

# CSRD WATER SYSTEMS

ASSET MANAGEMENT  
SYSTEM SUSTAINABILITY  
HEALTH CHECK-UP





# WHY IS ASSET MANAGEMENT IMPORTANT?

## 1. Optimizing Value

Asset management ensures that utilities maximize the value of their infrastructure investments. Properly funded asset management programs allow for proactive maintenance, timely repairs, and efficient operation of assets such as pipes, pumps, and treatment facilities.

## 2. Long-Term Sustainability

Asset management isn't just about the present; it's about planning for the future. Adequate funding ensures that utilities can set aside resources for asset replacement and upgrades, promoting long-term sustainability.

## 3. Meeting Service Expectations

Reliable water services are an expectation for communities. Properly funded asset management programs help utilities meet service level agreements, avoid downtime, and maintain customer satisfaction.

## 4. Comprehensive Information

Adequate funding enables utilities to maintain accurate inventories of critical assets. This includes not only physical locations but also detailed information about asset condition, performance, and expected lifespan. Having this data facilitates informed decision-making.

## 5. Timely Interventions

Funding allows utilities to address asset needs promptly. Whether it's repairing aging pipelines or upgrading treatment plants, timely interventions prevent costly emergencies and service disruptions.

## 6. Emergency Preparedness

In emergencies—such as pipe bursts or natural disasters—well-maintained assets are crucial. Adequate funding allows utilities to respond swiftly and effectively during crises.



# WATER SYSTEM SUSTAINABILITY QUESTIONS

## What assets do we own?

Ensuring access to clean drinking water relies heavily on robust infrastructure. Water systems consist of numerous interconnected assets and components. A comprehensive understanding of this infrastructure is fundamental for effective operations and strategic capital planning.

## How much are our assets worth?

The replacement value of infrastructure significantly impacts asset reinvestment levels and serves as a driver for future revenue requirements.

The presented replacement costs in this report reflect the investment needed to replace existing assets. However, it's essential to note that these costs do not encompass additional investments required for regulatory compliance, growth, safety enhancements, or economic development.

## What condition are our assets in?

The condition informs decisions regarding asset reinvestment and guides the development of inspection programs.

In most cases the actual physical condition of the asset is unknown due to challenges with inspecting pressurized systems. In these situations, its age becomes a useful proxy for estimating its current state.

## When will our assets need to be replaced?

Accurately predicting the replacement time for infrastructure is challenging due to the service life's unpredictability, which varies based on factors like materials, environmental conditions, and construction methods.

However, estimating when assets need replacing is crucial for the CSRD to effectively plan for future costs.

## How much should we be funding AM annually?

Accurately predicting when infrastructure will require replacement is a formidable challenge. Engineers typically err on the side of caution by using conservative lifespan estimates. These estimates prioritize safety and reliability, but they may underestimate the actual longevity of assets.

In reality, numerous assets could surpass their projected lifespans by a significant margin—sometimes up to 25% or more. Recognizing this variability, we've developed three distinct funding scenarios. Each scenario accounts for different assumptions regarding lifespan extension, allowing us to plan for financial needs across a range of potential asset lifetimes.

## How much water do we use?

Conserving water not only saves energy but also reduces the overall carbon footprint. Energy is essential for treating and distributing water to consumers; hence, using less water directly decreases energy consumption. Additionally, minimizing water usage helps maintain our natural ecosystems and supports the preservation of wetland habitats, which are crucial for wildlife sustenance.

# SYSTEM SUSTAINABILITY CATEGORIES

ASSET CONDITION  
ASSET REPLACEMENT FUNDING  
ASSET MANAGEMENT RESERVES  
WATER CONSERVATION

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WATER SYSTEM  
SUSTAINABILITY  
HEALTH CHECK-UP  
SCORING

**ALL CLEAR**

This indicator is meeting or exceeding the desired target and no additional actions are required.

**INVESTIGATE**

This indicator shows that the target is not being met and merits further investigation to understand if action is required.

**INTERVENE**

This indicator shows that the target is not being met by a significant margin and that intervening action(s) are very likely required.



# WHY IS ASSET CONDITION IMPORTANT?

## 1. Public Safety

Well-maintained water systems ensure the delivery of clean and safe drinking water, protecting communities from waterborne diseases and contaminants. This includes preventing the spread of bacteria, viruses, and toxic chemicals.

## 2. Environmental Protection

Properly functioning water infrastructure helps prevent pollution of local rivers, streams, and other water bodies. This is crucial for maintaining healthy ecosystems and biodiversity.

## 3. Economic Stability

Reliable water systems support economic activities by providing the necessary water for industries, agriculture, and daily life. They also help avoid costly repairs and disruptions caused by infrastructure failures.

## 4. Resilience and Security

Modern water infrastructure is designed to withstand physical and natural threats, ensuring continuous service even during emergencies. This resilience is essential for community safety and preparedness.

## 5. Quality of Life

Access to clean water is a fundamental human need. Good water infrastructure supports overall well-being, hygiene, and sanitation, contributing to a higher quality of life.

## Summary

In summary, maintaining the condition of water system infrastructure is essential for public health, environmental protection, economic stability, resilience, and quality of life.

ASSET  
CONDITION  
HEALTH  
RATING

**TARGET BASED ON % OF ASSET LIFE REMAINING**

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	% LIFE REMAINING	
	FROM	TO
ALL CLEAR	60%	100%
INVESTIGATE	40%	60%
INTERVENE	0%	40%

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# WHY IS FUNDING ASSET REPLACEMENT IMPORTANT?

## 1. Prolonging Asset Life

Proper replacement funding ensures that maintenance and repairs can be conducted regularly, extending the lifespan of critical infrastructure components like pipes, pumps, and treatment facilities

## 2. Cost Efficiency

Investing in asset replacement helps avoid costly emergency repairs and replacements. By planning and funding maintenance activities, utilities can manage resources more effectively and reduce overall costs.

## 3. Service Reliability

Adequate funding allows for timely upgrades and replacements, ensuring that water systems can consistently meet consumer demands and regulatory requirements. This reliability is essential for providing safe and uninterrupted water services.

## 4. Risk Management

With proper asset replacement funding, utilities can identify and mitigate potential risks before they become significant issues. This proactive approach helps prevent service disruptions and environmental hazards.

## 5. Financial Planning

Asset replacement supports long-term financial planning, enabling utilities to set rates based on sound operational and financial strategies. This ensures that there are sufficient funds to maintain and improve the water system over time.

## Summary

Asset replacement funding is vital for maintaining the efficiency, reliability, and safety of water systems, ultimately benefiting both the utility and the community it serves.



## TARGET BASED ON ASSETS LASTING 50% LONGER THAN THE GENERALLY ACCEPTED CONSERVATIVE LIFESPANS

# ASSET REPLACEMENT FUNDING

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	% OF TARGET	
	FROM	TO
ALL CLEAR	60%	100%
INVESTIGATE	40%	60%
INTERVENE	0%	40%

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# WHY ARE RESERVE FUNDS IMPORTANT?

## 1. Financial Stability and Risk Mitigation

- **Unforeseen Events:** Water systems face unexpected challenges such as equipment breakdowns, natural disasters, or regulatory changes. Having reserve funds allows utilities to respond promptly without disrupting service.

## 2. Infrastructure Maintenance and Replacement:

- **Capital Expenditures:** Water systems require ongoing maintenance and eventual replacement of aging infrastructure (pipes, pumps, treatment plants, etc.). Reserve funds ensure that funds are available for these critical capital projects.
- **Avoiding Debt:** Without reserves, utilities might need to borrow funds to cover major expenses. Reserves reduce reliance on debt financing.

## 3. Compliance and Emergency Preparedness

- **Regulatory Compliance:** Reserves help utilities meet regulatory requirements (e.g., water quality standards, infrastructure upgrades) without straining their operating budgets.
- **Emergency Response:** In emergencies (e.g., water contamination, equipment failure), having reserves allows for rapid action to protect public health.

## 4. Rate Stability and Ratepayer Confidence

- **Rate Stabilization:** Reserves provide stability in rate-setting. Utilities can avoid sudden rate spikes by using reserves to absorb short-term cost fluctuations.
- **Ratepayer Confidence:** Knowing that the utility has reserves instills confidence in ratepayers that their water system is well-managed and financially secure.

## 5. Planning for the Future

- **Long-Term Vision:** Reserves support strategic planning. Utilities can allocate funds for future expansion, technology upgrades, or environmental initiatives.
- **Asset Management:** Reserves facilitate asset management by ensuring funds are available for planned replacements and upgrades.

## Summary

Reserve funds play a crucial role in ensuring the stability and sustainability of water systems.

Reserve funds are like a safety net they provide financial security, flexibility, and the ability to adapt to changing circumstances.

# AM RESERVES

## TARGET BASED ON THE VALUE OF ASSETS ESTIMATED TO BE IN POOR CONDITION\*

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	% OF TARGET	
	FROM	TO
ALL CLEAR	60%	100%
INVESTIGATE	40%	60%
INTERVENE	0%	40%

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\* Minimum of 5% of replacement value



# WHY IS WATER CONSERVATION IMPORTANT?

## 1. Resource Preservation

Water scarcity is a global concern, and municipal water systems play a critical role in managing this precious resource. By promoting water conservation, communities ensure the sustainable use of water from natural sources such as rivers, lakes, and aquifers. This proactive approach helps prevent depletion and ensures a reliable water supply for current and future generations.

## 2. Environmental Impact

Beyond meeting human needs, water sustains ecosystems and wildlife. Conserving water minimizes the disruption of natural habitats and maintains healthy aquatic ecosystems. When we reduce water consumption, we indirectly protect the delicate balance of flora and fauna that rely on freshwater resources.

## 3. Drought Preparedness

Climate change exacerbates drought events, affecting water availability. Communities that prioritize water conservation are better equipped to withstand prolonged dry spells. Implementing water-saving measures during normal conditions builds resilience, ensuring that essential services remain functional even during water scarcity.

## 4. Public Health and Water Quality

Clean, safe water is fundamental to public health. When we conserve water, we reduce the strain on treatment facilities, maintain water quality standards, and minimize the risk of contamination. A healthy population relies on access to reliable and uncontaminated water sources.

## 5. Economic Efficiency

Efficient water use translates to cost savings. Communities invest significant resources in water treatment, distribution infrastructure, and maintenance. By encouraging conservation practices—such as fixing leaks, using water-efficient appliances, and implementing smart irrigation systems—local governments can reduce operational expenses.

## 6. Infrastructure Sustainability

Aging water infrastructure faces challenges due to increased demand and changing climate patterns. By promoting conservation, communities alleviate stress on pipes, pumps, and storage facilities. This proactive approach extends the lifespan of infrastructure components and avoids costly emergency repairs.

# WATER CONSERVATION

## TARGET BASED ON SUMMER PEAK BEING LESS THAN 1500L/DAY PER CONNECTION

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	% OF TARGET	
	FROM	TO
ALL CLEAR	0%	125%
INVESTIGATE	125%	250%
INTERVENE	250%	>

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# SYSTEM SUSTAINABILITY HEALTH CHECK-UP RESULTS





# ANGLEMONT WATER SYSTEM

What assets do we own?

**Watermain**  
 **32 km**

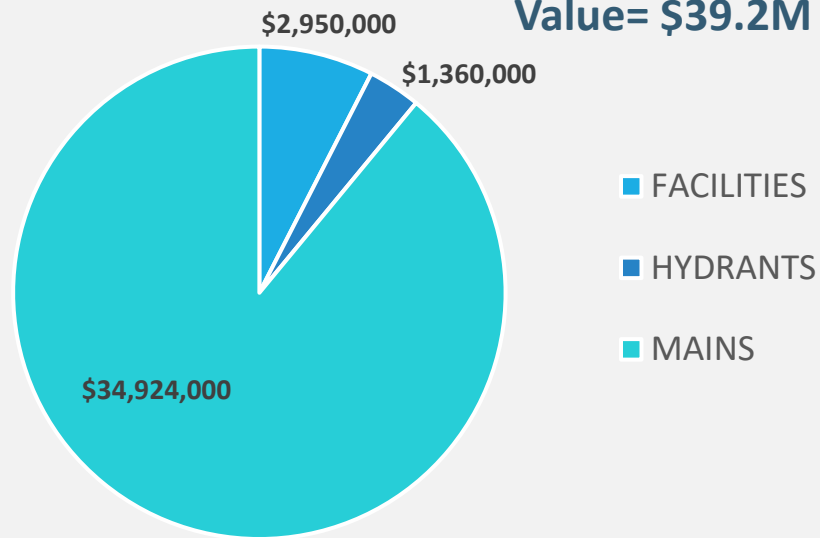
**Pumping Station**  
 **3**

**Reservoirs**  
 **4**

**Hydrants**  
 **81**

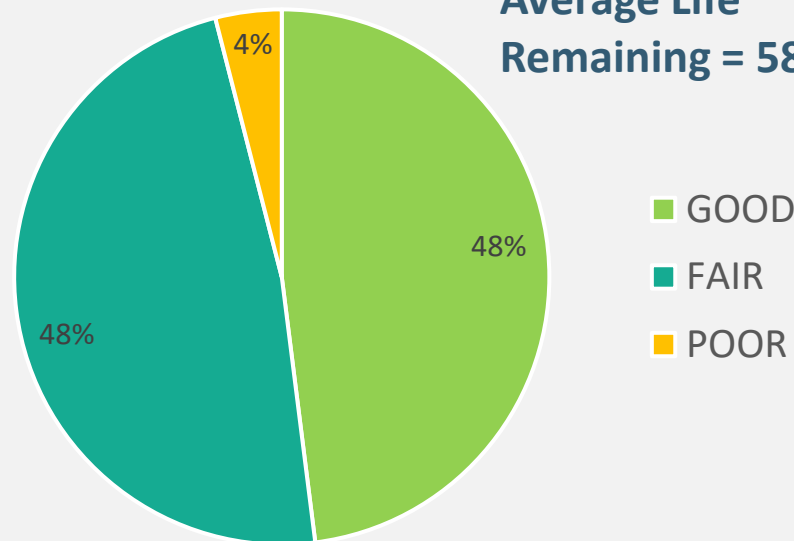
How much are our assets worth?

