Asset Management: Fad Diet or Lifestyle Change?

APWA NorCal Conference

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Andrew Hall & Anthony Smith

The Plan

- What is Asset Management?
- Incremental Nature of Asset Management
- The City of Livermore's Experience
  - Compare Enterprise & General Fund Asset Management
- Living the "Asset Management Lifestyle"

What is Asset Management?

- IAM - “Asset management is the art and science of making the right decisions and optimizing the delivery of value.”

- ISO - “Asset Management is the coordinated activities that an organization uses to realize value from assets in the delivery of its outcomes or objectives.”

What is Asset Management, Really?

- Answering the five basic questions:
  - **What** do I need to do?
  - **Where** do I need to do it?
  - **Why** do I need to do it?
  - **How** much is it going to cost me?
  - **Who** is going to do it? - YOU!
- Customer Service

What Asset Management is NOT

- Not:
  - A black box decision maker
  - A master plan for future growth
  - A capital improvement plan
  - A work order management system
  - A capacity assessment tool

Some useful terms:

- Consequence of Failure
- Probability of Failure
- Risk

What? & Where?

- Data Collection
  - Asset Inventory
  - Condition Assessment
  - Relatively Simple, but Time-Intensive

Why?

- Risk Matrix
  - Consequence x Probability
  - Prioritization

How much?

- Projections of replacement costs
- Inflation
- Compare current expenditures to projections

Who?

- You!

What are you already doing?

- Tracking work on assets?
  - Asset Inventory
  - Condition Assessment
- Budgeting for this work?
  - Cost projections
- Prioritizing work?
  - Risk

Incremental Progress

- This is not an “all or nothing” program
- A future-oriented mindset
- Integrating the process in your work culture
- For the next generation of Public Works leaders
- For our children and grandchildren
- For our community’s future

Continual Improvement

- Gather more data
- Refine your projections
- Review your budgets
- Review your levels of service
- Manage expectations
- Adjust priorities
- Reflect on your success and challenges

The City of Livermore

- Eastern Alameda County
- Population of 91,000
- Home to LLNL and Sandia
- $2.4 billion in General Fund assets
- $1 billion in Enterprise Assets
- A beautiful downtown
- Over 50 wineries!

The City of Livermore, cont.

- General Fund
  - Roads – 680 lane miles
  - Pedestrian Ramps – 8,000
  - Traffic Signals -107
  - Streetlights – 7,500
  - Bridges – 45
  - Traffic Signs – 13,000

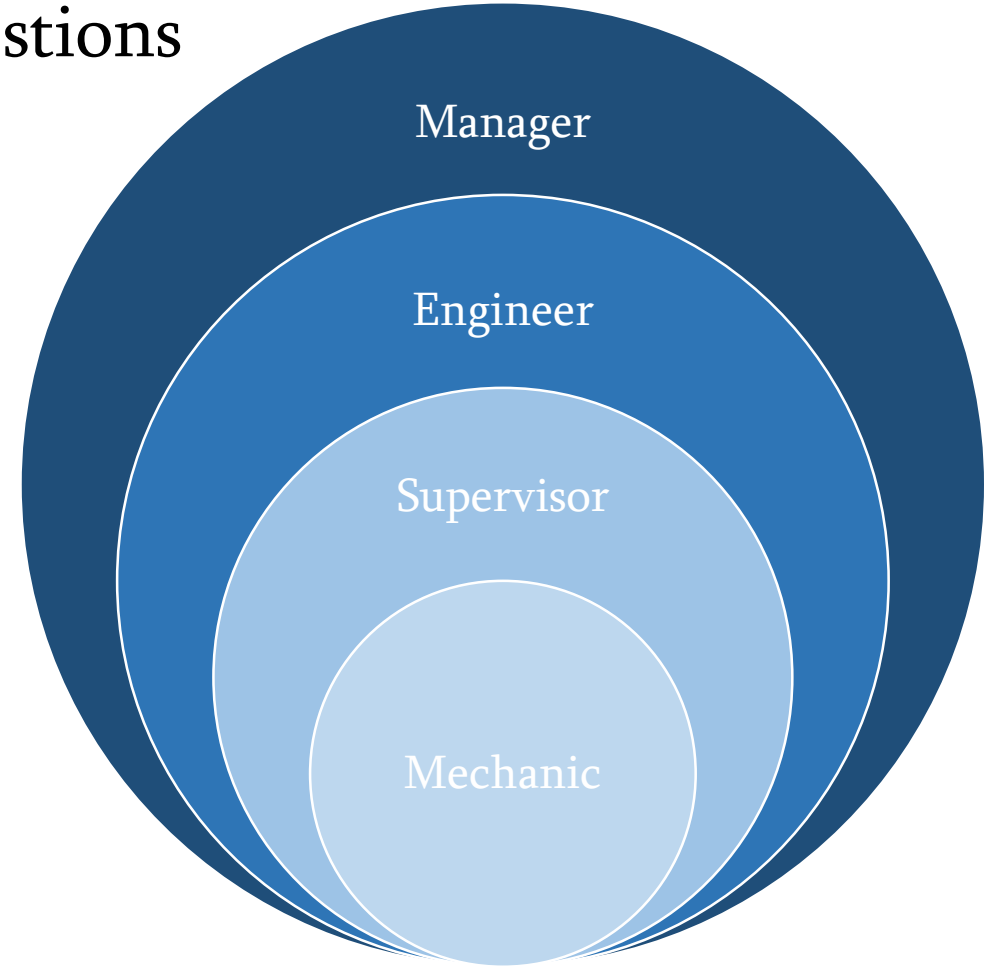
- General Fund
  - Sidewalks – ~~16.2 million sqft~~ 160,000 sqft
  - Curb/Gutter – 620 miles
  - Trails – 22 miles
  - Parks, Plazas, and Landscape – 100+ acres
  - Buildings – 600,000 sqft
  - Walls – 35 miles

