



Asset Management

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Regional Project Manager

NASSCO O&M Committee Chair





What is an asset?

- Pipes
 - Storm & Sanitary
 - Gravity & Pressure
- Manholes or Structures
- Pumps
- Streets
- Water Lines
- Gas Lines
- Electric Lines
- Communication Lines





Asset Management

- Per EPA Definition
 - Asset management is the practice of managing infrastructure capital assets to minimize the total cost of owning and operating these assets while delivering the desired service levels.
- Developing
- Managing
- Operating
- Maintaining
- Rehabbing
- Replacing
- Disposal



Purpose of Asset Management



- Maintain function or level of service as cost effectively as possible
- Maintain individual components (assets) at lowest life cycle cost possible





Asset Management in Collection Systems

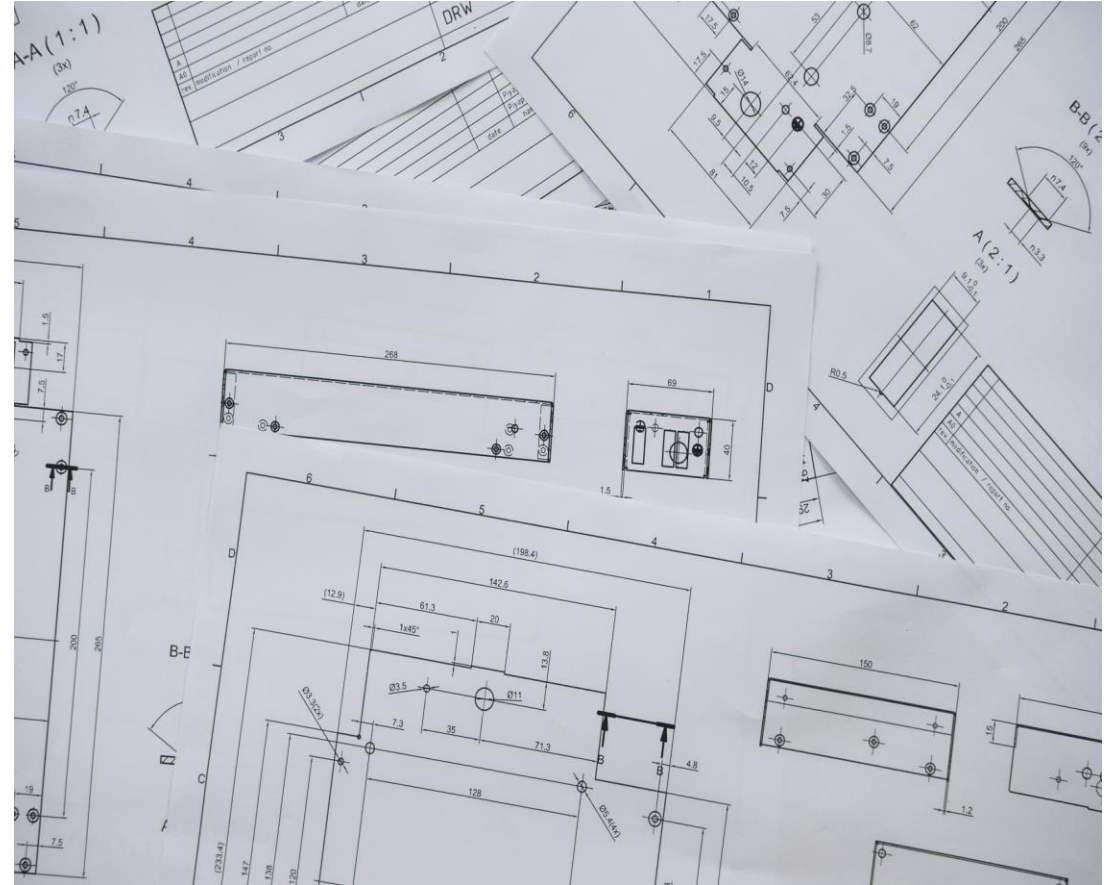
- What Info do you have?
- How accurate is this info?
- How do you answer those questions?





Your Assets – Research Phase

- What do you own?
- Where are they located?
- What are the materials of each?
 - Dimensions?
 - Depth to asset?
 - Ground Cover?
- Age?
- Previous Rehab?
 - Rehab date?





