



Town of Ashland

New Hampshire

Water and Wastewater Asset Management Plan



Agenda

- What is Asset Management?
- Ashland Asset Management Planning Process
- LOS Goals Matrix
- Risk Assessment
- Risk Interpretation & Action Levels
- Capital Outlay
- Implementation of the Plan

Asset Management

“Asset Management is ***maintaining a desired level of service for what you want your assets to provide at the lowest lifecycle cost.*** Lowest lifecycle cost refers to the best appropriate cost for rehabilitating, repairing or replacing an asset. Asset management is implemented through an asset management program and typically a written asset management plan.”

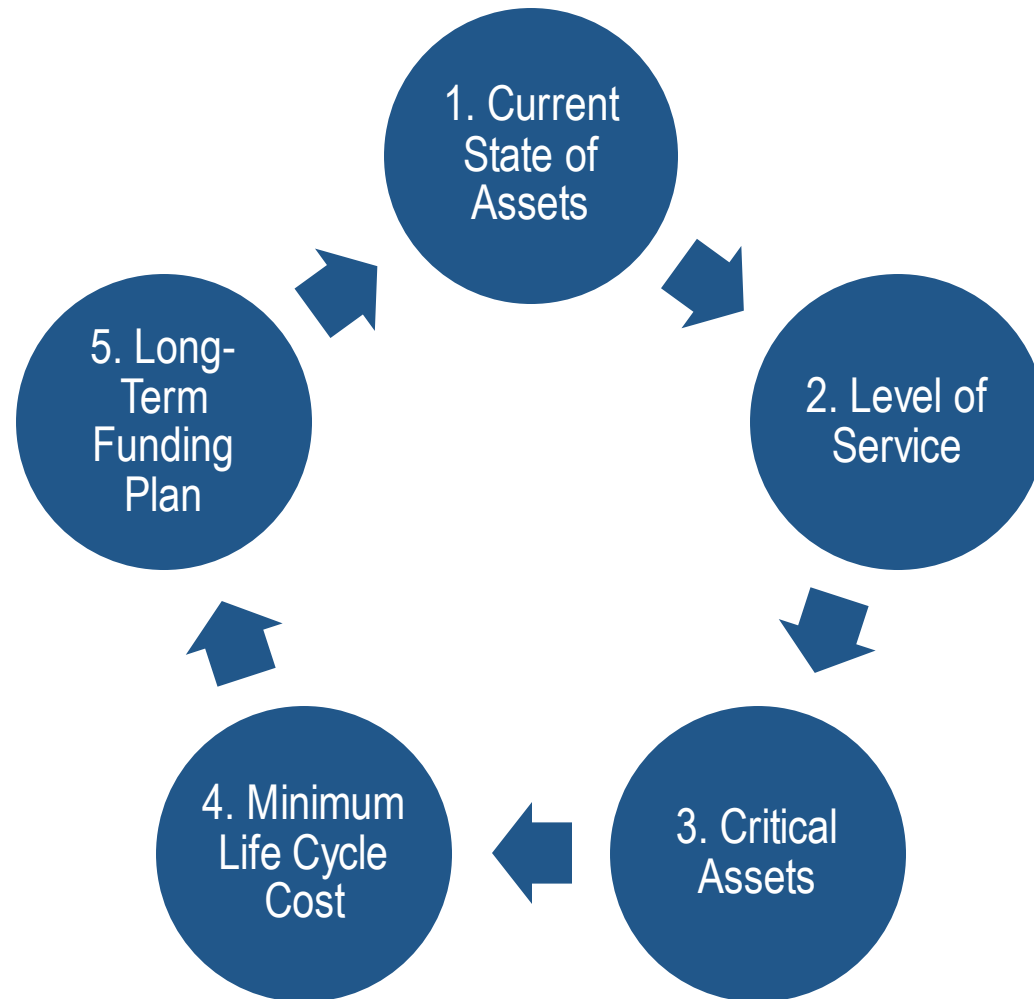
*EPA's Asset Management: Best Practices



Benefits of Asset Management

- Make better financial decisions and meet regulatory requirements.
- Reduces the number of emergency repairs.
- Prioritize the rehabilitation/replacement of assets.
- Research cost-effective options.
- Customers can see that you are spending money effectively and efficiently.
- Some funding agencies rank applicants higher if they have completed an AMP.