The City of Livermore

- Enterprise Funds
  - Water – 182 miles, 4 pump stations, 5 storage tanks
  - Sewer – 304 miles, 4 lift stations, 8.5 MGD WRP
  - Storm Drain – 288 miles, 3 lift stations, 24 miles of streams and channels, 300 trash capture devices
  - Airport
  - >80,000 assets

Definition of Asset Management

- HA! Every level of staffing has their own definition and questions



How do we answer everyone's questions

- Create an Asset Register (What do we own and what shape is it in)
- Develop an Asset History (Why are we working on these assets)
- Forecast failures (When will Assets need Replacement & Rehabilitation)
- Prioritize R&R (Which Assets get funding)
- Visualize R&R (How do we sell our funding requests)

The Initial Asset Management Program was a Work Management Program

- Reactive maintenance
- Sewer overflows
- Wasted time
- Inefficiencies
- Lack of asset history

What is an Asset

Definition:

- Useful life > 1 year
- Value > $5000
- “Critical”
- Eventually anything that gets maintained becomes an Asset

Asset Registry Requirements

- Each asset requires a unique ID (Asset ID)
- Assets assigned to a Hierarchical Class-similar attributes and useful life (motors, pumps, sewer mains, etc.)
- Assets assigned to a Hierarchical Location – CIP sized (Map pages, drainage basin, process, buildings)
- Collect important attribute data (install date, cost, condition, size, model, make, etc.)

Asset Registry

21VA002 ACTUATOR, GATE, INFLUENT BYPASS
Operations Influent ACTUATOR

21VA001 ACTUATOR, GATE, INFLUENT HEADWORKS ISOLATION
Operations Influent ACTUATOR

22IN007 AIR CONDITIONER, BAR SCREEN PLC1
Operations Barscreen HVAC-10

61IN022 AIR MONITOR STATION, LLL
Operations EQ Basin INSTRUMENTS-10

21IN004 ANALYZER, INFLUENT pH
Operations Influent INSTRUMENTS-10

22BS001 BAR SCREEN
Operations Barscreen BARSCREEN

ECS7D2L5822 1001 LISBON AV
Sewer S7D2 Sewer Laterals

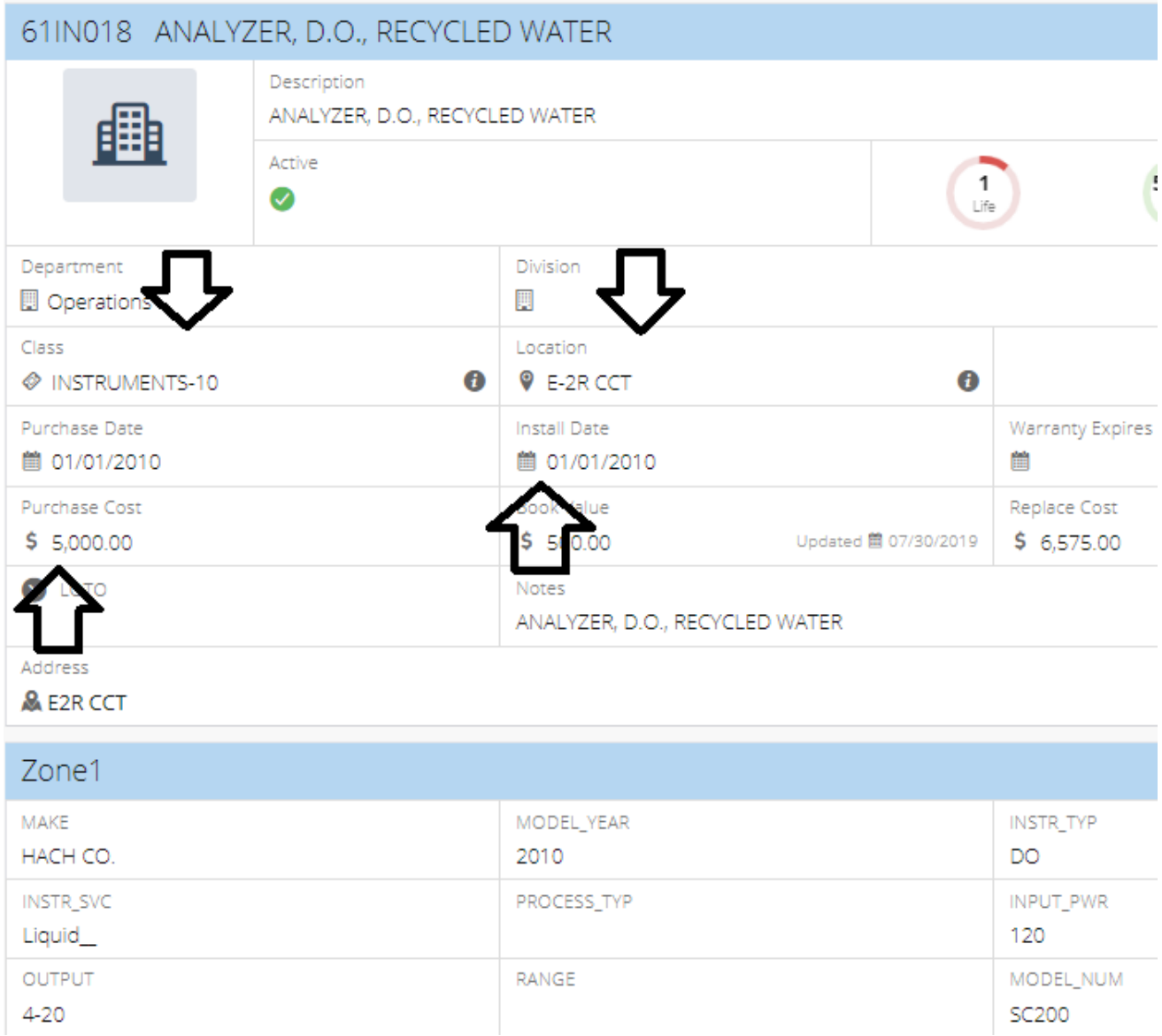
PPS4H2L10936 1002 FLURRY DR
Sewer S4H2 Sewer Laterals