Social Aspect

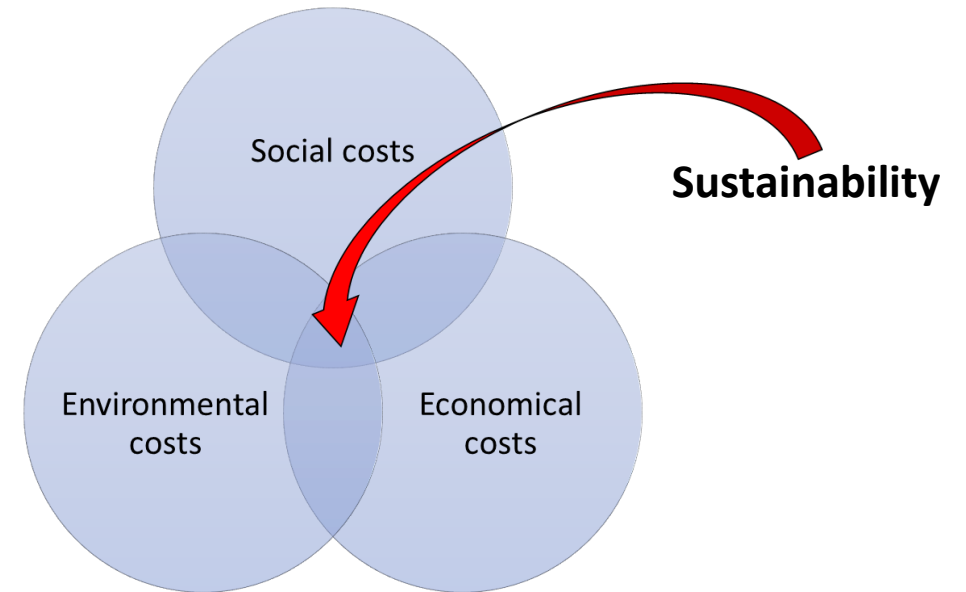
- What does it serve?
 - Hospital, Dr., Retirement Home
 - Schools
 - Emergency Response
- What is affected by failure of each asset?





CoF - Consequence of Failure

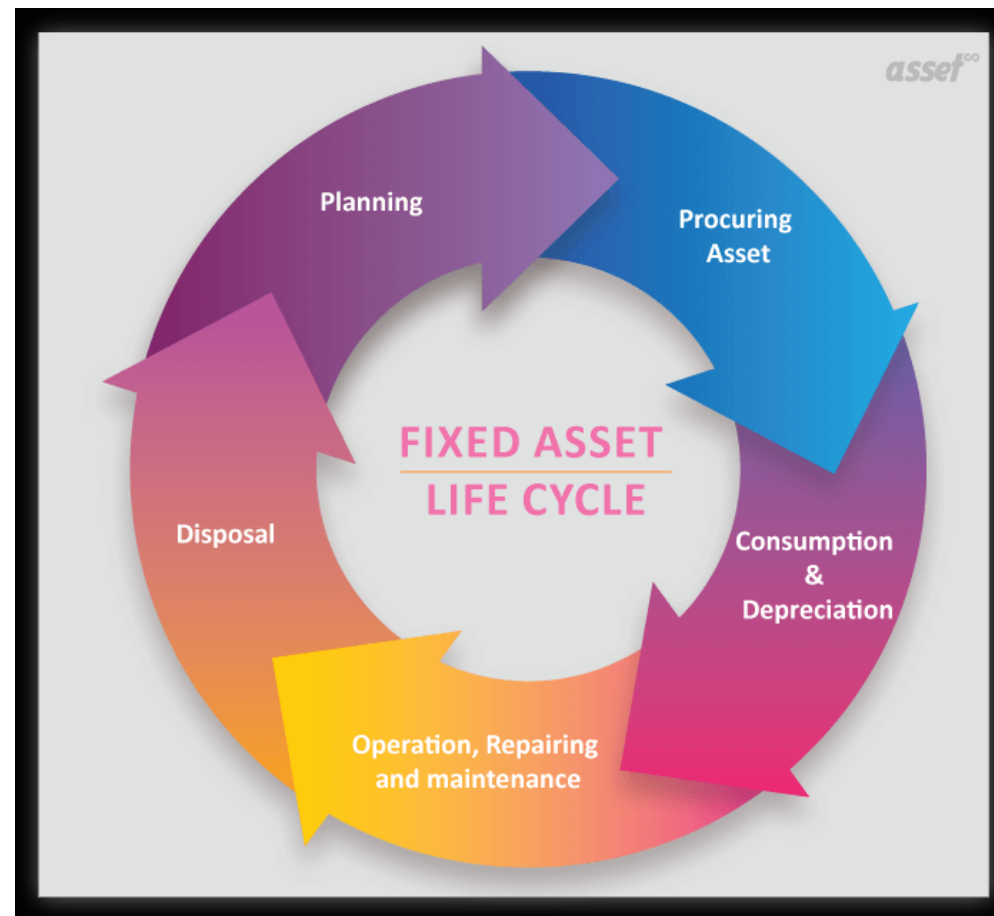
- Combination of direct and indirect impacts on the vicinity & community due to potential asset failure.
 - Economical Costs
 - Property damage, repair costs, etc.
 - Direct & Indirect Impact
 - Social Costs
 - Number & types of affected properties
 - Environmental Costs
 - Impact to ecological conditions as a result of asset failure.