**Total Replacement Value = \$39.2M**

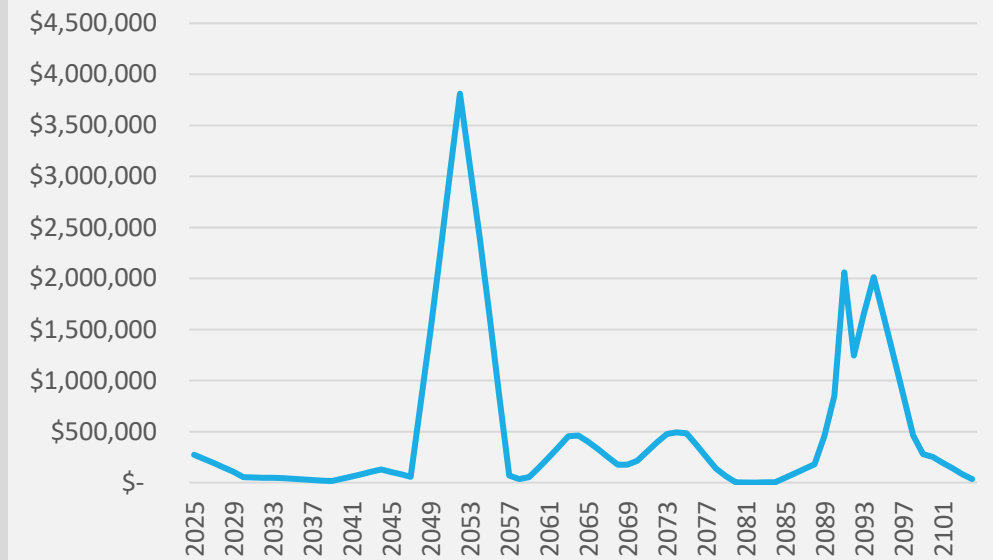


What condition are our assets in?

**Average Life Remaining = 58%**



When will our assets need to be replaced?



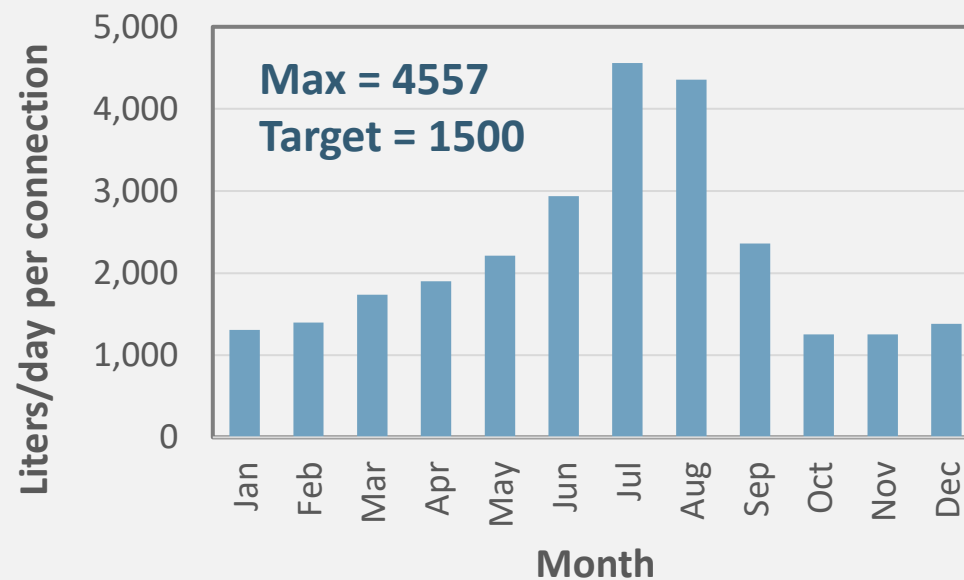
How much should we be funding capital replacements/reserves annually?

Scenario	Annual Funding
Base case asset lifespans	\$575,000
Assets last 50% longer (Target)	\$383,000
Current Funding	\$139,000

What is our current capital reserves status?

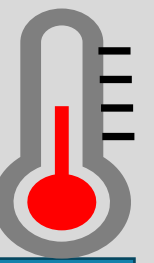
Category	Amount
Reserve Fund Target	\$1,962,000
Current Reserve Funds	\$2,107,000

How much water do we use?

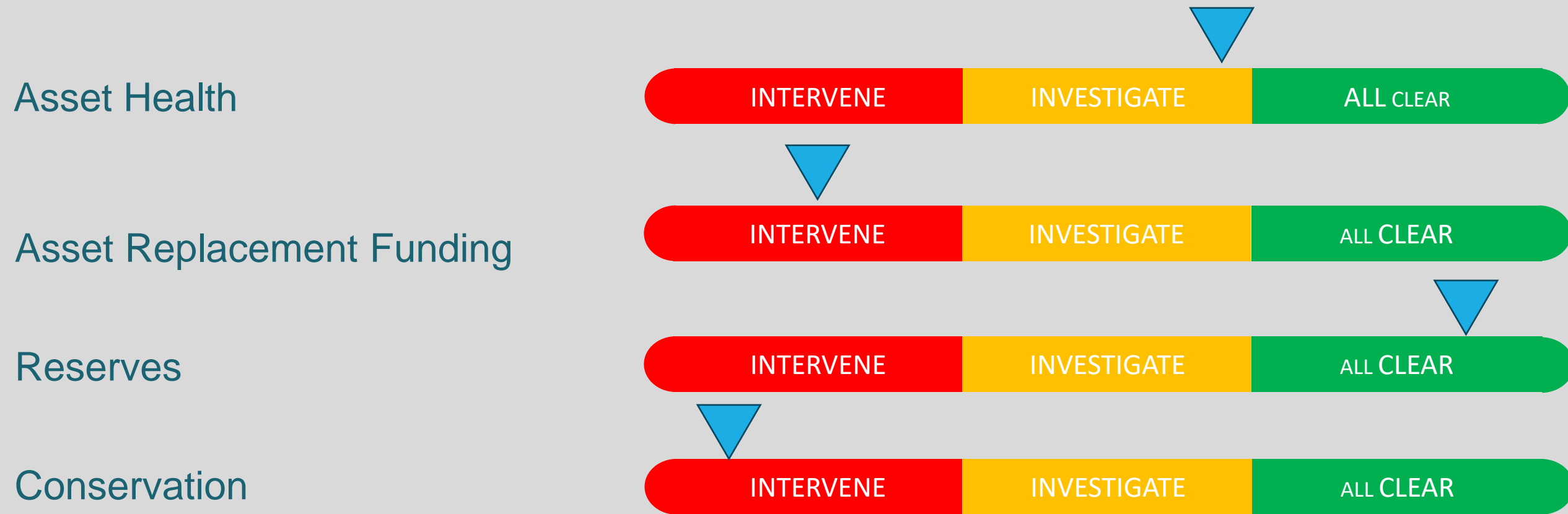


Do we have other concerns?

- \$100k/year budgeted for service replacements and blow-off upgrades
- Undersized mains on east side and lack of looping
- System leakage still a concern
- Undersized creek crossing
- Pumps will need rebuilding
- PRV's (12) need major service
- Hydrants are old and require replacement



## SYSTEM HEALTH CHECK-UP




- Continued annual service replacements and correcting system leakage will help reduce high water usage
- Reserves will start to deplete as necessary upgrades/replacements are completed







# CEDAR HEIGHTS WATER SYSTEM

What assets do we own?

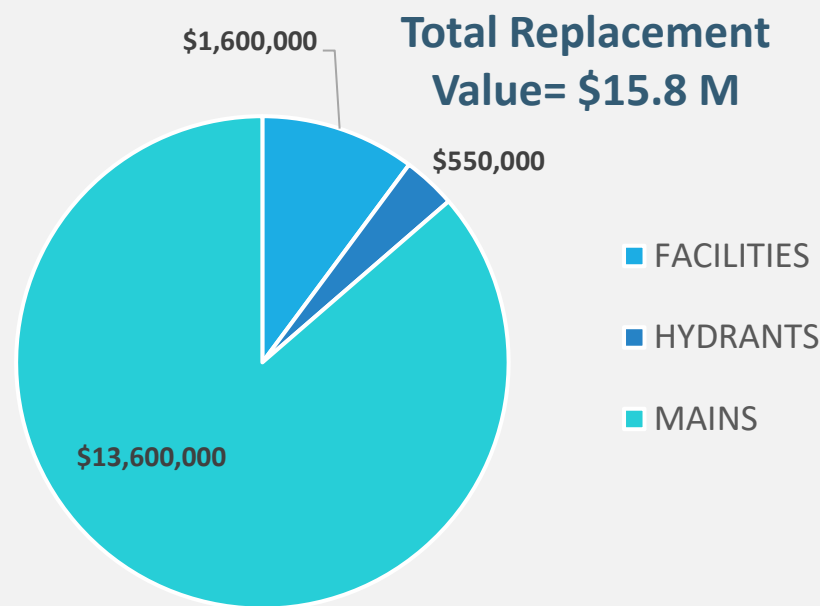
**Watermain**  
 **12 km**

**Pumping Station**  
 **3**

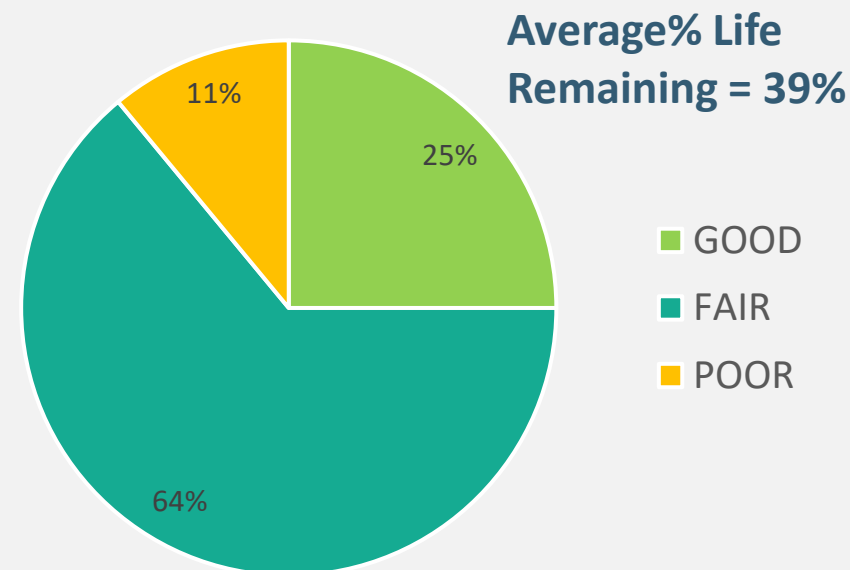
**Reservoirs**  
 **3**

**Hydrants**  
 **36**

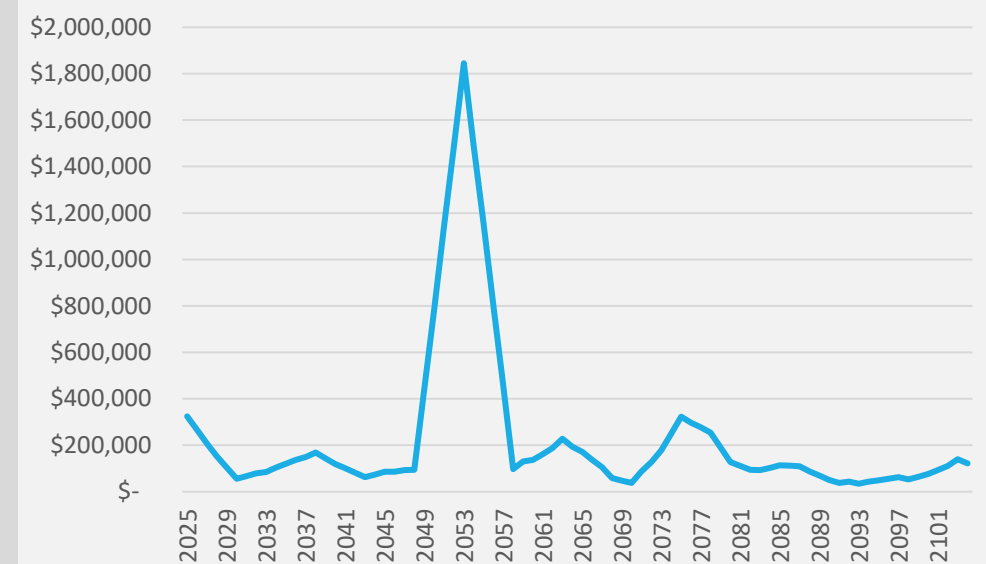
How much are our assets worth?



What condition are our assets in?



When will our assets need to be replaced?



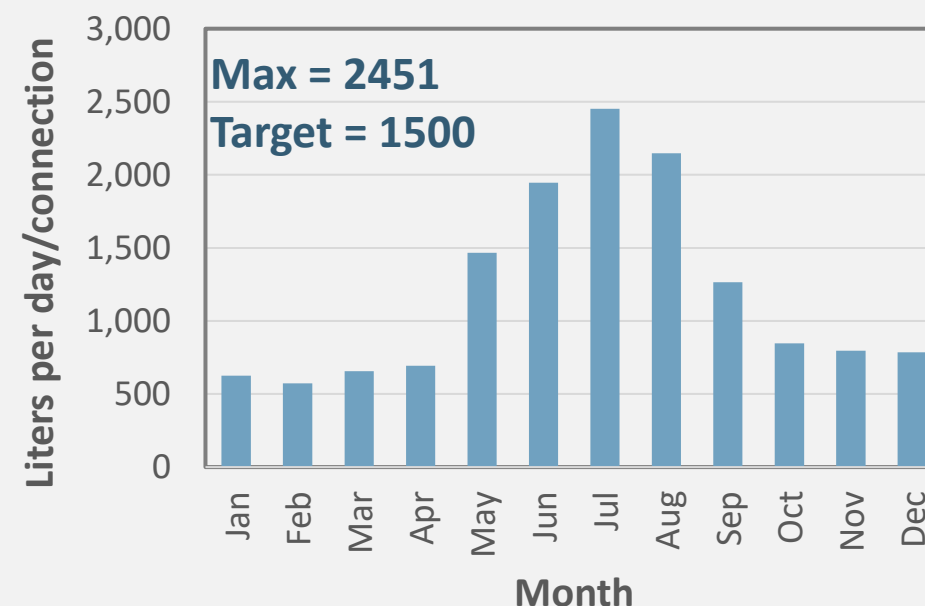
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$249,000
Assets last 50% longer (Target)	\$166,000
Current Funding	\$12,000

What is our current financial status?