PPS4H2L10934 1006 FLURRY DR
Sewer S4H2 Sewer Laterals

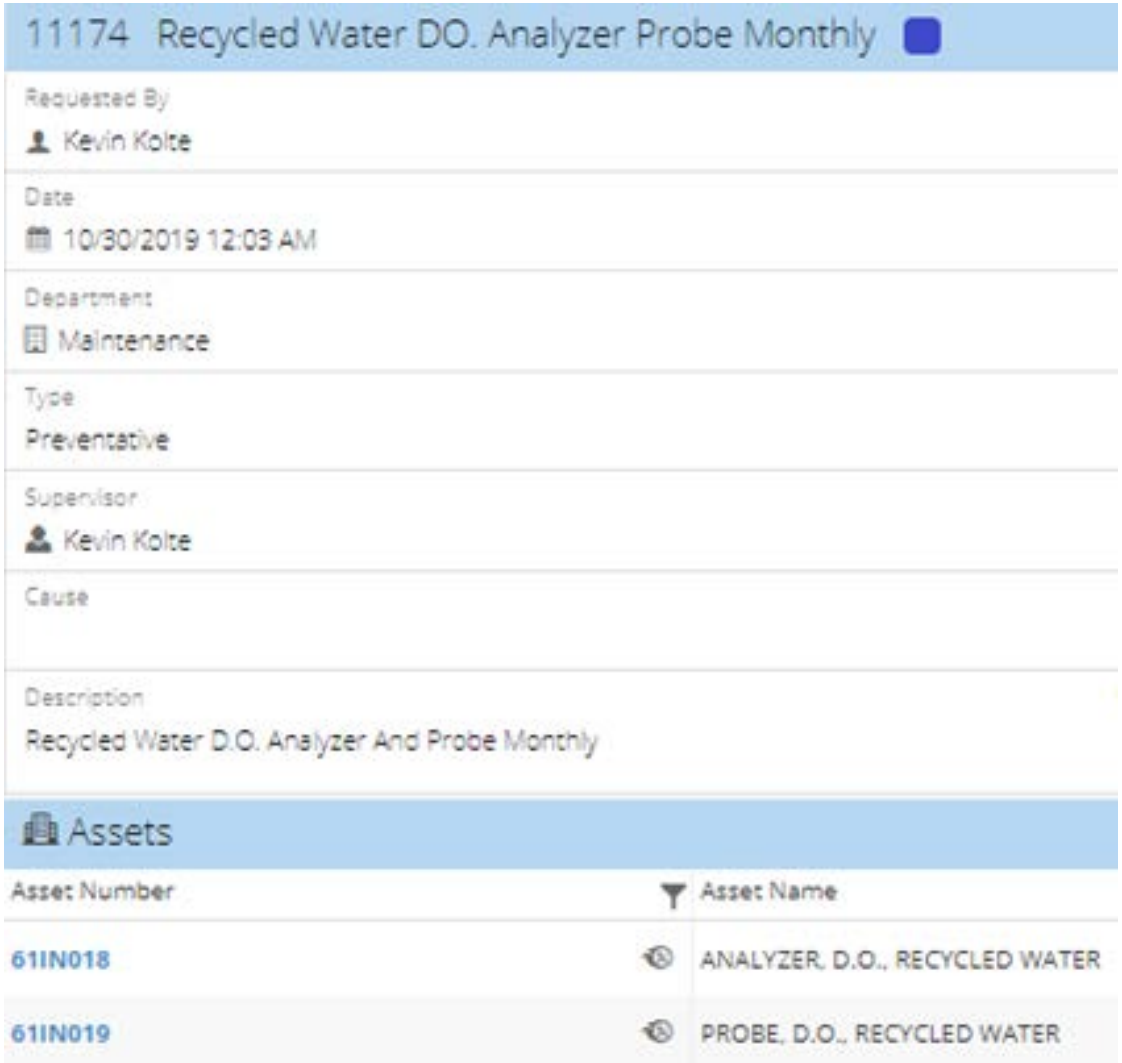
ECS7D2L130 1009 WAGONER DR
Sewer S7D2 Sewer Laterals

PPS4H2L10966 1012 FLURRY DR
Sewer S4H2 Sewer Laterals

Asset Characteristics



Assign Assets to Work Orders



Collect History

61IN018 ANALYZER, D.O., RECYCLED WATER

Edit

Description
ANALYZER, D.O., RECYCLED WATER

QR Code

Active

1 Life | 57.00 ARI | 9.50 ACI

Department
Operations

Division

Class
INSTRUMENTS-10

Location
E-2R CCT

Purchase Date
01/01/2010

Install Date
01/01/2010

Warranty Expires

Purchase Cost
$ 5,000.00

Book Value
$ 500.00 Updated 07/30/2019

Replace Cost
$ 6,575.00 Updated 07/30/2019

LOTO

Notes
ANALYZER, D.O., RECYCLED WATER

Address
E2R CCT

Work Order

YTD | + Add

Number	Date	Main Task	Type	Status	Description	Total Cost
11174	10/30/2019	Recycled Water DO. Analyzer Probe M...	Preventative	New	Recycled Water D.O. Analyzer And Pr...	0.00
10679	09/29/2019	Recycled Water DO. Analyzer Probe M...	Preventative	Close	Recycled Water D.O. Analyzer And Pr...	25.12
10207	08/30/2019	Recycled Water DO. Analyzer Probe M...	Preventative	Close	Recycled Water D.O. Analyzer And Pr...	50.24
9712	07/30/2019	Recycled Water DO. Analyzer Probe M...	Preventative	Close	Recycled Water D.O. Analyzer And Pr...	50.24
9212	06/29/2019	Recycled Water DO. Analyzer Probe M...	Preventative	Close	Recycled Water D.O. Analyzer And Pr...	25.12
						$ 301.44