Budget & CIP Investment Strategies

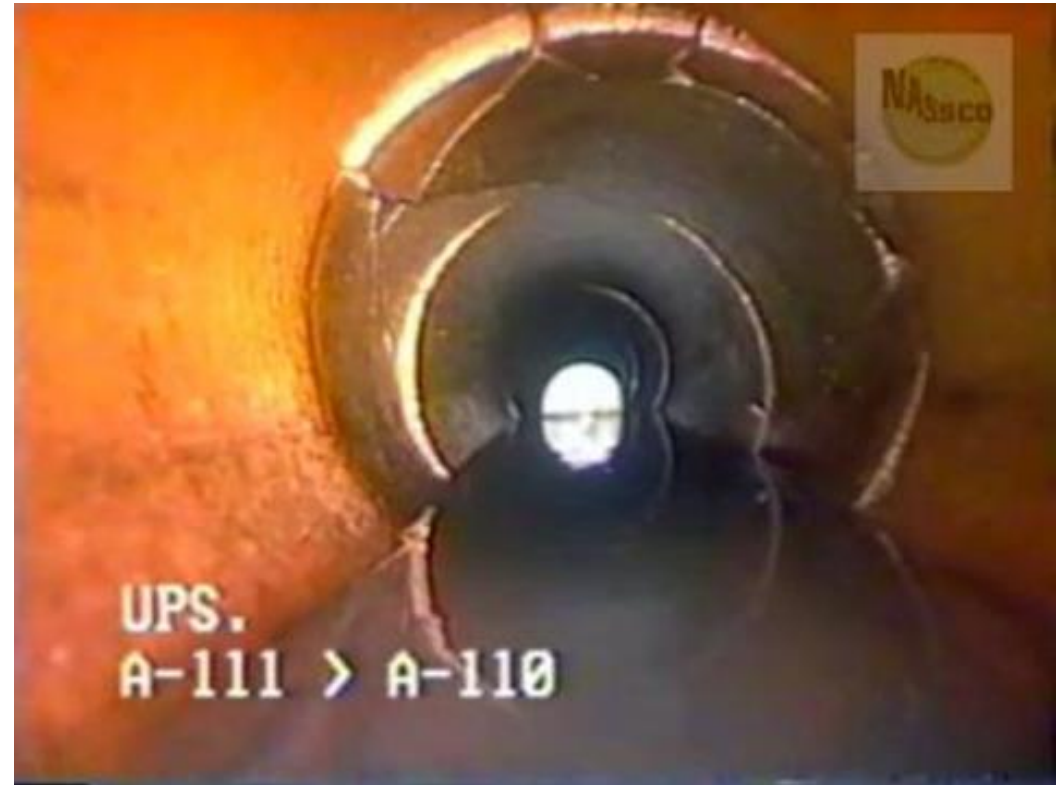
- Life Cycle cost of assets
- What other assets are affected by replacement?
- What are rehab vs replace costs?
- Planned vs emergency





Assessing the Blanks

- Inspect Assets to fill in blanks
 - Asset Info
- Asset Condition
 - Asset structural condition
 - Asset operational condition
- Asset Maintenance
 - Reactive
 - Proactive
 - Predictive





LoF = Likelihood of Failure

- Probability of failure based on assets physical condition
- Typically, in collection system collected as PACP, MACP or LACP
- Determine estimated life left of pipe
- O&M Issues
 - Blockages
 - Surcharge/ SSO/ CSO





PACP = Pipeline Assessment Certification Program

- PACP survey data and condition ratings enable utilities to more efficiently prioritize, budget, and schedule various operation, maintenance, and rehabilitation tasks

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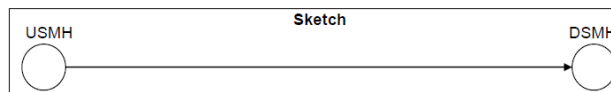
PACP in Asset Management

PACP data can be used to develop considerable portions of an asset management plan by collecting PACP information such as:

- Pipe segment length
- Street & City
- Pipe diameter, shape & material
- Upstream/Downstream manhole data
- Pipe segment reference
- Consequence of failure
- Defect codes (Structural and O&M)
- Condition grades