Overview of Ashland AMP Process



1. Determine Current State of Assets

- Conducted an Inventory of Assets including:
 - GIS layers for Sewer Mains/Water Mains/Pump Stations and Manholes
 - MVP Software
 - Scanned and Geo-Referenced Record Drawings
 - Discussions with Staff
- Determine Useful Life
- Determine Asset Value & Replacement Cost

2. Level of Service

Determine the required “sustainable” level of service based on:

- Regulations
- Customer Service and Stakeholder Demands
- Actual Performance
- Capabilities of the Assets



Level of Service Matrix

Goal	Objective	Measure	Units	2017 Benchmark	2018 Goal	2018 Attainment	2019-2020 Goal
Customer Service	Respond to a sewer or water customer by next business day of receiving inquiry	hours/call	hours/call	Within/Day	>95%	Within/Day	Within/Day
	Respond to water quality or pressure service complaints within 4 hours	hours/call	hours/call	2 hours	>95%	1 hour	2 hours
	Contact affected customers 48 hours prior to a scheduled water main shutdown in both planned and emergency situations	Customers called before shutdown	% customers called before shutdown	80%	>95%	90%	>95%
	Reduce number emergency main shutdowns	Shutdowns	# of shutdowns	1	0	1	0



3. Determine Critical Assets

- Consequence of Failure (CoF)
 - Based on asset's function, role and location
 - Ranked on scale of 1 (very low) – 5 (very high)

- Likelihood of Failure (LoF)
 - Based on the asset's condition, performance, and reliability
 - Ranked on a scale of 1 (very low) – 5 (very high)

CoF Scoring

Triple Bottom Line (TBL) Driver	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
Environmental Regulatory	Fine, compliance order or other regulatory action likely or significant damage to the environment	Fine, compliance order or other regulatory action possible or localized damage to the environment	Non-compliance possible or some damage to the environment	Non-compliance possible if not addressed or minimal damage to the environment	Non-compliance unlikely or minor damage to the environment
Economic Service & Financial Impacts	Complete disruption of services; direct or indirect costs trigger state and regional media coverage	Partial disruption of services; direct or indirect costs trigger local media coverage	Partial disruption of services, direct or indirect costs do not trigger media coverage	No disruption of services; direct or indirect costs do not trigger media coverage	No impact to operations; direct or indirect costs do not trigger media coverage
Social Safety & Security	High expectation of serious injury, potentially life-threatening or major security breach	High expectation of a major injury, not life-threatening or security compromised	Low risk of a moderate injury or security jeopardized	Low risk of minor injury or security threat	No risk of injury and minor security threat
Social Customers & Reputation	Major impact on stakeholders and/or serious threat to long-term reputation	Intermittent service to some customers and or threat to reputation	Minor service impacts and/or diminishes reputation	Contained within the facilities, workarounds making work flows difficult	In-house work item, reduction in efficiency
Plant Impact	Very high, major consequence. No redundancy or workaround, certain & immediate impact to permit compliance, safety or other systems. Loss of service and high cost of failure.	High consequence. Limited redundancy, work-around/repair more expensive and/or challenging. Likely/short term impact to permit compliance or safety. Higher cost of failure vs addressing now.	Medium consequence. Full redundancy but critical, or limited redundancy but work-around available. Possible/eventual impact to permit compliance or safety. Some cost of failure vs addressing now.	Low consequence. Full redundancy, simple repair, or could live without. Minimal operational & cost impacts. No impact to permit, safety, or other systems.	No consequence. Full redundancy and/or no impact.