We have a foundation for “Asset Management”

- Asset Registry
- Assigning assets to work orders
- Creating history for the assets
- Now we can start forecasting

Forecasting

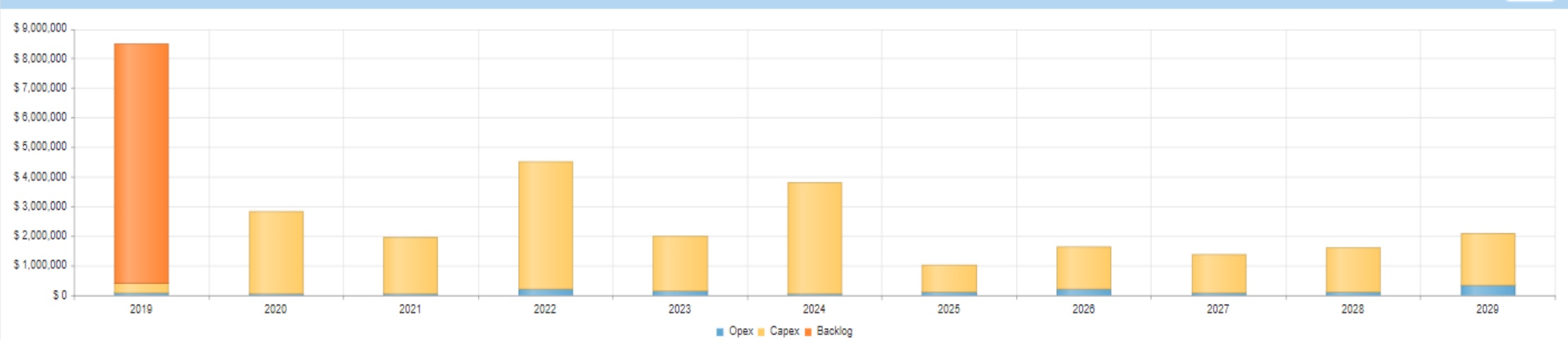
We know the estimated useful life, the install date, condition, and some history. When will this asset fail?

What is it's Probability of Failure.

- (Current date-Install date)/Useful life
- Condition Assessment (CCTV)
- POF = 1 Asset has failed and requires R&R

Funding Required (Good luck)

- Livermore
  - Backflow
  - Potable Water Pumpstations
  - Recycled Water Stations
  - Sewer
  - Source Control
  - Storm
  - Water
  - Water Reclamation Plant
    - Buildings
    - Division
    - Influent
    - LivermoreGIS
    - Primary Treatment
    - SCADA
    - Secondary Effluent
    - Secondary Treatment
    - Site
    - Solids Handling
    - Solids Stabilization
    - Tertiary Treatment
    - UnassignedValves
    - Vehicles



Funding Details [Current Year : 2019]

Export to Excel | Export to PDF

Asset Number	Asset Name	Class	Location	Frequency (Yrs)	Task	Description	Cost ($) (PV)	Backlog Yrs
61WG008	GATE, E2R DRAIN GATE, SOUTH CENTRAL IN TANK	GATE	E-2R CCT	30	Replace		43,875.00	25
60VM001	VALVE, #3 WATER TERTIARY TUNNEL	VALVE-25	Tunnels	25	Replace		2,575.00	20
41DR202	DRIVE, RAKE & SKIMMER, SECONDARY CLARI FIER #2	DRIVES-20	Secondaries	20	Replace		1,182,500.00	19
20IN009	METER, PRIMARY SLUDGE DENSITY	INSTRUMENTS-20	Primaries	20	Replace		23,650.00	19
61WG001	GATE, BYPASS, TERTIARY	GATE	Tertiary Diversion	30	Replace		66,125.00	17
31IN022	PLC-2 AERATION BLWER BLDG	PLC	Electrical	20	Replace		135,600.00	16

Prioritize R & R by Risk

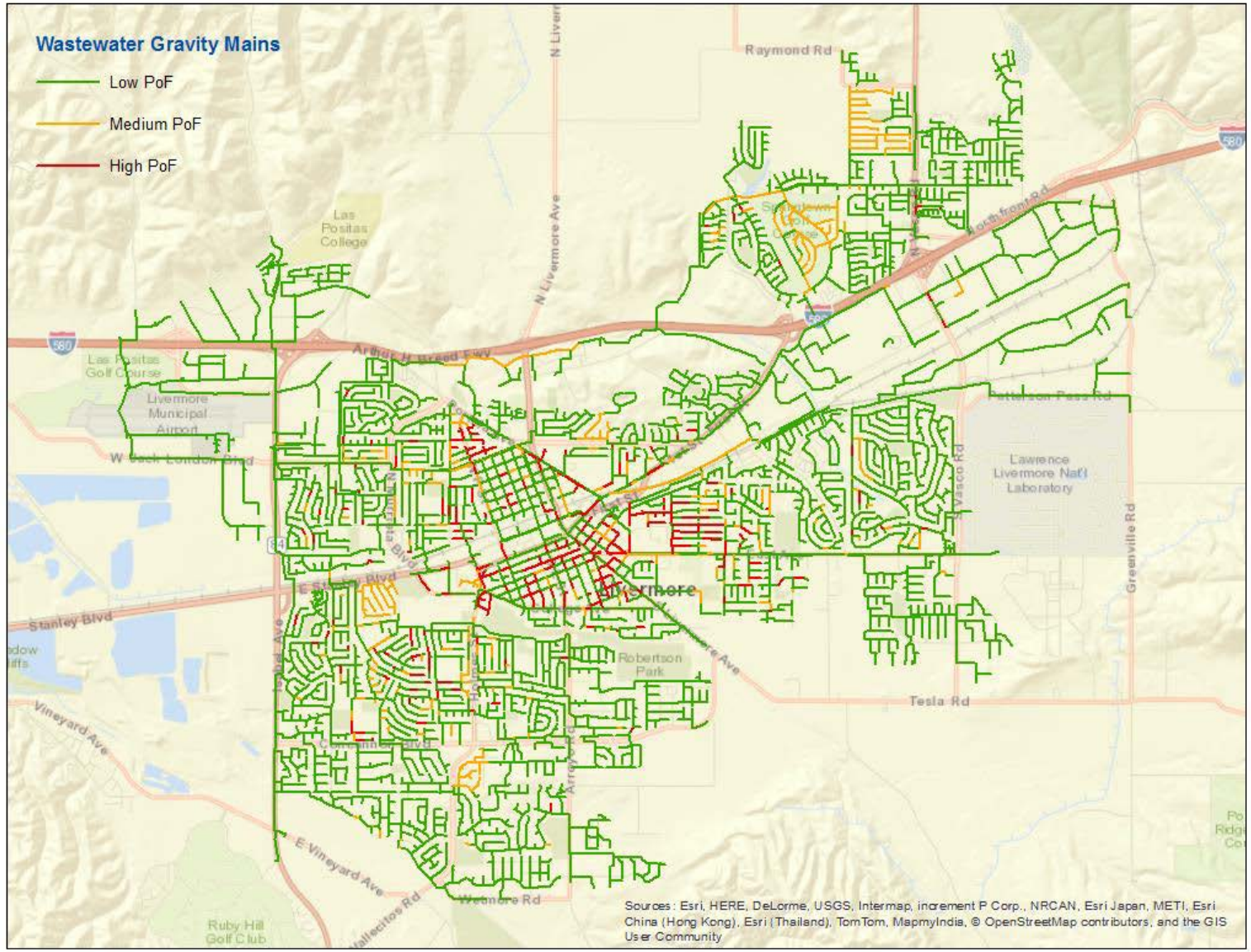
- Consequence of Failure X Probability of Failure