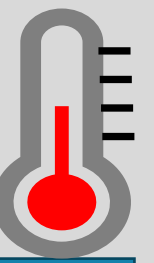
Category	Amount
Reserve Fund Target	\$1,735,000
Current Reserve Funds	\$408,000

How much water do we use?

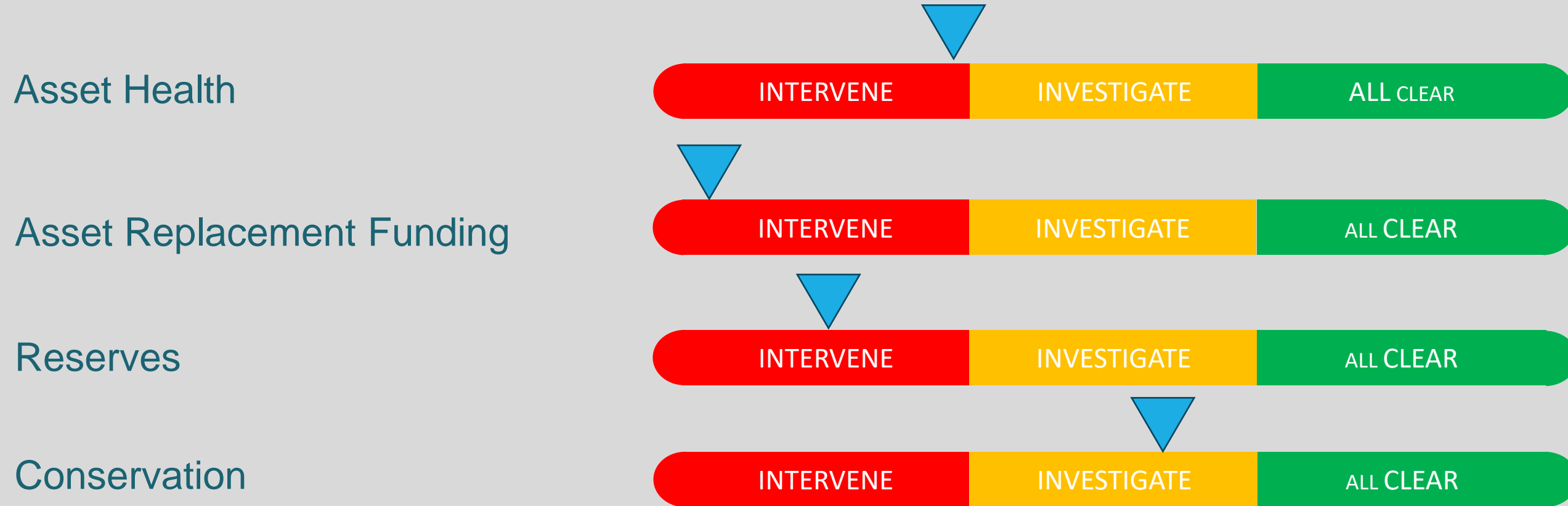


Do we have other concerns?

- Inadequate reservoir capacity
- UV - no parts available – replacing one in 2024 replace other in future
- Small quantity of Ductile Iron Pipe – condition unknown
- PRV's – 2024 upgrade x 2
- Most services do not have steel curb boxes (PVC riser pipes) – plan to upgrade
- Lake pumps failed in 2024, need replacing
- High lift pumps – vertical turbines need rebuild – 2025 budget



## SYSTEM HEALTH CHECK-UP





- Inadequate reserves to fund required upgrades and replacements





# COTTONWOOD WATER SYSTEM

What assets do we own?

**Watermain**  
 **0.2 km**

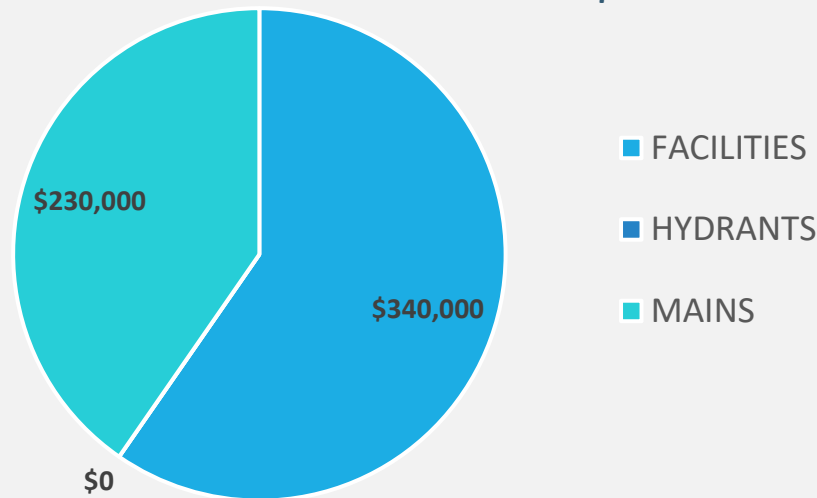
**Pumping Station**  
 **1**

**Reservoirs**  
 **0**

**Hydrants**  
 **0**

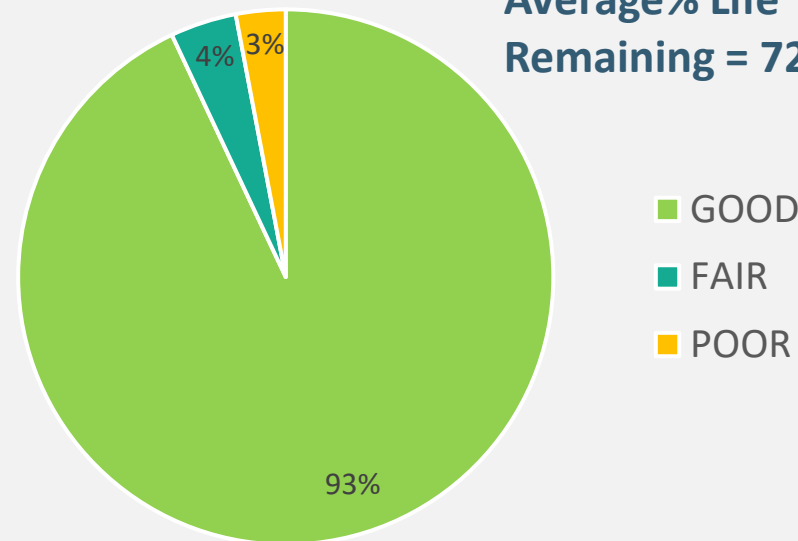
How much are our assets worth?

**Total Replacement Value= \$0.6M**

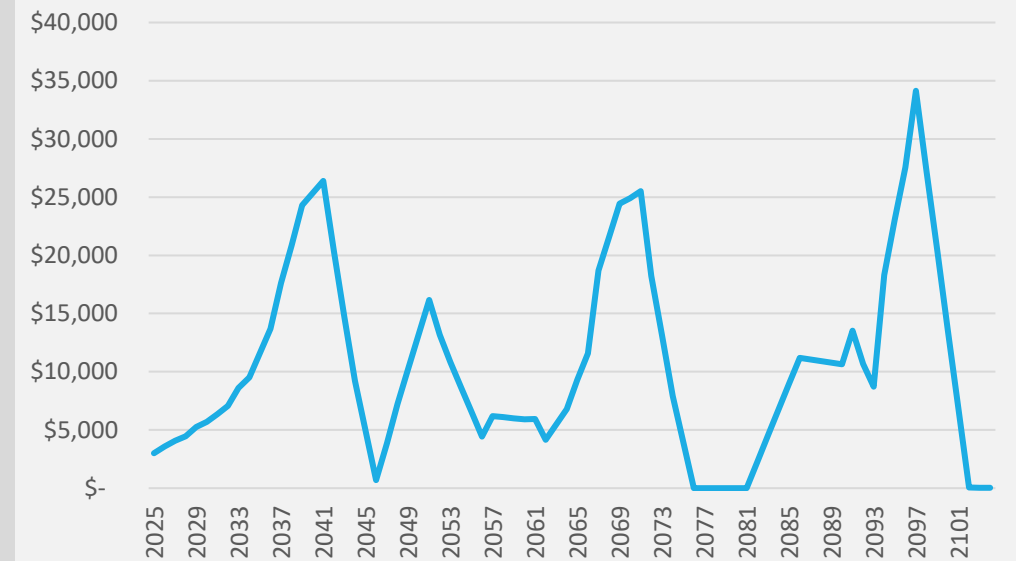


What condition are our assets in?

**Average% Life Remaining = 72%**



When will our assets need to be replaced?



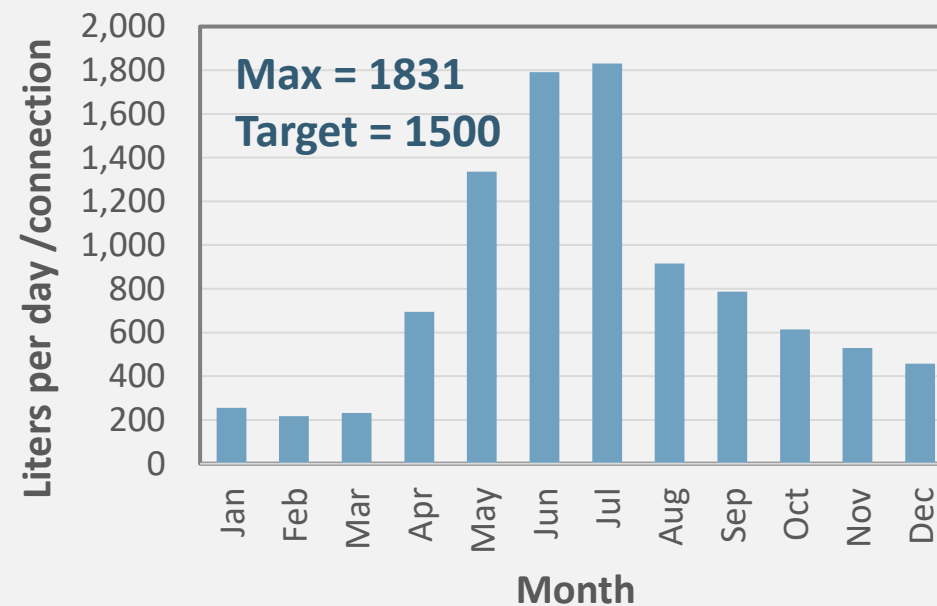
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$17,000
Assets last 50% longer (Target)	\$11,000
Current Funding	\$33,000

What is our current financial status?

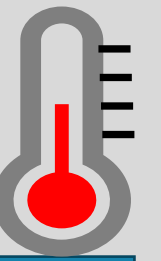
Category	Amount
Reserve Fund Target	\$30,000
Current Reserve Funds	\$328,000

How much water do we use?



Do we have other concerns?

- Distribution system is privately owned
- No concerns with supply and treatment



# SYSTEM HEALTH CHECK-UP

Asset Health



Asset Replacement Funding



Reserves



Conservation







# EAGLE BAY WATER SYSTEM

What assets do we own?

**Watermain**  
 **2.3 km**

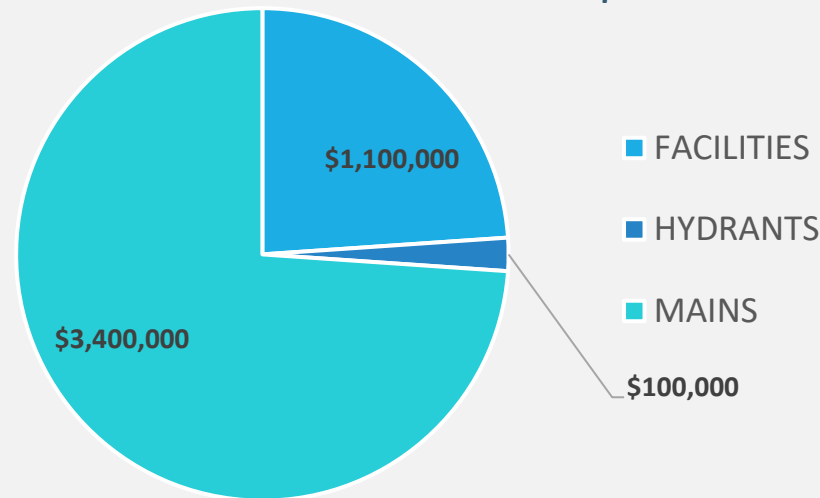
**Pumping Station**  
 **2**

**Reservoirs**  
 **1**

**Hydrants**  
 **6**

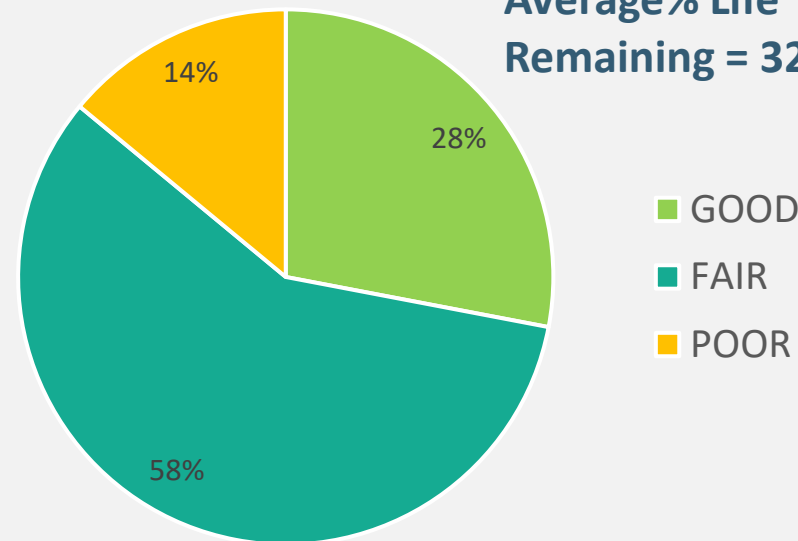
How much are our assets worth?