LoF Scoring

Asset Type	5 (Very High)	4 (High)	3 (Moderate)	2 (Low)	1 (Very Low)
Horizontal Assets	Not functional - requires major repair, rebuild or replacement to operate properly. Beyond useful life.	Operable, but does not function as needed for current operating conditions. At or nearing end of useful life.	Functions as needed for current operating conditions, ½ -¾ life expended.	Fully functional for current operating conditions, ¼ - ½ life expended.	Fully functional as designed, < ¼ life expended.
Vertical Assets	Failed/out of service/does not exist/impact being felt now	Poor Condition/End of life (failure likely within 5 years). Significant deterioration - major repair required, requires excessive maintenance or insufficient capacity for current process. Rehabilitation unlikely	Fair condition. Some life (5 to 10 years) remaining, requires moderate maintenance, approaching capacity issues	Good Condition. Significant life (10-15 years) remaining. Minor defects, only preventative maintenance or minor corrective maintenance required	New or nearly so. Full life (15-20 years) remaining, reliable, and sufficient capacity for current and design process needs

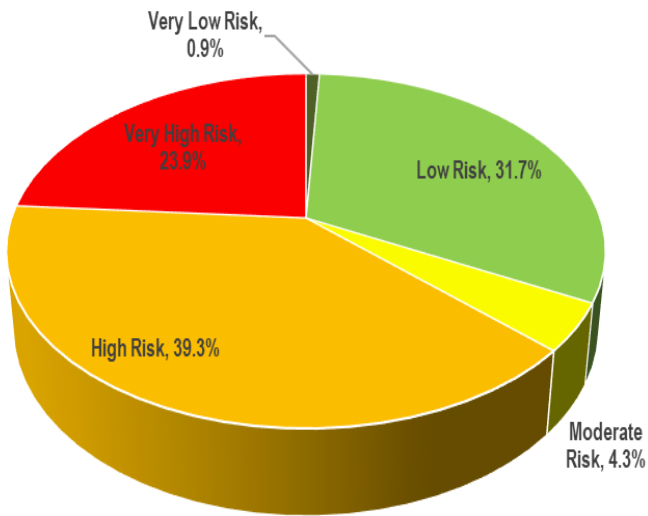
Risk Interpretation & Action Levels

- **Frequent Assessment / Immediate Action:** Assets with a high CoF are critical to system operation and should be assigned highest priority for inspection and maintenance activities to ensure they remain operational. As the LoF for these assets increases, they become increasingly high risk assets, which require immediate action outside of regular maintenance. Inspection is recommended every 1-5 years.
- **Regular Monitoring / High Priority Renewal:** Assets requiring regular monitoring and or routine maintenance may have a high CoF and a low LoF, and should be prioritized to ensure they remain operational; because they are less likely to fail, they can be addressed over time. As the LoF for these assets increases, they become high risk assets which may require more frequent or immediate attention. Inspection is recommended every 5-10 years.