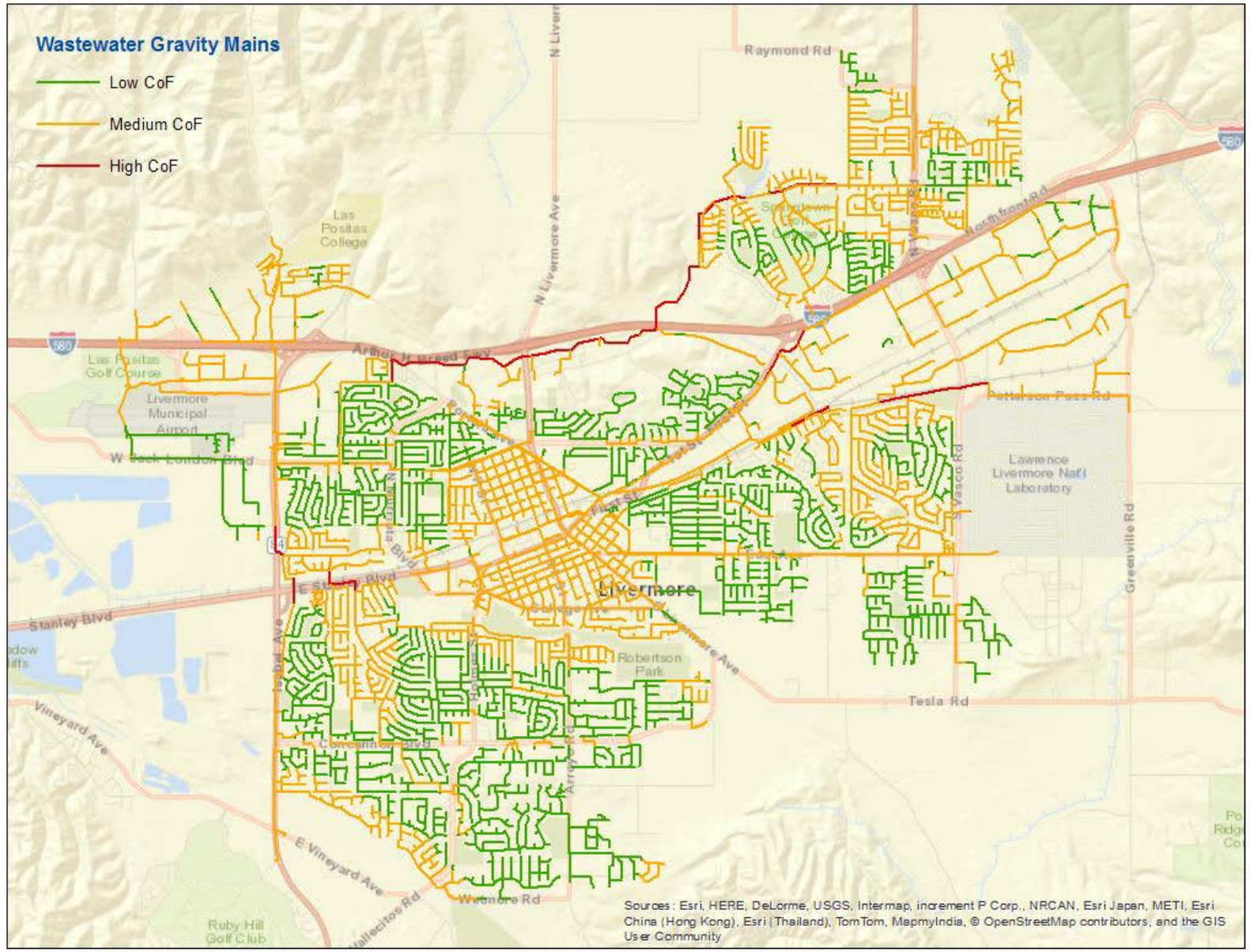
Triple bottom line

- Economic
- Social
- Regulatory

Risk based Funding

Year	Asset	ARI	Task
2019 Backlog: 13	JLS6D2P4067 JLS6D2P4067 DIP S6D2 Sewer Useful Life: 50	68.00	Replace
2019 Backlog: 19	JLS6E3P6109 JLS6E3P6109 DI S6E3 Sewer Useful Life: 50	64.00	Replace
2019 Backlog: 15	JLS6E3P6118 JLS6E3P6118 DI S6E3 Sewer Useful Life: 50	56.00	Replace
2019 Backlog: 2	DTS6E2P7131 DTS6E2P7131 RPM S6E2 Sewer Useful Life: 75	52.00	Replace
2019 Backlog: 2	DTS6E2P3764 DTS6E2P3764 RPM S6E2 Sewer Useful Life: 75	52.00	Replace
2019 Backlog: 2	DTS6E2P3821 DTS6E2P3821 RPM S6E2 Sewer Useful Life: 75	52.00	Replace
2019 Backlog: 2	DTS6E1P3457 DTS6E1P3457 RPM S6E1 Sewer Useful Life: 75	52.00	Replace