**Total Replacement Value= \$4.6M**

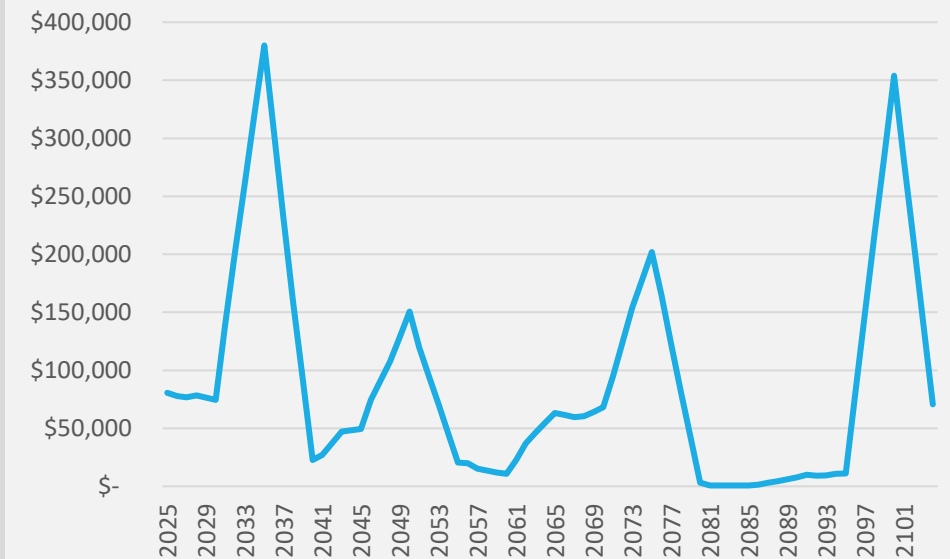


What condition are our assets in?

**Average% Life Remaining = 32%**



When will our assets need to be replaced?



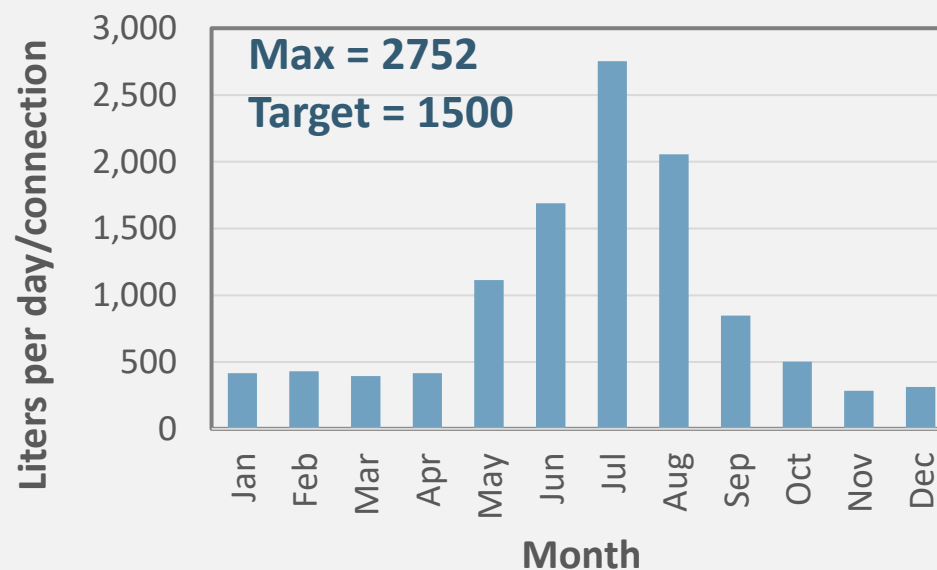
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$88,000
Assets last 50% longer (Target)	\$59,000
Current Funding	\$10,000

What is our current financial status?

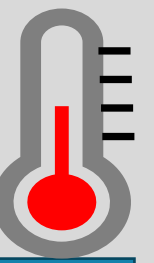
Category	Amount
Reserve Fund Target	\$640,000
Current Reserve Funds	\$181,000

How much water do we use?

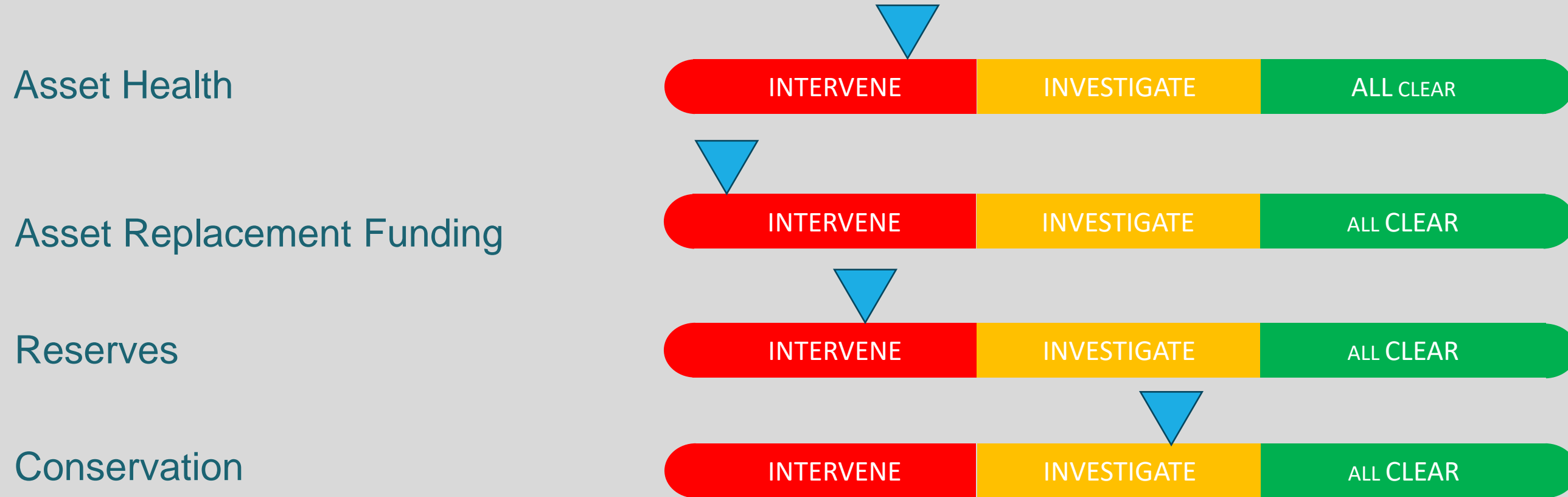


Do we have other concerns?

- Most of distribution system AC 1970
- Some distribution pipe not in protected RW's – discovered in 2024
- Booster station at reservoir in need of replacement – 2025 budget item
- CSP intake will need replacing at some point – inspection done 2019
- No redundancy on UV



## SYSTEM HEALTH CHECK-UP





- Inadequate reserves to fund required upgrades and replacements




# FALKLAND WATER SYSTEM

What assets do we own?

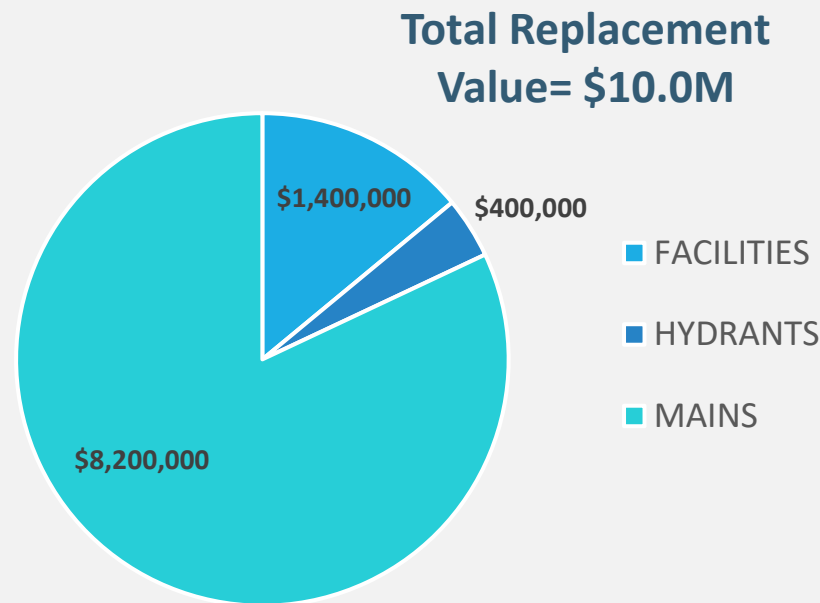
**Watermain**  
 **6.1 km**

**Pumping Station**  
 **1**

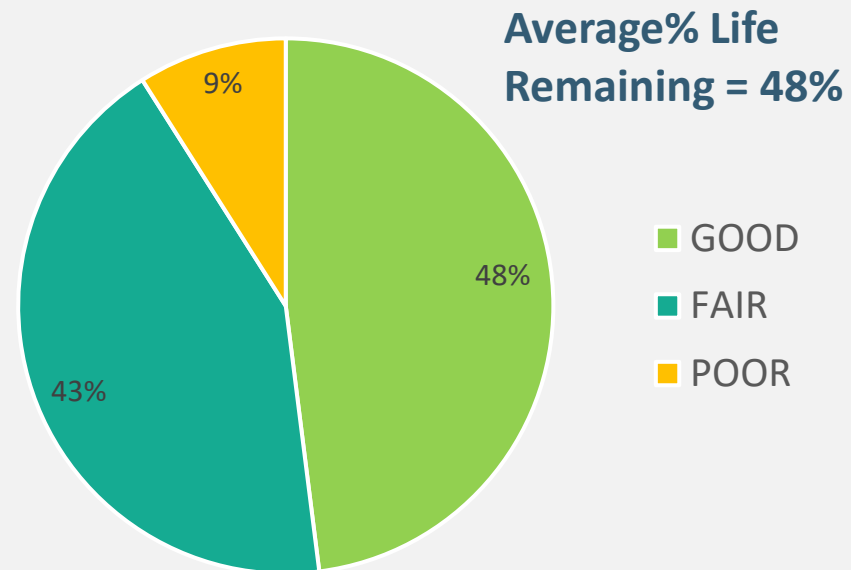
**Reservoirs**  
 **1**

**Hydrants**  
 **24**

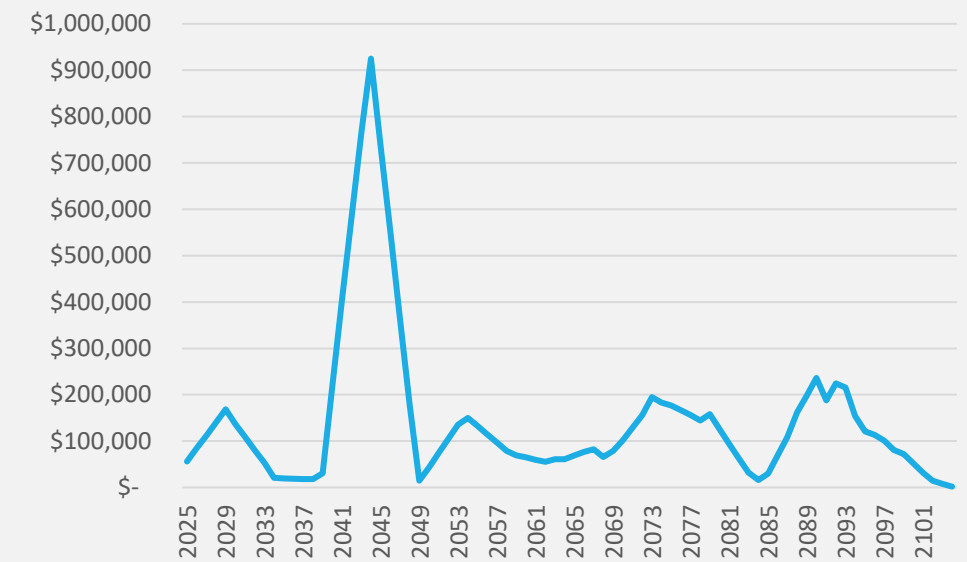
How much are our assets worth?



What condition are our assets in?



When will our assets need to be replaced?