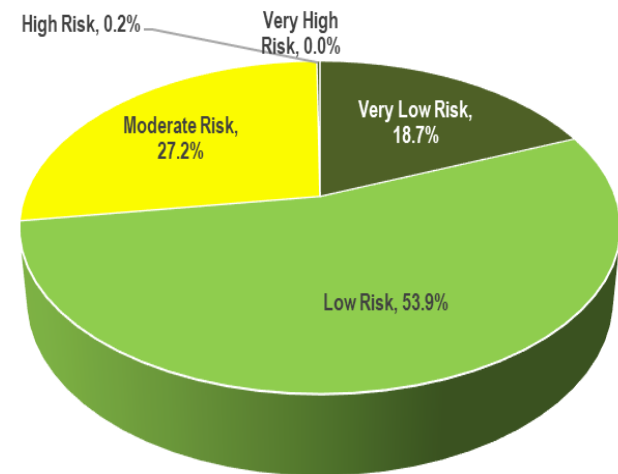


Sewer Main CoF/LoF

Sewer Main CoF Scoring

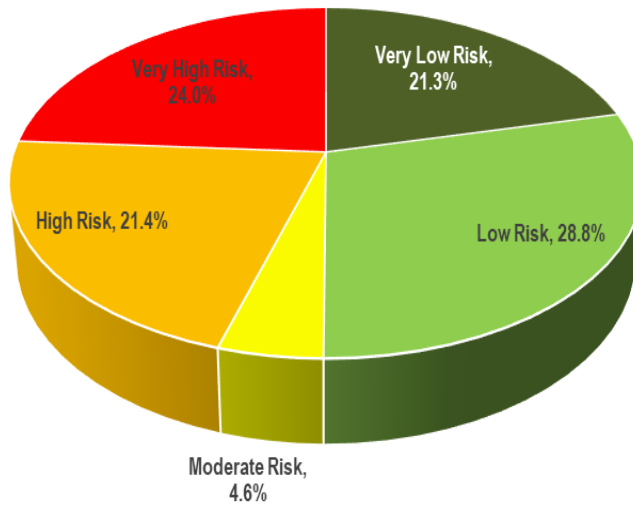


Sewer Main LoF Scoring

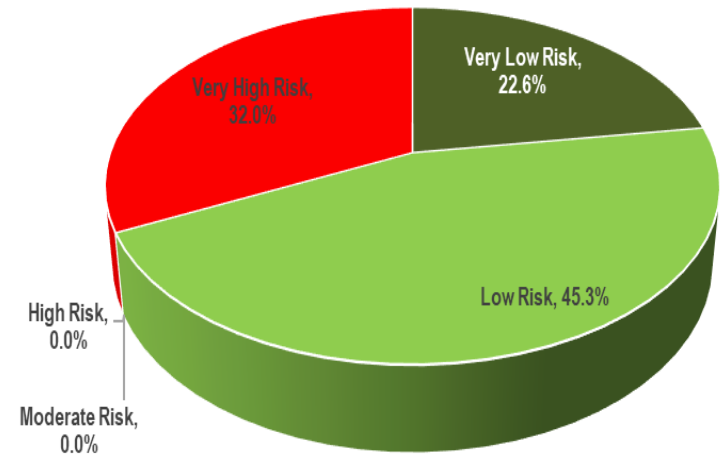


Water Main CoF/LoF

Water Main CoF Scoring

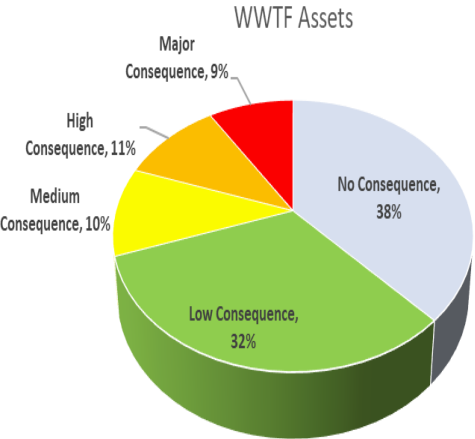
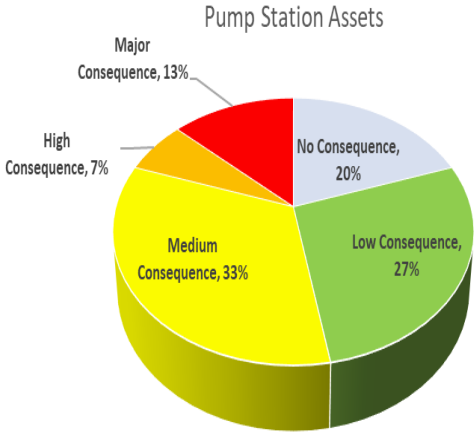