Wastewater Gravity Mains
Low PoF
Medium PoF
High PoF
Raymond Rd
Las Positas College
N Livermore Ave
Northfront Rd
Las Positas Golf Course
Livermore Municipal Airport
W Jack London Blvd
Patterson Pass Rd
Lawrence Livermore Nat'l Laboratory
Vasco Rd
Greenville Rd
Stanley Blvd
Robertson Park
Tesla Rd
Vineyard Ave
E Vineyard Ave
Wetmore Rd
Ruby Hill Golf Club
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community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Stanley Blvd
Vineyard Ave
E Vineyard Ave
Wenmore Rd
Ruby Hill Golf Club
Livermore
Robertson Park
Tesla Rd
Lawrence Livermore Natl Laboratory
Greenville Rd
Patterson Pass Rd
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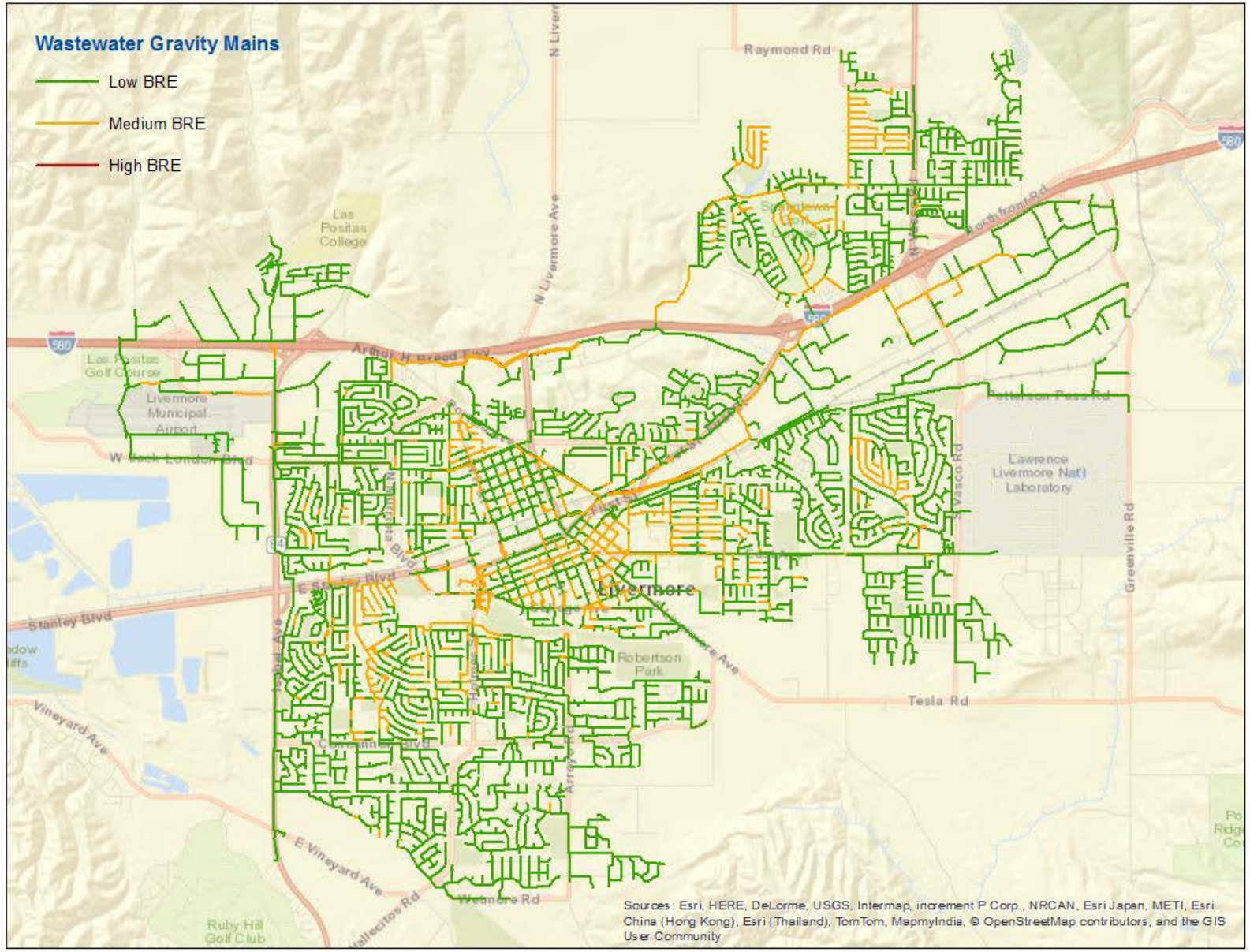
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Vasco Rd
Lawrence Livermore Nat'l Laboratory
Greenville Rd
Vineyard Ave
E Vineyard Ave
Arroyo Rd
Wenmore Rd
Ruby Hill Golf Club
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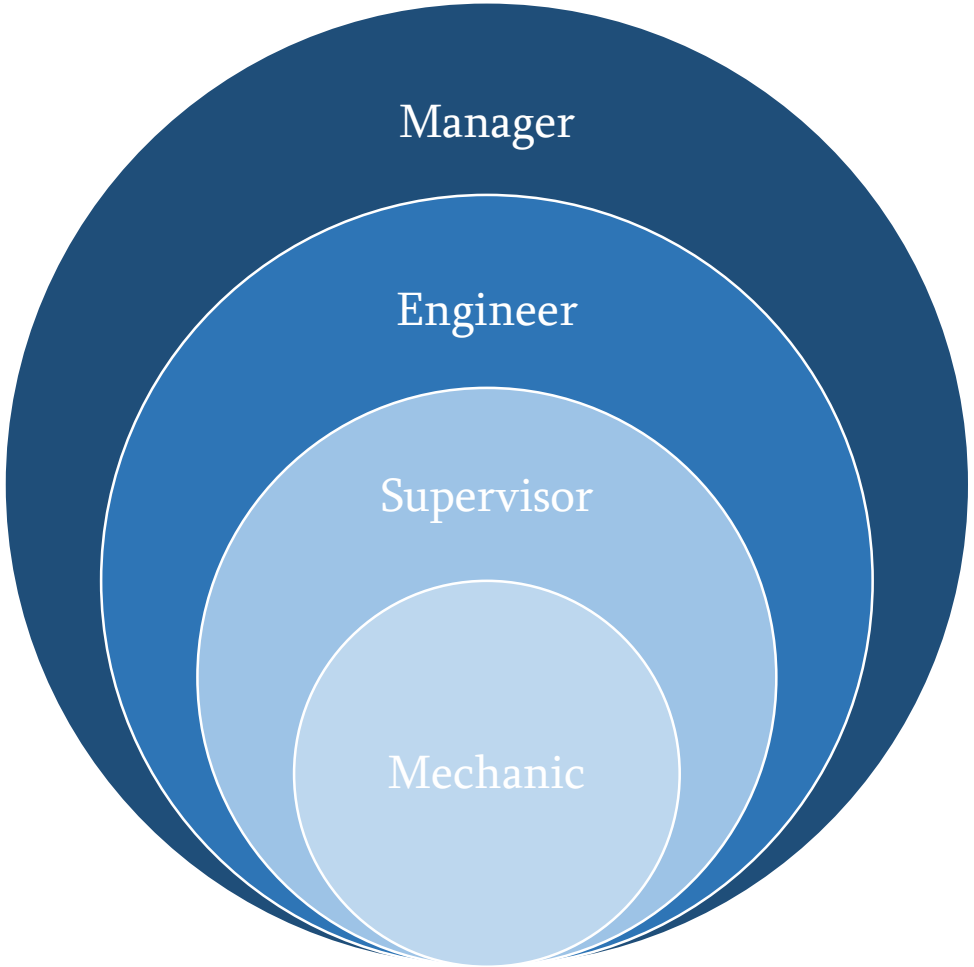
WRD Asset Management