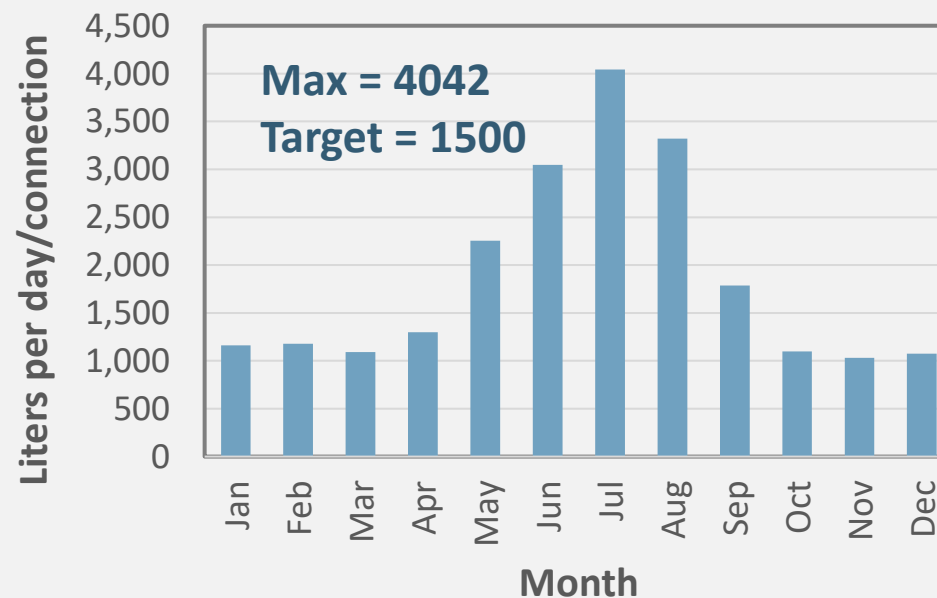
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$172,000
Assets last 50% longer (Target)	\$115,000
Current Funding	\$13,000

What is our current financial status?

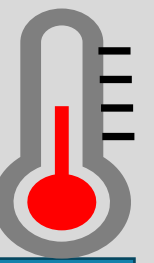
Category	Amount
Reserve Fund Target	\$900,000
Current Reserve Funds	\$270,000

How much water do we use?

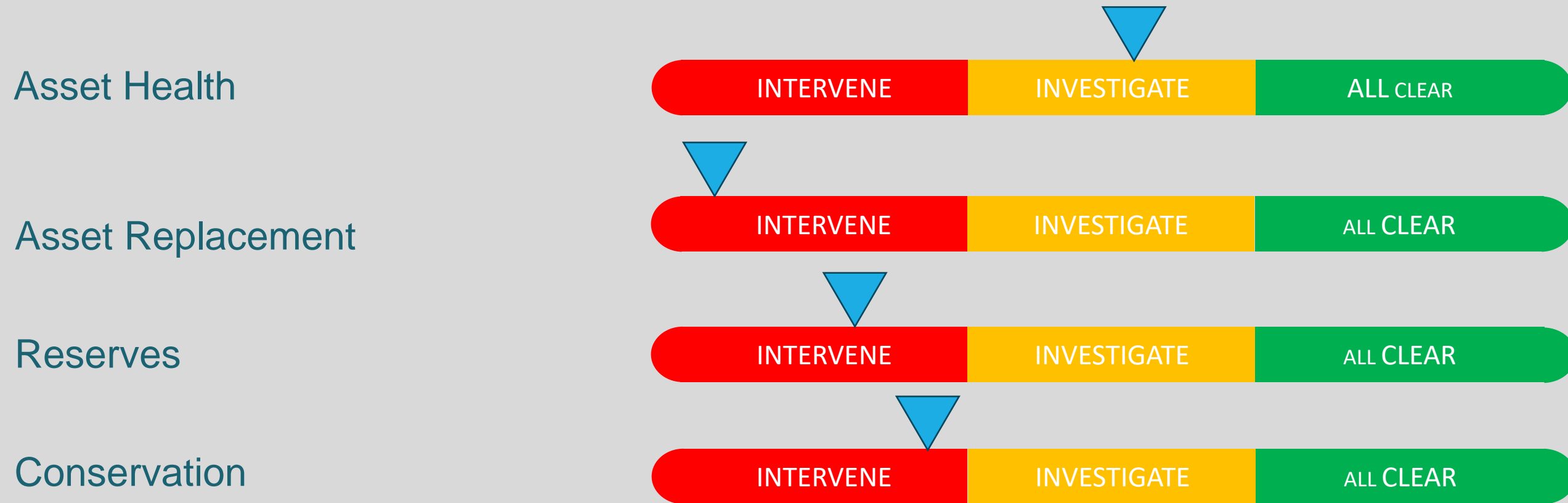


Do we have other concerns?

- Most of distribution piping AC - 1979
- Small amounts of steel/galvanized piping – 2025 budget replace Galvanized
- Reservoir size Inadequate
- Pump in old building – vertical turbine – needs replacement also inspect well casing
- Booster station pumps old need replacing also flow meter on upper zone
- High winter usage – may be result of leakage



## SYSTEM HEALTH CHECK-UP




- Inadequate reserves to fund required upgrades and replacements
- High usage may be a result of system leakage, need to conduct leakage detection to determine







# GALENA WATER SYSTEM

What assets do we own?

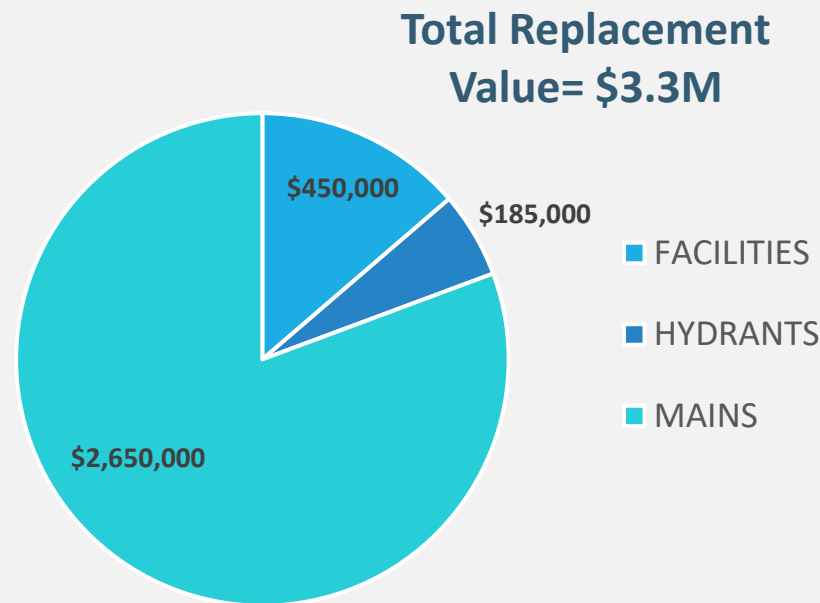
**Watermain**  
 **2.2 km**

**Pumping Station**  
 **0**

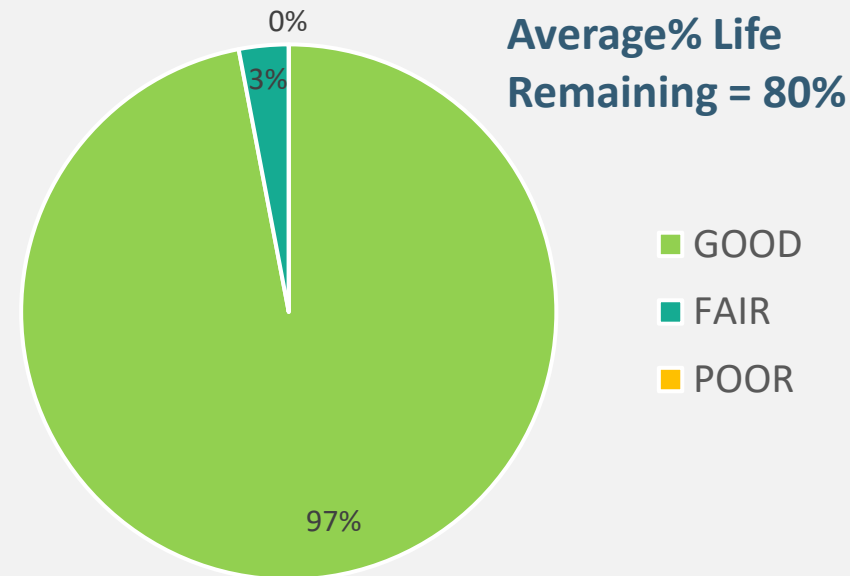
**Reservoirs**  
 **1**

**Hydrants**  
 **11**

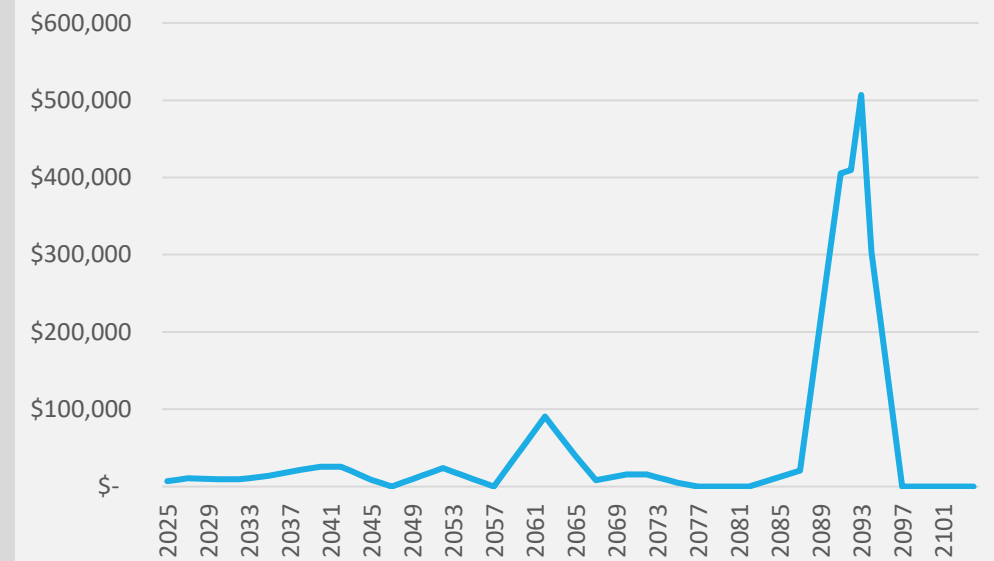
How much are our assets worth?



What condition are our assets in?



When will our assets need to be replaced?



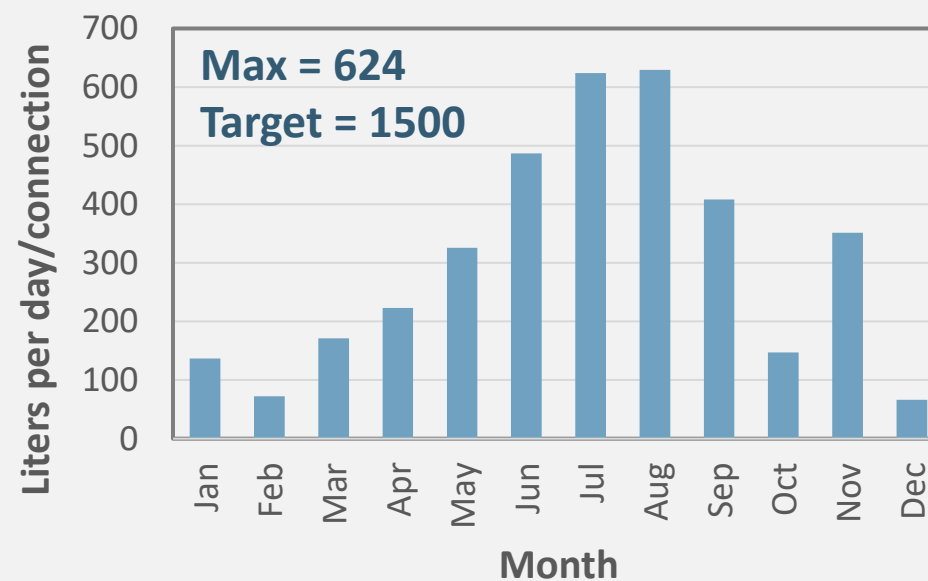
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$54,000
Assets last 50% longer (Target)	\$36,000
Current Funding	\$4,000

What is our current financial status?

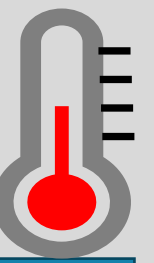
Category	Amount
Reserve Fund Target	\$166,000
Current Reserve Funds	\$405,000

How much water do we use?

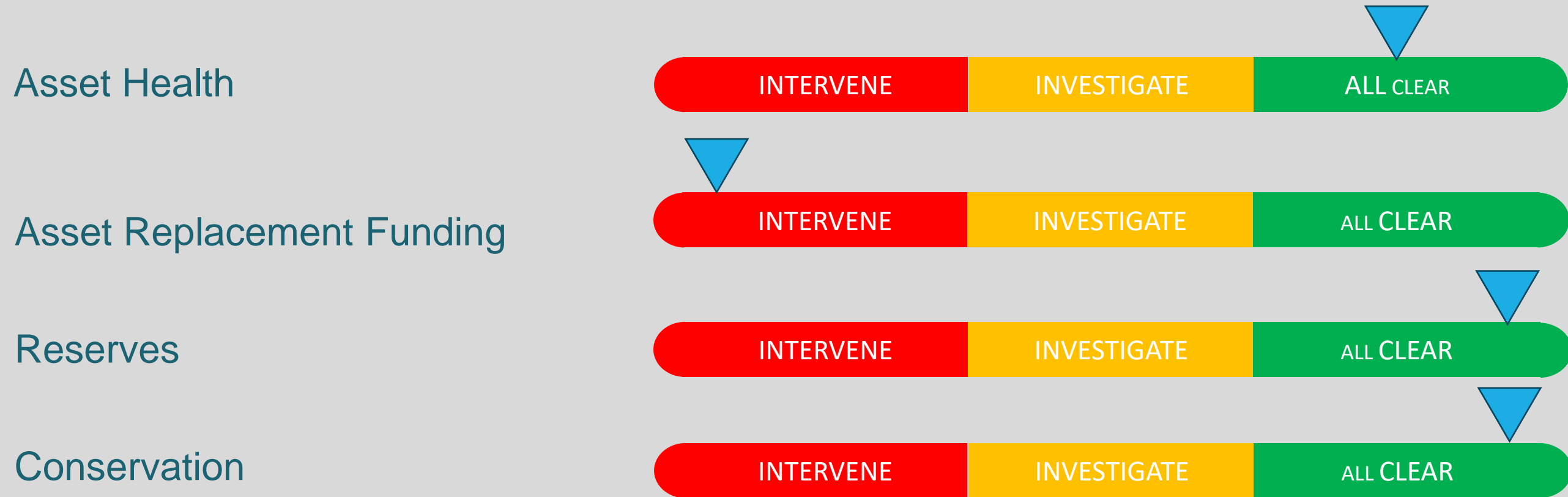


Do we have other concerns?