Water Main LoF Scoring

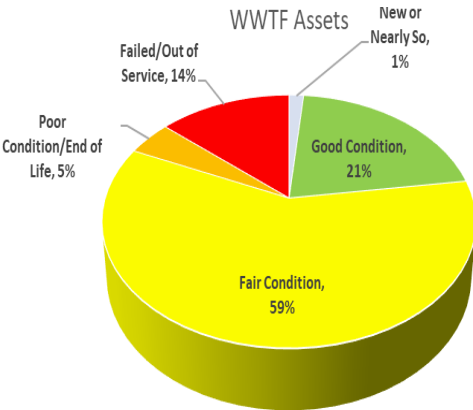
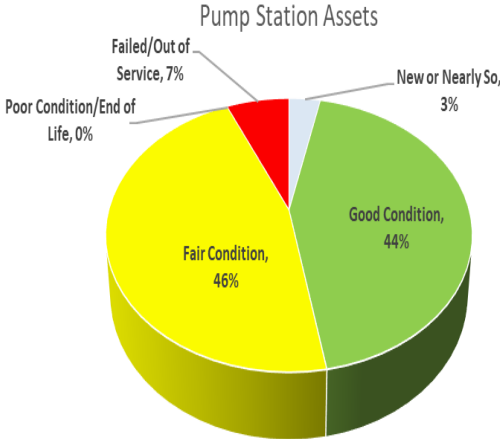


Pump Station & WWTF CoF/LoF

CoF Scoring



LoF Scoring



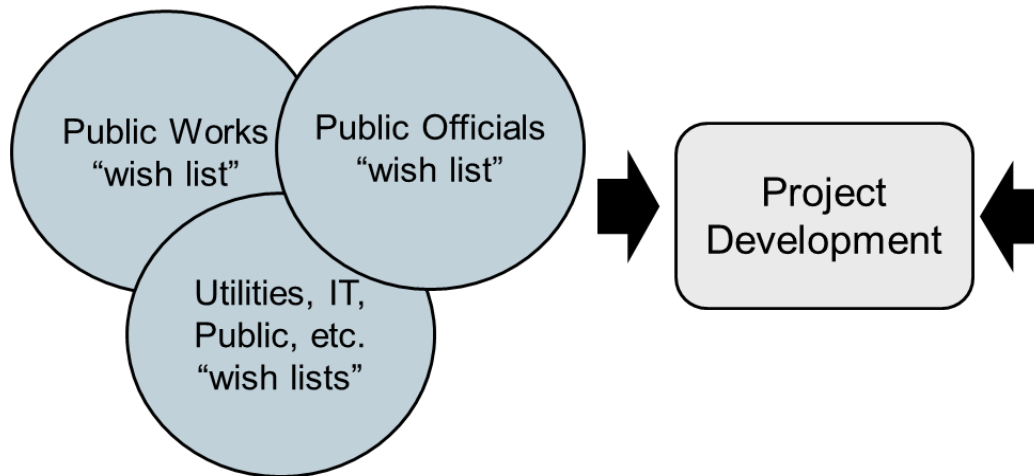
4. Minimum Life Cycle Cost

- Determine the costs to:
 - Rehabilitate Critical Assets
 - Repair Critical Assets
 - Replace Critical Assets

- Determine way Optimize:
 - Operations & Maintenance
 - Personnel
 - Capital Budget Accounts

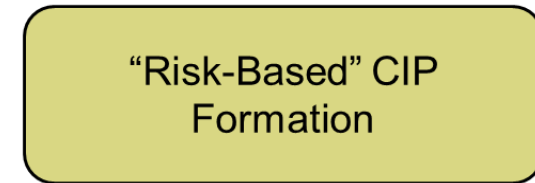
Typical CIP vs. Enhance CIP

Traditional Model



- No objective prioritization of needs
- “Squeaky wheel” gets the money
- Doesn’t fully consider...
 - Risk reduction
 - Lifecycle costs
 - Levels of Service (LOS)
 - Return on Investment (ROI)

Enhanced Model



- Asset “Risk”
 - Asset Condition
 - Consequences of Failure
- Business Goals
- Lifecycle Costs
- Levels of Service (LOS)
- Return on Investment (ROI)
- Payback Period
- Objective Prioritization Criteria

5. Long Term Funding Plan

- Do we have enough funding to maintain the assets for our required level of service?
- Is our rate structure adequate for our system's long-term needs?