Lessons learned

- Work Orders are not a Timecard – biased information
- Just one tool in the R&R decision basket (Master plans, Knowledge Management, Planning, etc.)
- Not a one and done- Just like a piece of equipment Asset Management requires continual maintenance and refining

General Fund
Asset Management

Competing Priorities

- General Fund is Discretionary = COMPETITION
- Police
- Fire
- Library
- City Hall / Administration
- Expansion of Facilities
- Asset Management

Challenges

- Aging infrastructure (founded in 1869)
- Deferred maintenance and replacement
- Expansion caused by building booms
- Focus on Downtown development
- Maintaining a Balance Between Expansion and Replacement

General Fund Asset Management

- Asset Inventory and Condition Assessment
  - Sidewalks – Sampling based on expected year of construction
    - "Smith-Chung Method" sidewalks develop as population expands.
  - Pedestrian Ramps – Sampled 1,000 out of 8,000
  - Curb / Gutter – Assumed 1% failure rate (100 year life)
  - Roads – Existing Pavement Management Program
  - Traffic Signs – Continued 12-year blanket replacement program
  - Trails – Full inventory and condition assessment of amenities
  - Parks & Plazas - Full inventory and condition assessment of amenities

General Fund Asset Management

- Asset Inventory and Condition Assessment
  - Walls – Full inventory and condition assessment
  - Traffic Signals – Collected inventory information only
  - Streetlights – Used existing information from 2013 replacement project
  - Bridges – Full inventory and condition assessment
  - Storm Drains – Used existing information
  - Streams – Used drone aerial video recording to identify problems
  - Buildings – Full inventory and condition assessment

Risk-Based Prioritization

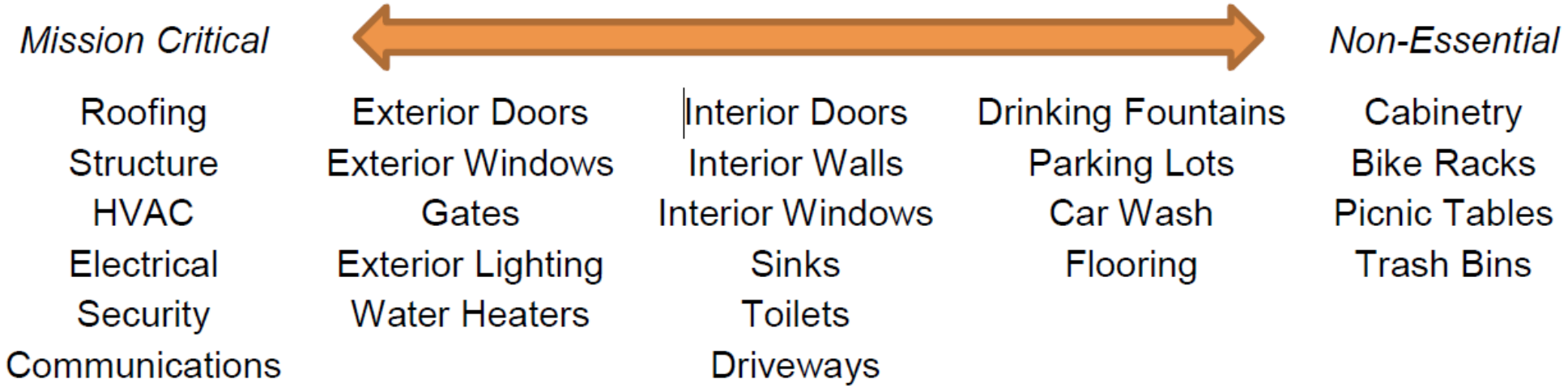
- 6 Council Presentations
- Centered on Inventory, Replacement Cost, and Consequence of Failure
- Stayed Inside Each Asset Class