- Well pumps 10+ years old – plan for major well pump maintenance
- Hydrants have not been serviced since installed in 2012, not in fire service area therefore not included in CSRD contracted hydrant maintenance program.



## SYSTEM HEALTH CHECK-UP




- Any major capital expenditures will quickly deplete reserves due to the small service area




# MACARTHUR-REEDMAN WATER SYSTEM

What assets do we own?

**Watermain**  
 **5.1 km**

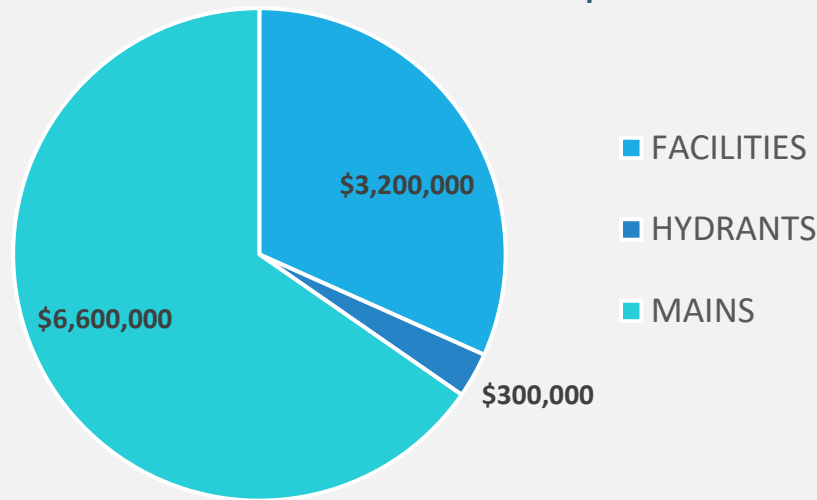
**Pumping Station**  
 **3**

**Reservoirs**  
 **2**

**Hydrants**  
 **20**

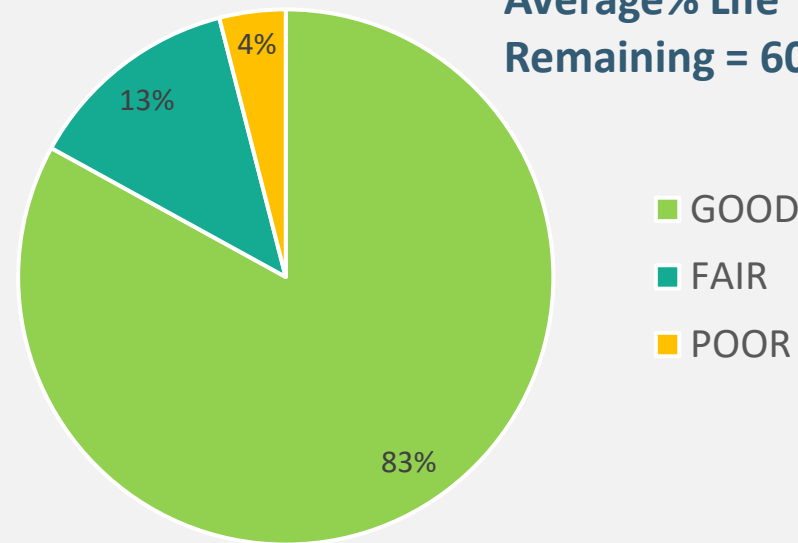
How much are our assets worth?

**Total Replacement Value = \$10.1M**

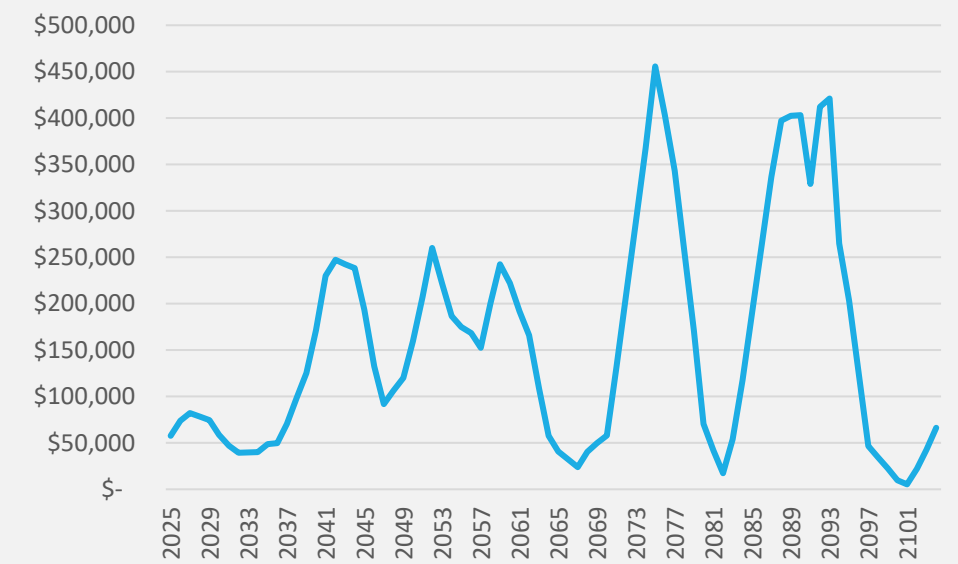


What condition are our assets in?

**Average % Life Remaining = 60%**



When will our assets need to be replaced?



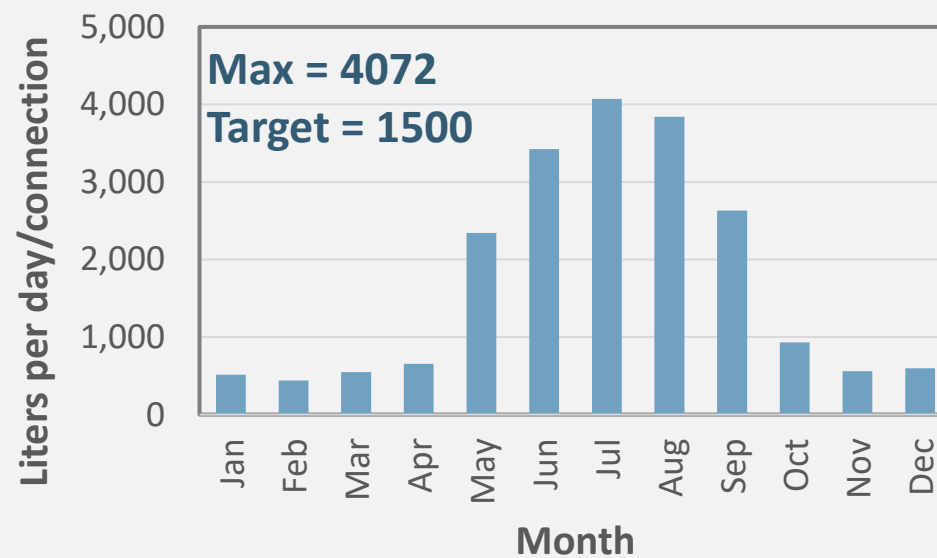
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$181,000
Assets last 50% longer (Target)	\$121,000
Current Funding	\$15,000

What is our current financial status?

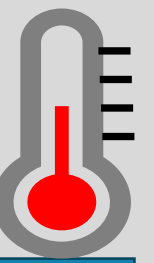
Category	Amount
Reserve Fund Target	\$503,000
Current Reserve Funds	\$90,000

How much water do we use?

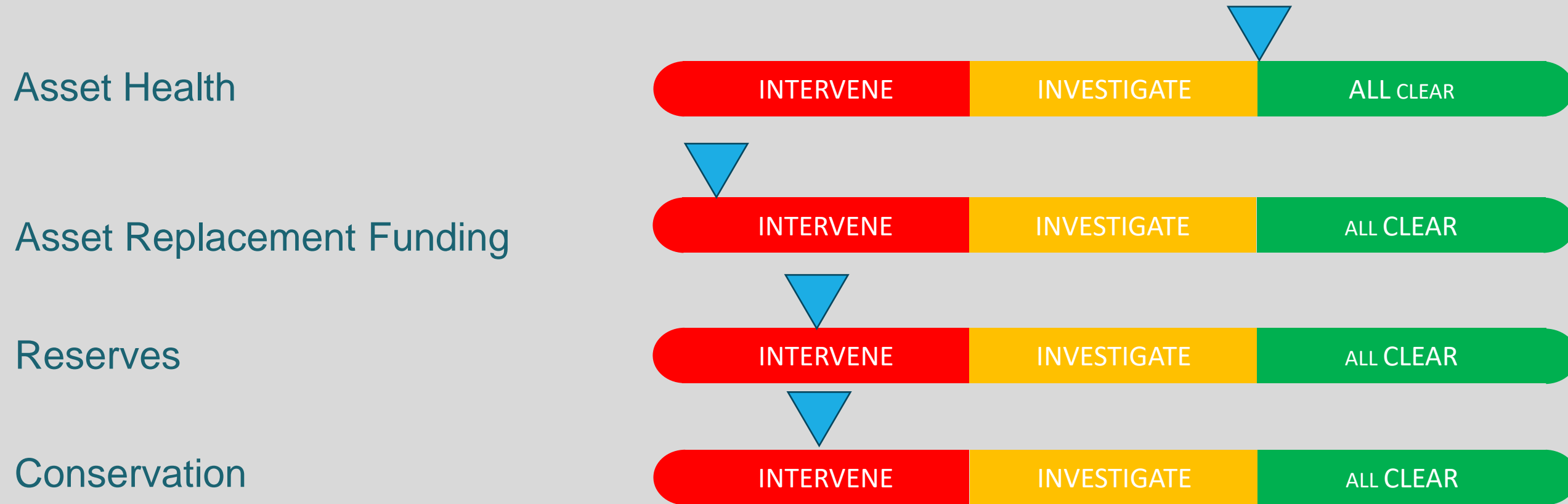


Do we have other concerns?

- Intake upgrade – 2024 budget
- Excessive summer usage - cannot run filtration during summer high demands
- Upper reservoir steel tank – above ground will need replacement in future
- PRV's – old need replacement and/or major rebuild
- AC mains in lower section from 1970's
- Booster station pumps over 10 years old – need replacement soon
- Backup generators -shared with Sunnybrae



## SYSTEM HEALTH CHECK-UP




- Inadequate reserves to fund required upgrades and replacements
- High usage confirmed to not be a result of system leakage, need to implement water conservation and possibly metering to reduce water usage




# SARATOGA WATER SYSTEM

What assets do we own?

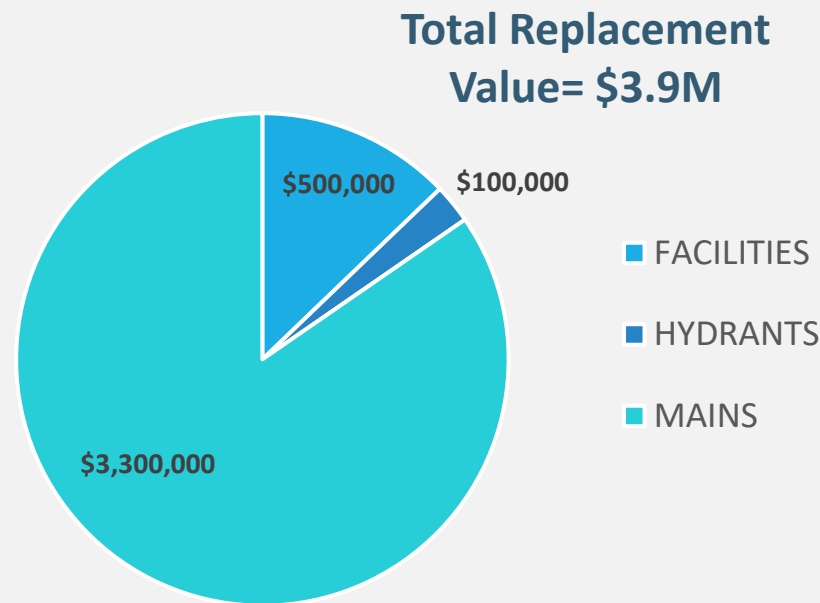
**Watermain**  
 **2.9 km**

**Pumping Station**  
 **1**

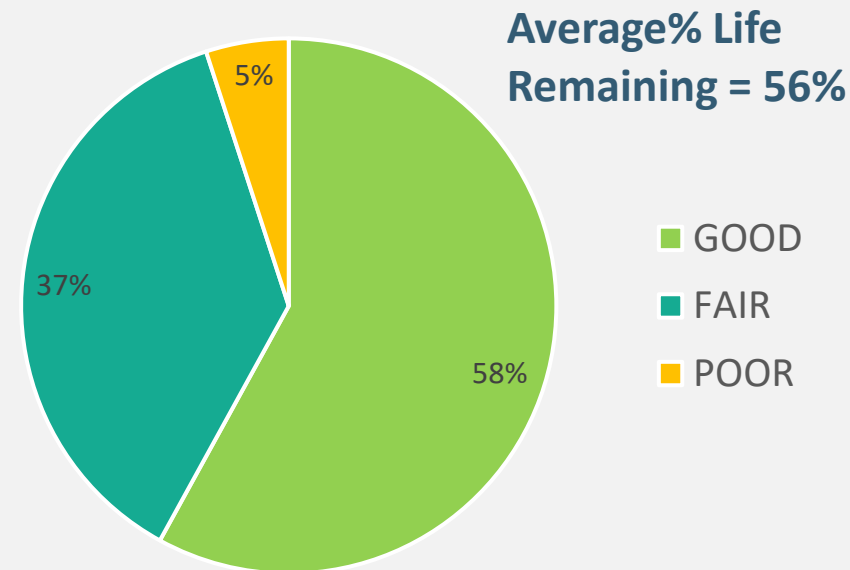
**Reservoirs**  
 **1**

**Hydrants**  
 **4**

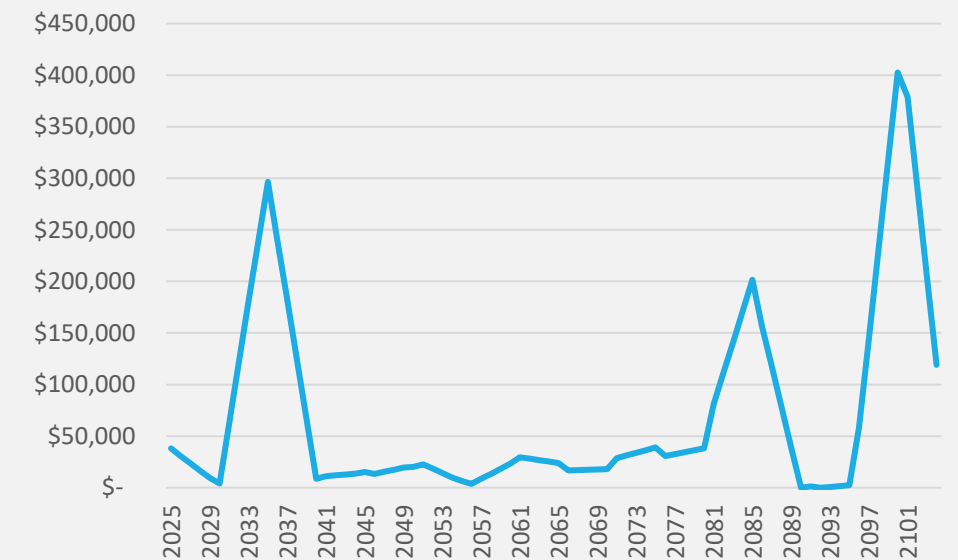
How much are our assets worth?



