	**$780,000**

Stormwater Repairs

Repair estimate S. Edenton rd – Jennie's Gut

Edenton Road Street Culvert

Description	Unit	Quantity	Unit Cost	Total Cost
Design and Permitting	Lump Sum	1	$100,000.00	$100,000.00
Mobilization	Lump Sum	1	$100,000.00	$100,000.00
Clearing and Grubbing	Acre	1	$25,000.00	$25,000.00
Earthwork	Cubic Yard	10,000	$25.00	$250,000.00
Demolition	Lump Sum	1	$75,000.00	$75,000.00
Roadway Improvements	Lump Sum	1	$250,000.00	$250,000.00
Traffic Management	Lump Sum	1	$150,000.00	$150,000.00
Erosion Control	Acre	1	$50,000.00	$50,000.00
Culvert Structure	Lump Sum	1	$400,000.00	$400,000.00
Culvert Structure	Acre	1	$5,000.00	$5,000.00
			CONSTRUCTION TOTAL	**$1,405,000**
			CONTINGENCY (25%)	**$351,250**
			TOTAL PROJECT COST OPINION (LOW)	**$1,229,375**
			TOTAL PROJECT COST OPINION (HIGH)	**$2,283,125**

I/I Internal Investigation

Ftr ID	Test Date	Street Location	Smoke Quantity	DefectType	Corrected	Date Corrected	Map Latitude	Map Longitude
22	2/21/2024 14:16	Carolina Street	Low	Cleanout - Broken	No		36.1922069	-76.480332
42	2/22/2024	Dogwood MHP & Wynne Fork Rd	Medium	Broken Manhole	No		36.1706067	-76.4659156
43	2/22/2024	Dogwood MHP Lane	Medium	Missing Cap	No		36.1706536	-76.4653358
44	2/22/2024	Dogwood MHP Lane	Medium	Broken Line	No		36.171295	-76.4655281
45	2/22/2024	Dogwood MHP Lane	High	Broken Line	No		36.1716578	-76.4650911
46	2/22/2024	Dogwood MHP Lane	Medium	Missing Cap	No		36.1718617	-76.4637954
33	2/22/2024 11:22	King Street	Medium	Broken Manhole	No		36.1858857	-76.4735533
23	2/21/2024 14:59	Meads Circle	Low	Under House	No		36.1974048	-76.4850399
24	2/21/2024 15:02	Meads Circle	Medium	Under house	No		36.1978076	-76.4847251
25	2/21/2024 15:03	Meads Circle	Low	Cleanout - Missing Cap	No		36.1980171	-76.4846041
26	2/21/2024 15:04	Meads Circle	High	Broken Line	No		36.1980793	-76.4843385
34	2/21/2024	Meads Circle	Medium	Broken Line	No		36.198574	-76.4838445
35	2/22/2024 11:45	Meads Circle	Medium	Broken Line	No		36.1985525	-76.483823
36	2/21/2024	Meads Circle	Medium	Broken Line	No		36.2000987	-76.4821704
16	2/21/2024 14:04	Nates Drive	High	Cleanout - Broken	No		36.1933734	-76.4794677
17	2/21/2024 14:06	Nates Drive	Low	Cleanout - Missing Cap	No		36.193984	-76.4793042
18	2/21/2024 14:07	Nates Drive	Low	Cleanout - Broken	No		36.194133	-76.478927
19	2/21/2024 14:08	Nates Drive	Low	Cleanout - Broken	No		36.1945572	-76.4785296
20	2/21/2024 14:08	Nates Drive	Low	Cleanout - Broken	No		36.1946836	-76.4782687
21	2/21/2024 14:09	Nates Drive	Low	Cleanout - Broken	No		36.1947232	-76.4783757
8	2/21/2024 11:31	Pennsylvania Ave	High	Cleanout - Broken	No		36.1898456	-76.4759083
9	2/21/2024 11:34	Pennsylvania Ave	High	Cleanout - Broken	No		36.189773	-76.4758013
10	2/21/2024 11:35	Pennsylvania Ave	Medium	Under house	No		36.1897688	-76.4756009
4	2/21/2024 10:54	Perry & West Grubb Street	Low	Cleanout - Broken	No		36.1906326	-76.4761923
1	2/21/2024 10:49	Perry & Willow	High	Cleanout - Missing Cap	No		36.1912763	-76.4754937
2	2/21/2024 10:50	Perry & Willow	Low	Storm Sewer	No		36.1914131	-76.4755652
5	2/21/2024 11:13	Perry Street	Low	In water meter pit	No		36.1905768	-76.4760463
12	2/21/2024 11:59	Saunders Street	Medium	Cleanout - Broken	No		36.1923171	-76.4766284
13	2/21/2024 11:59	Saunders Street	Medium	Cleanout - Broken	No		36.1922595	-76.4766445
31	2/21/2024 16:13	Sunshine Lane	High	Cleanout - Missing Cap	No		36.1984209	-76.4915062
27	2/21/2024 16:05	Sunshine Lane	High	Cleanout - Missing Cap	No		36.199119	-76.4906722
28	2/21/2024 16:11	Sunshine Lane	High	Broken Manhole	No		36.1990731	-76.4906831
29	2/21/2024 16:12	Sunshine Lane	High	Cleanout - Missing Cap	No		36.1986537	-76.4912371
30	2/21/2024 16:13	Sunshine Lane	High	Cleanout - Missing Cap	No		36.1985132	-76.4916102
32	2/21/2024 16:14	Sunshine Lane	High	Cleanout - Missing Cap	No		36.1983211	-76.4916095
3	2/21/2024 10:52	West Grubb Street	High	Under house	No		36.1911417	-76.4763647
7	2/21/2024 11:18	West Grubb Street	High	Cleanout - Missing Cap	No		36.1909293	-76.4766132
11	2/21/2024 11:55	West Grubb Street	Low	Cleanout - Broken	No		36.1916299	-76.4770647
14	2/21/2024 12:02	West Grubb Street	Low	In water meter pit	No		36.1920869	-76.4782262
15	2/21/2024 12:04	West Grubb Street	Low	Line Break	No		36.1923706	-76.4786789
6	2/21/2024 11:17	Woodland Street	Medium	Cleanout - Missing Cap	No		36.1915575	-76.4763615

I/I Investigation Aerial View

Don Juan / Meads Trailer Park

I/I Investigation Aerial View

Willow Pump Station Flow Area