Risk-Based Prioritization

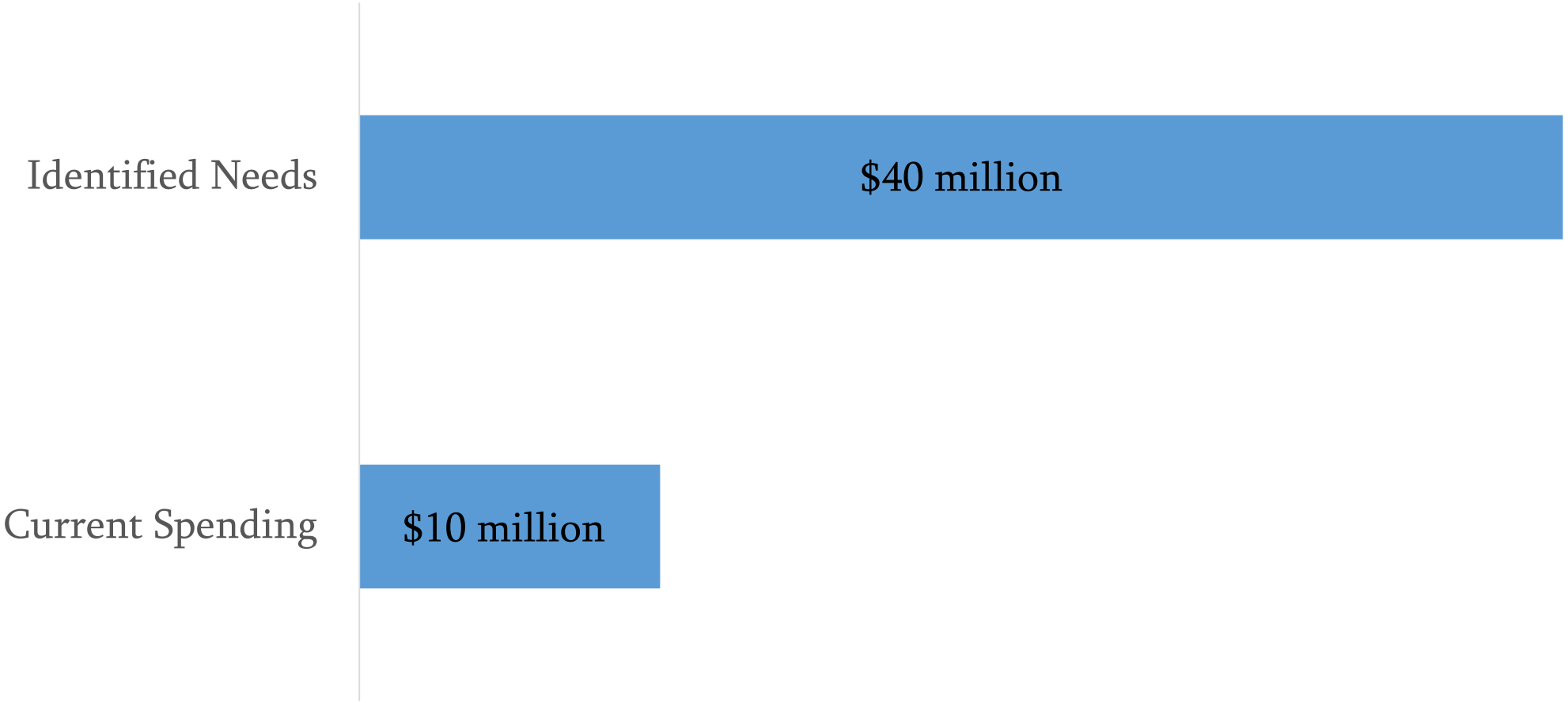
- Roads:
  - Roadway Classification, Traffic Volume/Speed
  - Bike Lanes, Transit Routes, Truck Routes,
  - Critical Facilities

Risk-Based Prioritization

- Buildings (Two-Tiered)
  - Essential Facilities
  - Enrichment Facilities – General Usage
  - Enrichment Facilities – Specific Usage



Here's What We Found



Cross Asset Prioritization

- The Most Difficult Step
- Change of Heart

Sidewalk Success!

- Asked Council to end subsidy and City-administered sidewalk program.
- Council agreed.
- Reduced City responsibility from 16.2 million sqft to 160,000 sqft
- Potentially saves the City $1.5 million per year

The Work Continues...

- Public Outreach
- More Tough Decisions

Enterprise v. General Fund

- Enterprise
  - Interconnected
  - Dedicated Revenue Streams
  - Start at Work Management
- General Fund
  - Independent (mostly)
  - Funds are Highly Competitive
  - Start at Long-Term Obligations

Living the Lifestyle

- START TODAY!
- Incremental progress
- Continual improvement
- Have a conversation, have many conversations
- Help people understand the long-term costs of actions

Living the Lifestyle, cont.

- Stop the bleeding. Get your planners involved.
  - Does your Agency NEED to own this new asset? Any alternatives?
  - Lower landscape planting density = fewer maintenance problems, better plant health
  - Some assets can necessitate additional assets
  - Long-term costs associated with “free” improvements
  - Location of trees & plants in relation to sidewalk
  - Think about lifecycle costs and ongoing funding from the start

Questions?

Andrew Hall – athall@cityoflivermore.net

Anthony Smith – awsmith@cityoflivermore.net