What condition are our assets in?



When will our assets need to be replaced?



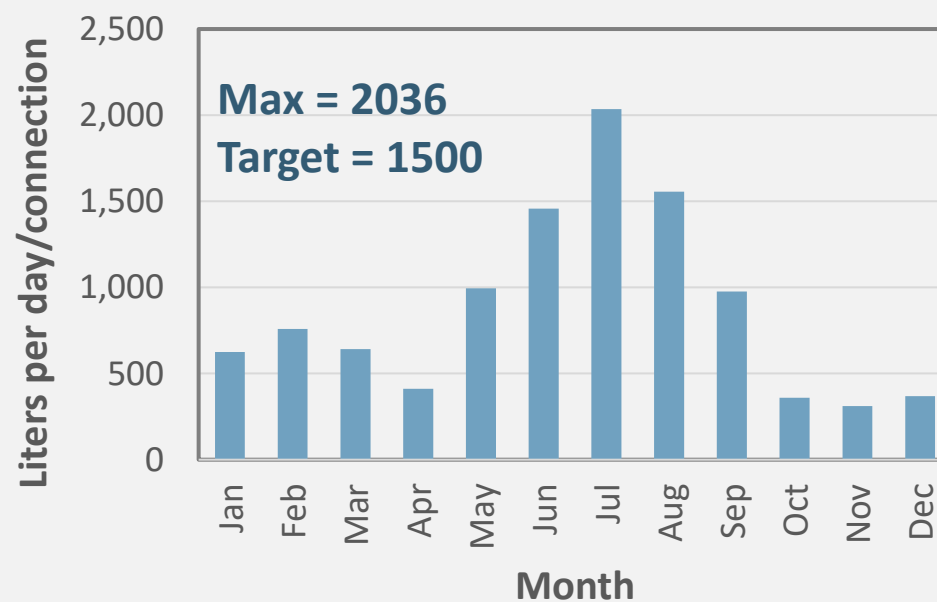
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$68,000
Assets last 50% longer (Target)	\$45,000
Current Funding	\$49,000

What is our current financial status?

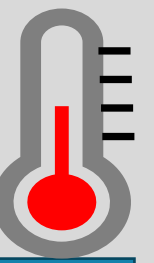
Category	Amount
Reserve Fund Target	\$195,000
Current Reserve Funds	\$520,000

How much water do we use?

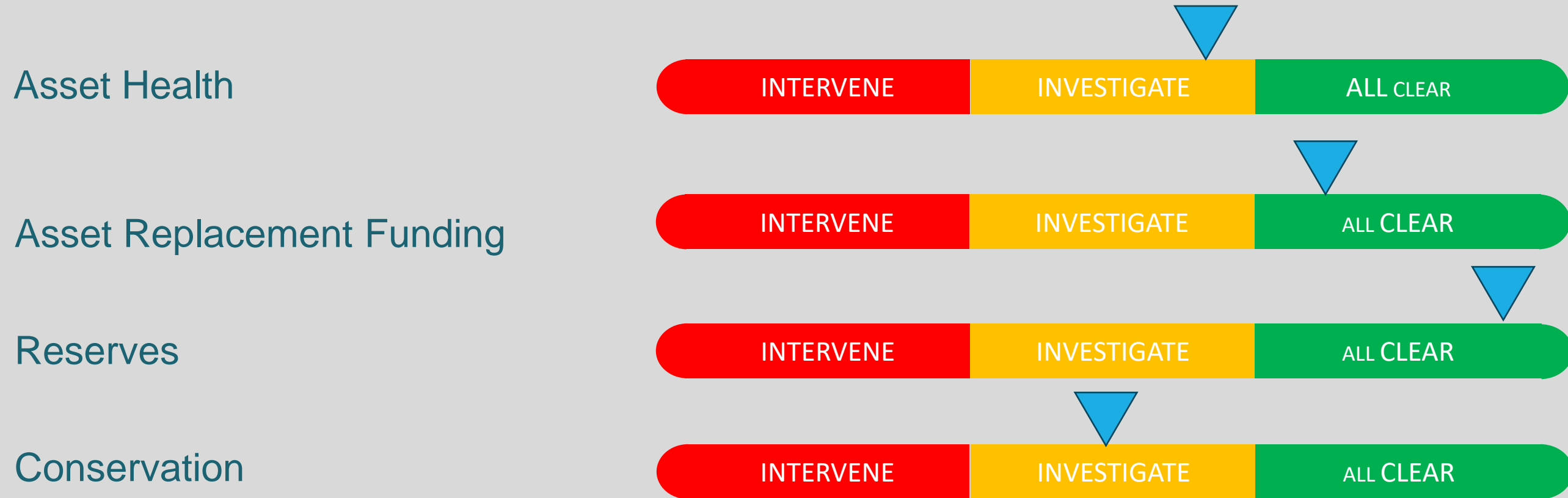


Do we have other concerns?

- Original system distribution piping 100 AC – age unknown
- Pipe in back yards no access, shut-offs hard to locate – upgrade/replace will be challenging
- Hydrants do not provide adequate fire protection – low flow, undersized mains
- Reservoir size inadequate
- Backup generator -shared with Sunnybrae – 2024 budget
- Will likely need alternate funding source for upcoming capital



## SYSTEM HEALTH CHECK-UP





- Inadequate reserves to fund required upgrades and replacements




# SORRENTO WATER SYSTEM

What assets do we own?

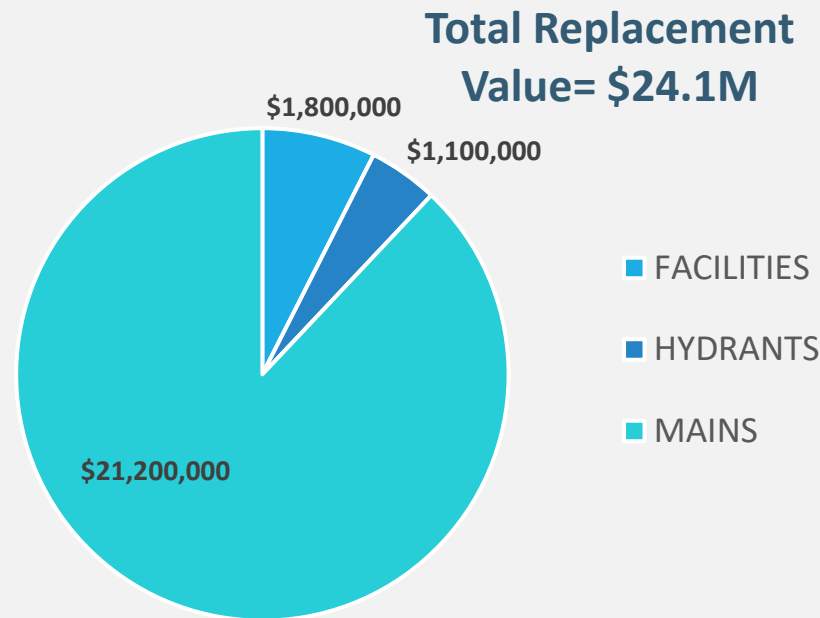
**Watermain**  
 **18.2 km**

**Pumping Station**  
 **2**

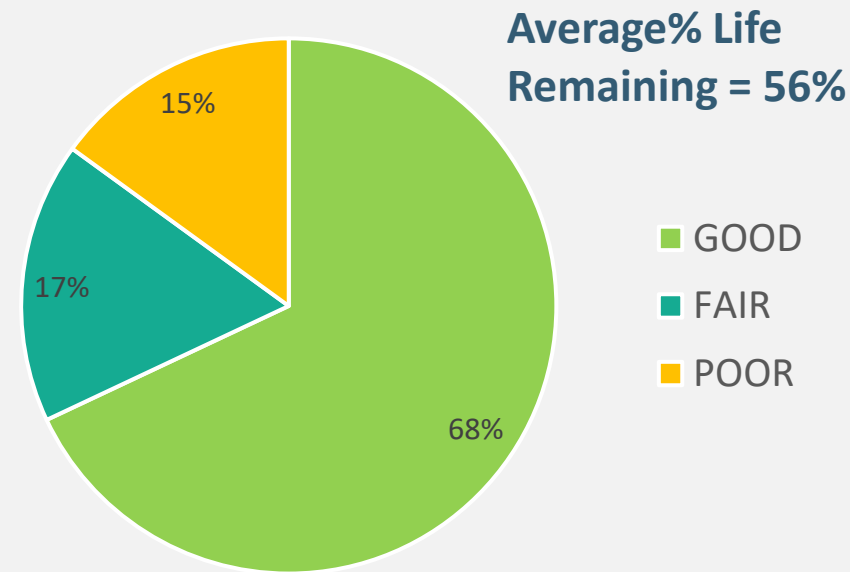
**Reservoirs**  
 **5**

**Hydrants**  
 **69**

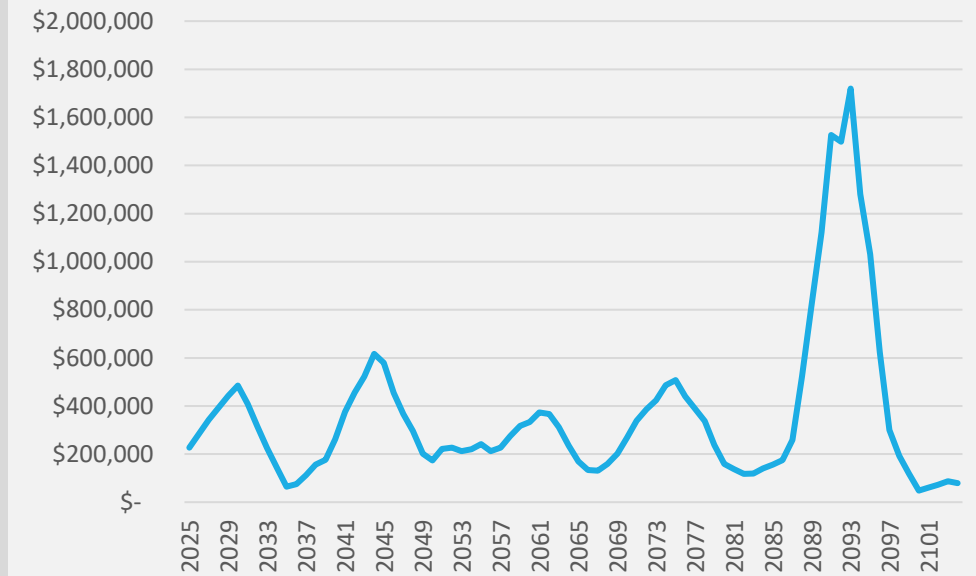
How much are our assets worth?



What condition are our assets in?



When will our assets need to be replaced?



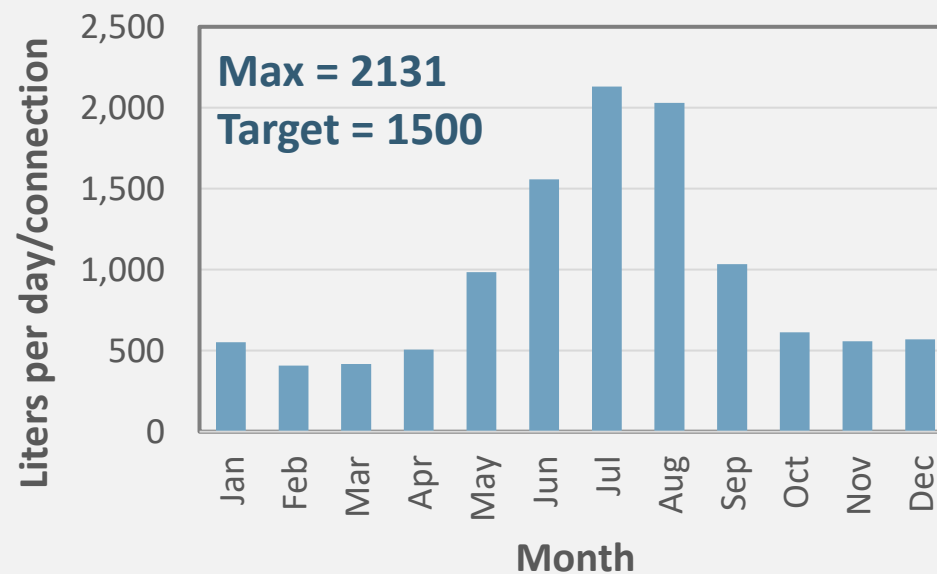
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$270,000
Assets last 50% longer (Target)	\$180,000
Current Funding	\$147,000

What is our current financial status?