General Information			
1. Surveyed by	2. Certificate No.	3. Reviewed by	4. Reviewer Certificate No.
5. Owner	6. Customer	7. P/O Number	8. Work Order Number
9. Media Label	10. Project	11. Date	12. Time
13. Sheet Number			
14. Weather	15. Pre-Cleaning	16. Date Cleaned YYYYMMDD	17. Flow Control
18. Purpose of Survey			
19. Direction of Survey	20. Inspection Technology Used	21. Inspection Status	
22. Consequence of Failure	23. Pressure Value		
Location			
24. Drainage Area	25. Pipe Segment Reference	26. Street (Name & Number)	
27. City	28. Location Code	29. Location Details	
Pipe			
30. Pipe Use	31. Height	32. Width	33. Shape
34. Material	35. Lining Method	36. Coating Method	37. Pipe-Joint Length
38. Total Length	39. Length of Pipe Surveyed	40. Year Constructed	41. Year Renewed
Measurements			
42. Upstream MH Number	43. Upstream MH Rim to Invert	44. Upstream MH Rim to Grade	45. Upstream MH Grade to Invert
46. Upstream MH Northing	47. Upstream MH Easting	48. Upstream MH Elevation	
49. Downstream MH Number	50. Downstream MH Rim to Invert	51. Downstream MH Rim to Grade	
52. Downstream MH Grade to Invert	53. Downstream MH Northing	54. Downstream MH Easting	
55. Downstream MH Elevation	56. MH Coordinate System	57. MH Vertical Datum	58. GPS Accuracy
59. Additional Information			

Red = Mandatory; Black = Non-mandatory





Risk in Asset Management

$$\text{Risk} = \text{LoF} \times \text{CoF}$$

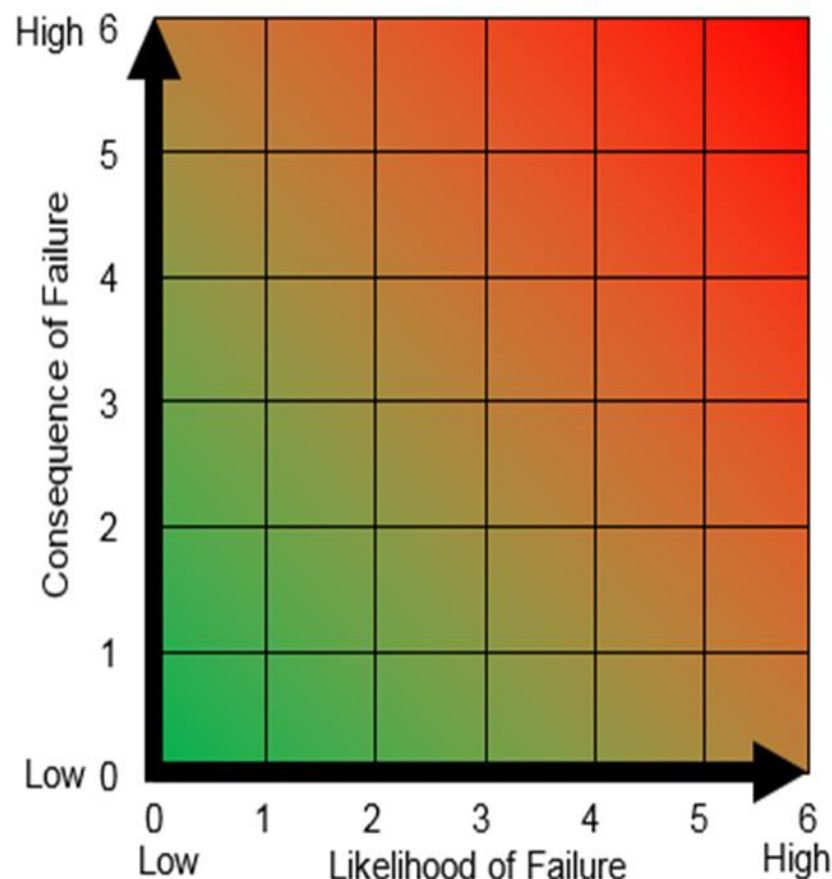
- ***Likelihood of Failure (LoF)*** - Probability of failure of based upon an asset's physical condition
- ***Consequence of Failure (CoF)*** – Combination of direct and indirect impacts on the vicinity and community due to a potential asset failure