AMP Recommendations

Asset for Rehabilitation	Short – Term Cost	Intermediate Cost
Sewer		
Sewer Mains	\$22,813	\$ -
Sewer Manholes	\$8,944	\$ -
SSES Program	\$343,883	\$343,883
Water		
Water Mains	\$1,391,416	\$910,160
Hydrants	\$101,250	\$ -
WWTP		
Blower Room Electrical	\$135,000	\$ -
Blower Room Generator	\$ -	\$135,000
Flow Meter	\$ -	\$18,225
Lagoon Lining	\$ -	\$1,580,182
Lagoon Aeration	\$ -	\$168,750
Pump Stations		
PS #1 Automatic Transfer Switch	\$ -	\$13,500
PS #2 Automatic Transfer Switch	\$ -	\$13,500
PS #3 Automatic Transfer Switch	\$ -	\$13,500

AMP Recommendations

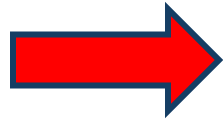
Asset for Rehabilitation	Short – Term Cost	Intermediate Cost
Total Utilities	\$1,868,306	\$1,254,043
Total WWTP	\$135,000	\$1,942,657
Total	\$2,003,306	\$3,196,700

AMP Recommendations

Asset for Rehabilitation	Short – Term Cost	Intermediate Cost
Total Utilities	\$1,868,306	\$1,254,043
Total WWTP	\$135,000	\$1,942,657
Total	\$2,003,306	\$3,196,700

Optimize & Leverage Funding

2019 NHDES CLEAN WATER SRF PRIORITY LIST



WASTEWATER PLANNING EVALUATIONS				
No.	APPLICANT	PROJECT NAME	TOTAL COST	Principal Forgiveness ^{1,2}
1	Ashland	Facility Analysis	\$75,000	\$75,000
2	Epping	Lagoons 1 & 2 Decommissioning	*	\$75,000
3	Exeter	Westside Drive Sewer & Stormwater Planning	*	\$75,000
4	Lancaster	WW Master Plan	\$75,000	\$75,000
5	Milford	WWTF Nutrient & Metals Removal Upgrade	\$75,000	\$75,000
6	Northumberland	WWTF & PS Flood Mitigation Study	\$75,000	\$75,000
7	Franklin	Wastewater Collection System Planning	\$120,000	\$0
8	Conway Village Fire Dist.	Sewer System Evaluation Survey - Phase 2	\$75,000	\$0
9	Newmarket	Sewer System Evaluation - Phase 2	\$75,000	\$0
10	Northumberland	The Hill Sewer Replacement	\$83,000	\$0
11	Winchester	WWTF Solids & Septage Improvements	\$60,000	\$0
12	Rochester	Septage Receiving Facility	\$82,500	\$0
13	Rochester	Sewer Collection System Master Plan	\$150,000	\$0
14	Rochester	Tara Estates PS Upgrade Planning	\$15,000	\$0
15	North Conway Water Precinct	Wastewater Master Plan Update	\$75,000	\$0
16	Dover	Wastewater Pump Station Evaluation	\$75,000	\$0
17	Dover	Sewer and Force Main Study	\$150,000	\$0
18	Newfields	Sludge Removal & Aeration System Planning	\$25,500	\$0
19	Concord	Collection System CIP Prioritization	\$110,000	\$0
20	Salem	Wastewater Collection System Improvements	\$10,000	\$0
21	Winnepesaukee R. Basin Program	CMOM Implementation & Pipeline Rehabilitation	\$120,000	\$0
22	Winnepesaukee R. Basin Program	Solids Handling Master Plan & Resultant Upgrades	\$114,500	\$0
23	Hampton	System wide Infiltration/Inflow Study	\$75,000	\$0
24	Hooksett	Route 3A Sewer Expansion Phase I	\$75,000	\$0
			\$1,790,500	\$450,000