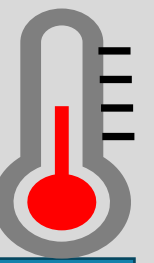
Category	Amount
Reserve Fund Target	\$3,618,000
Current Reserve Funds	\$2,734,000

How much water do we use?

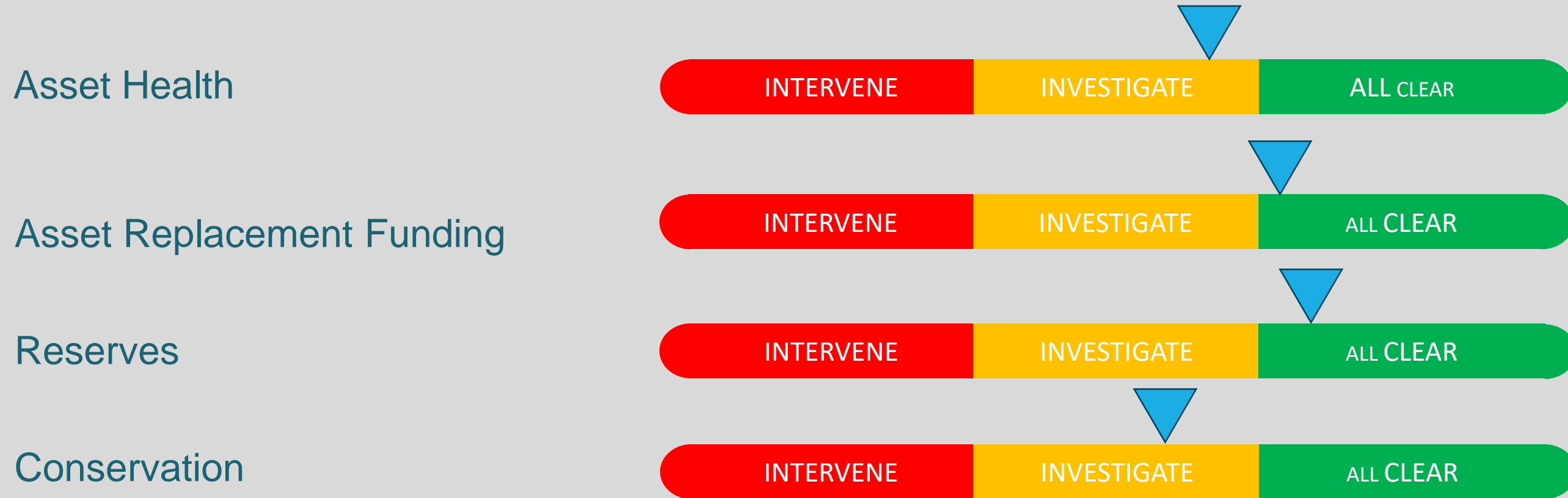


Do we have other concerns?

- 5km AC distribution piping – 1960's
- TCH crossings – high risk – AC pipe – undersized – missing valves
- Reservoir size inadequate – upper area supply expansion
- Turbidity from Newsome Creek – annual short duration boil water – filtration to rectify
- Lake pumps and booster pumps over 10 years old – need rebuild/replace soon
- PRV's – need major service 4 PRV's in area
- Low reserves for needed future major capital replacement work – will likely need alternate funding source



## SYSTEM HEALTH CHECK-UP



- Reserves will start to deplete as necessary upgrades/replacements are completed
- Starting to implement AC replacement program beginning with highest risk areas.







# SUNNYBRAE WATER SYSTEM

What assets do we own?

**Watermain**  
 **2.6 km**

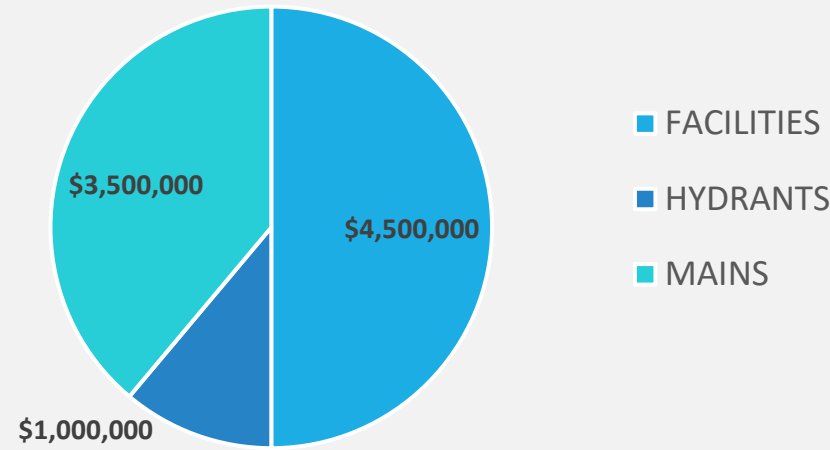
**Pumping Station**  
 **1**

**Reservoirs**  
 **1**

**Hydrants**  
 **12**

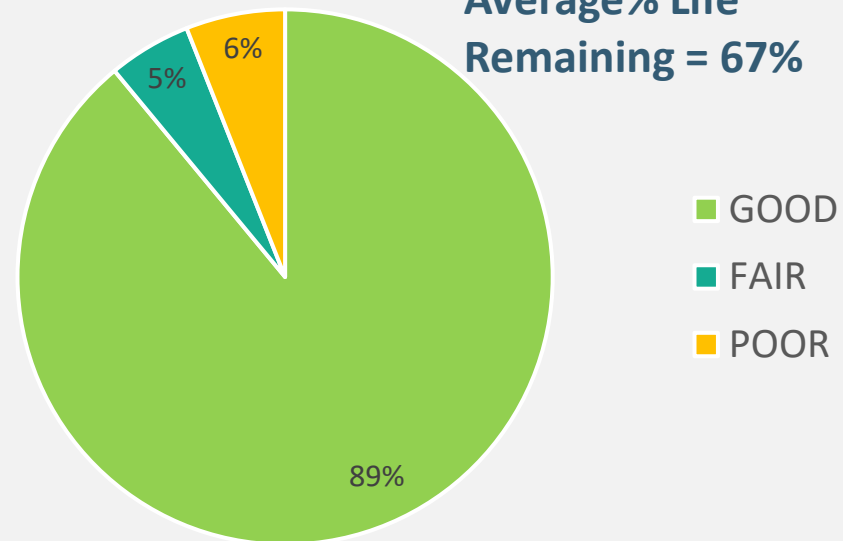
How much are our assets worth?

**Total Replacement Value = \$4.5M**

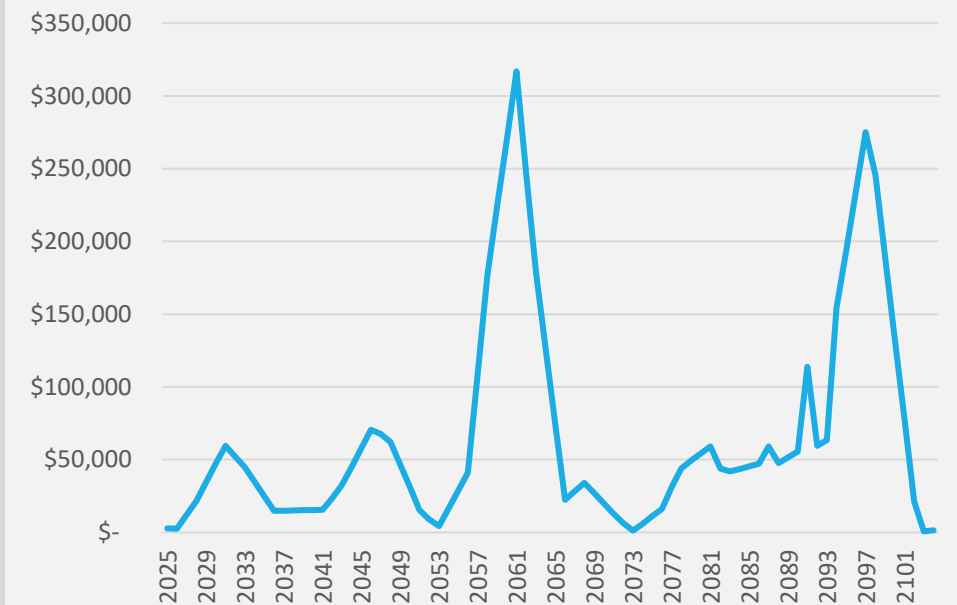


What condition are our assets in?

**Average % Life Remaining = 67%**



When will our assets need to be replaced?



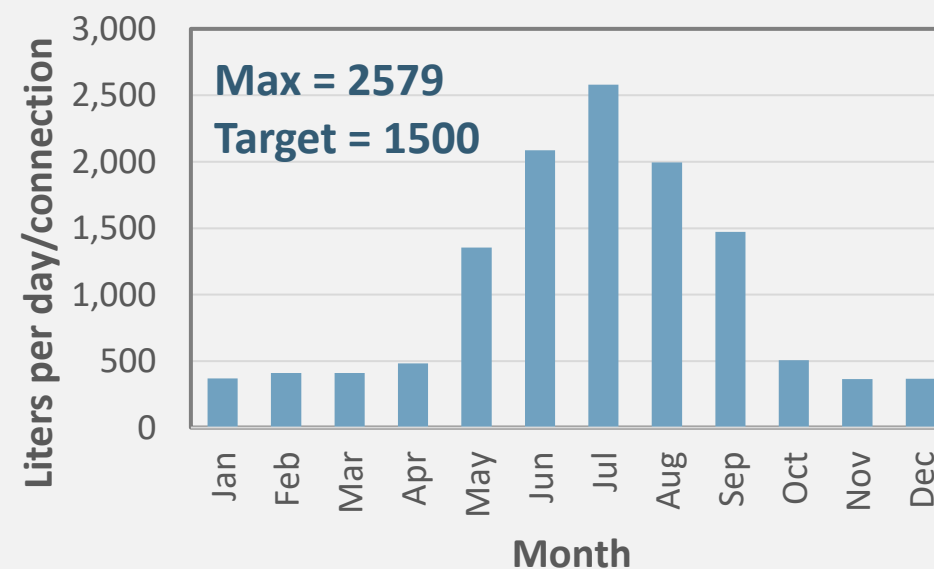
How much should we be funding AM annually?

Scenario	Annual Funding
Base case asset lifespans	\$76,000
Assets last 50% longer (Target)	\$51,000
Current Funding	\$14,000

What is our current financial status?

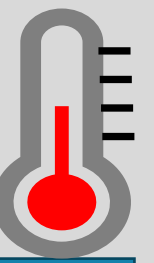
Category	Amount
Reserve Fund Target	\$272,000
Current Reserve Funds	\$150,000

How much water do we use?

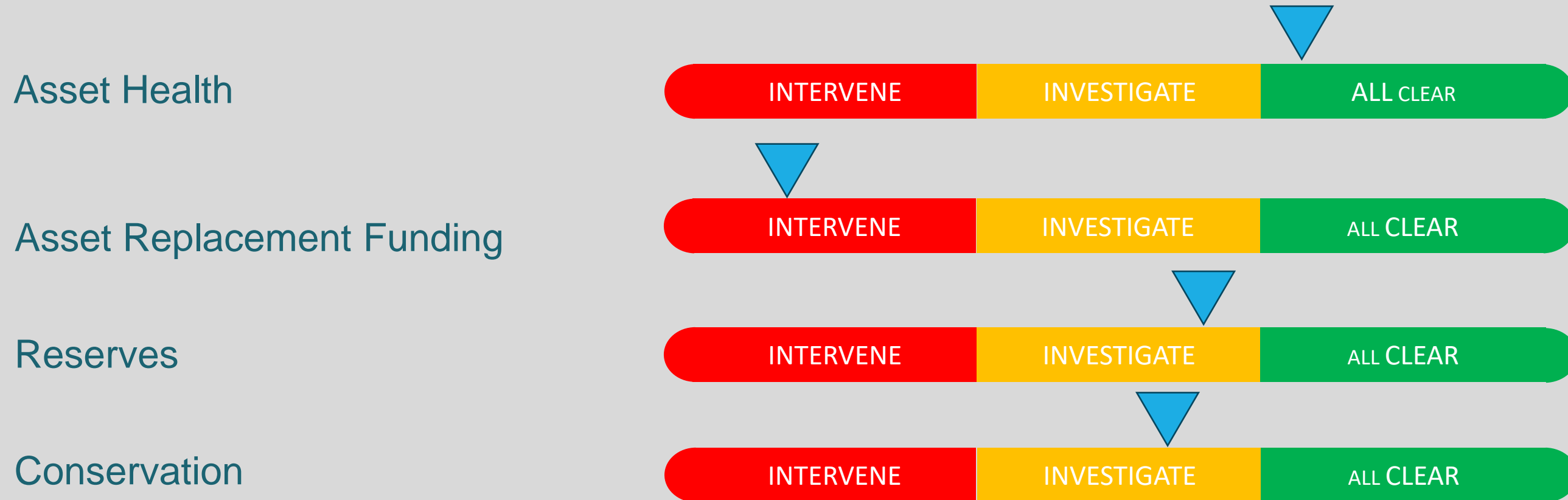


Do we have other concerns?

- No redundancy on UV
- Reservoir size inadequate
- Backup gen – 2024 budget



## SYSTEM HEALTH CHECK-UP



- Inadequate reserves to fund upcoming necessary upgrades/replacements
- Future proposed development may help with UV redundancy and reservoir capacity deficiencies