Rating Methodology

- CoF assigned a rating scale 1 – 6
- LoF assigned a rating of 1 – 5 with PACP, MACP, & LACP
- Score of 0 typically means no data
- Consideration for CoF Rating
 - Network Position of Pipe
 - Location of Pipe
 - Environmental Sensitivity
 - Service to Critical Customers
 - Access for Maintenance and Inspection

Increase
Aggressiveness of
Assessment

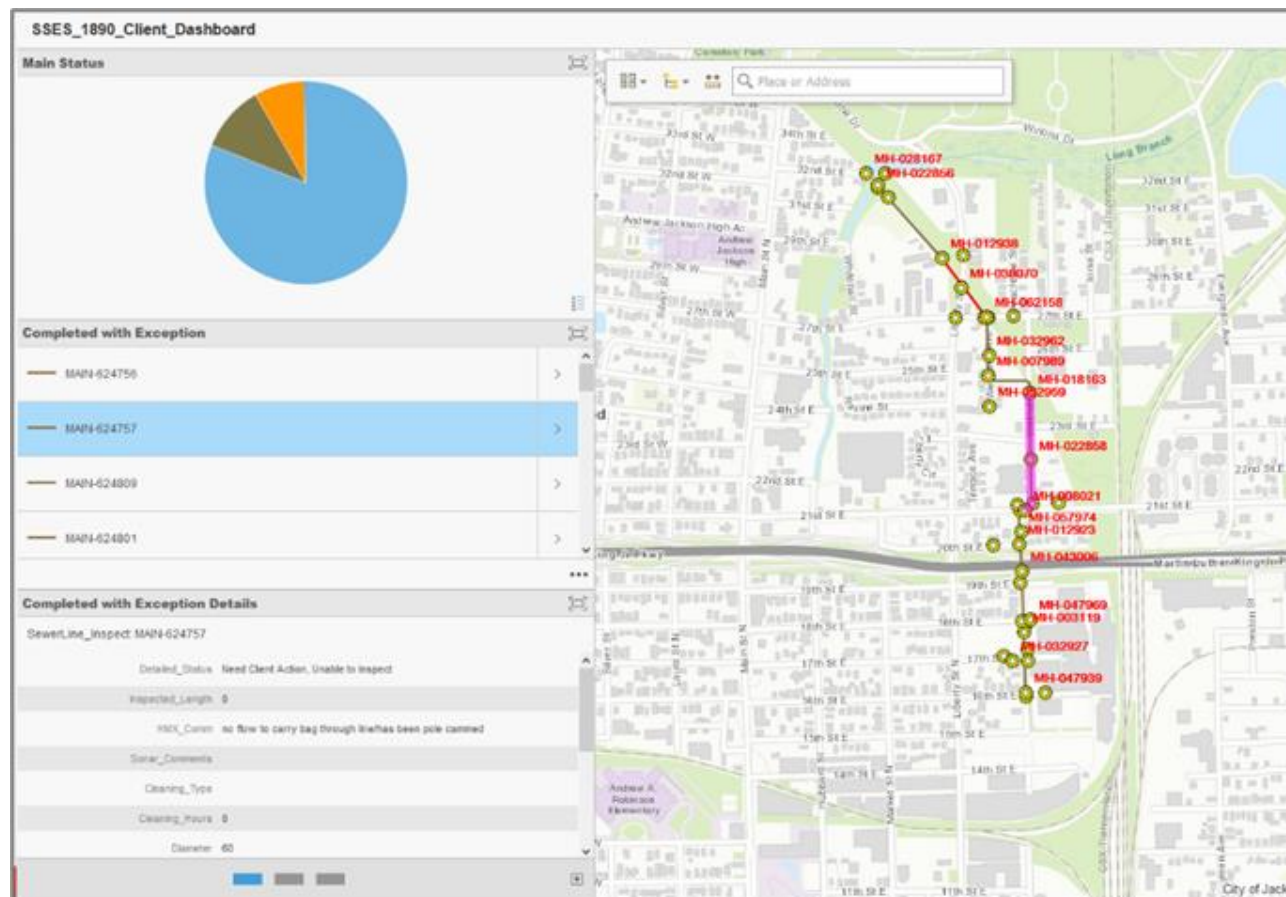


Increase
Aggressiveness of
Rehabilitation



Managing Asset Risk

- Overall risk is a function of the LoF & it's consequences.
- Using GIS to store data.
- Asset Management software.
- Databases of Information
 - Assessment data
 - Maintenance activities
 - Rehab completed





Successful Asset Management Results

- Shift from emergency response to strategic risk-based management of critical assets
- Reduce the number of asset failures
- Minimize the negative impacts of failures when they occur
- O&M budgets are more predictable and easier to manage



Thank you!

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