Water & Sewer Rate Evaluation

- Goals of the Rate Study
 - Revenue Stability
 - Revenue Sufficiency
 - Equitable Distribution of Costs to Users
 - Maintenance of Adequate Capital & Operational Reserves
 - Easy to Understand & Administer



Water & Sewer CIP

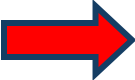
- Ashland needs to invest in Capital Improvements in the next coming 5-years (FY2021 – FY2026)
 - Water System: ~ \$2.4M (Water Mains and Hydrants)
 - Sewer System: ~ \$2.8M (SSES, Sewer Mains, WWTP, Lagoons, Pump Stations)



Water & Sewer CIP

- Developed Rate Model to show impacts of capital projects on user rates
 - Allows Ashland to add additional projects/modify existing projects

ASHLAND, NH - CAPITAL IMPROVEMENT PROGRAM/AMP
Full list of needed capital upgrades



Year	Improvements	Planning	CCE	Distrib. System	Funding Source	Grant %	Year Constr.	Project Value	Bonding Duration	% Rate	LIE/DS	FY Cost Hits
2021	Facility Analysis (Lagoons)	2021	\$75,000	\$0	SRF	100%	2021	\$0	20	0.00%	\$0	2022
2021	Sewer Mains	2021	\$22,813	\$0	Cash	0%	2021	\$25,455	20	0.00%	\$25,455	2021
2021	Sewer Manholes	2021	\$8,944	\$0	Cash	0%	2021	\$11,239	20	0.00%	\$11,239	2021
2021	SSES Program Phase 1	2021	\$343,883	\$0	SRF	0%	2026	\$354,552	20	0.00%	\$17,728	2027
2026	SSES Program Phase 2	2026	\$343,883	\$0	SRF	0%	2021	\$401,148	20	0.00%	\$20,057	2022
2021	Blower Room Electrical	2021	\$135,000	\$0	SRF	0%	2026	\$140,447	20	0.00%	\$7,022	2027
2026	Blower Room Generator	2026	\$135,000	\$0	SRF	0%	2026	\$158,908	20	0.00%	\$7,945	2027
2026	Flow Meter	2026	\$18,225	\$0	Cash	0%	2026	\$23,485	20	0.00%	\$23,485	2026
2026	Lagoon Lining	2026	\$1,580,182	\$0	SRF	0%	2026	\$1,834,876	20	0.00%	\$91,744	2027
2026	Lagoon Aerator	2026	\$168,750	\$0	SRF	0%	2026	\$198,048	20	0.00%	\$9,902	2027
2026	Pump Station #1 Transfer Switch	2026	\$13,500	\$0	Cash	0%	2026	\$18,005	20	0.00%	\$18,005	2026
2026	Pump Station #2 Transfer Switch	2026	\$13,500	\$0	Cash	0%	2026	\$18,005	20	0.00%	\$18,005	2026
2026	Pump Station #3 Transfer Switch	2026	\$13,500	\$0	Cash	0%	2021	\$18,005	20	0.00%	\$18,005	2021

Implementation of AMP

- Staff Training
- Public Outreach
- Maintenance Program Updates
- Leverage Funding Sources
 - NHDES SRF Program – Principal Forgiveness/Low Interest
 - Northern Borders Regional Commission
 - USDA Rural Development Water & Waste Disposal Loans



THANK YOU!
QUESTIONS?

