City of Fort Worth
TPW Asset Management Journey

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City of Fort Worth TPW

September 17, 2020

Asset Management in City of Fort Worth – Keeping it Simple and Bringing Folks Along for the Ride

Presented by:
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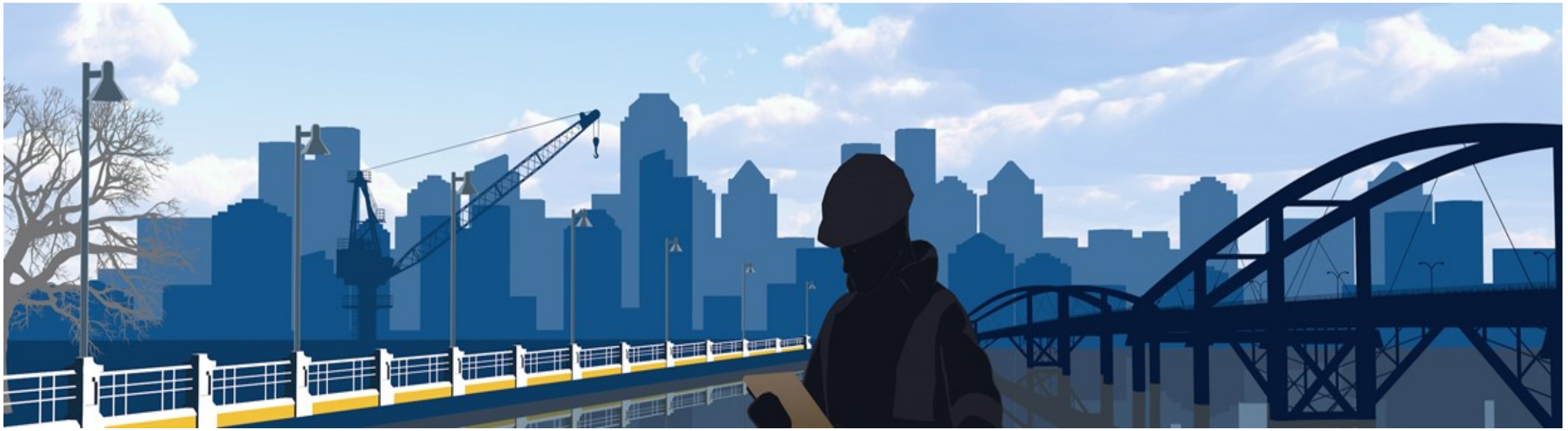
City of Fort Worth TPW Department
May 21, 2019

Last Year's Topics

- Benefits of Asset Management
- Key definitions
- Asset Management Framework
- Obstacles/pitfalls we had encountered
- How to keep it simple
- How to get others to come along for the ride

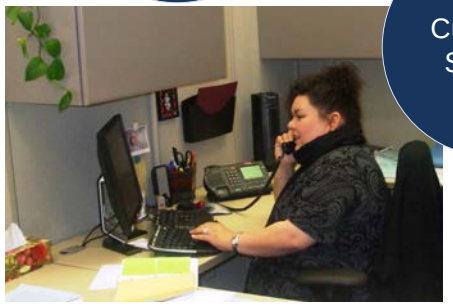


Continuation of TPW's Asset Mgmt JOURNEY

Focus on the following:

- Asset Mgmt impact in TPW
- TPW “Asset Management” efforts to date
- Practical Applications
- Next steps

Asset Management Impact



Elements of an Asset Management Program

6	Life Cycle Costing	Apply R&R Decisions
5	Optimal Maintenance	Plan & Execute PM
4	Asset Condition	Rate Assets
3	Service Levels	Establish Performance Standards
2	Asset Criticality	Identify Critical Assets (PoF & CoF)
1	Asset Inventory	Asset Inventory & Data Management

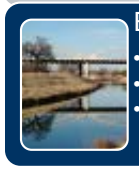
Asset Management Timeline in TPW

TPW Asset Management Efforts to Date

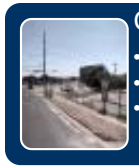
- Asset Inventories/Data Management - GIS
- Work Order Systems – CMMS (Accela and VueWorks)
- Condition Assessments (Ex. Pvmt Maint Program)
- Initiatives (Ex. SD Rehab Program)
- Education/Training
  - 23 City/12 TPW staff - attended 5-day AM IAM Cert Course
  - 21 City/16 TPW staff - attended 1-day AM Overview Course

TPW Asset Management Data - Inventory

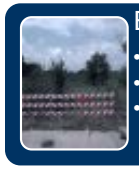
Streets



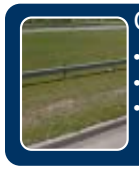
Bridges
- 437 Assets
- 0 Attributes
- 437 Data Elements



Curb & Gutters
- 300,138 Assets
- 23 Attributes
- 6,894,388 Data Elements



End of Road Barricades
- 1,112 Assets
- 22 Attributes
- 24,288 Data Elements



Guardrails
- 166 Assets
- 19 Attributes
- 3,54 Data Elements

Pavement
- 34,110 Assets
- 83 Attributes
- 2,810,380 Data Elements

Traffic Management

Poles
- 120,340 Assets
- 11 Attributes
- 1,276,407 Data Elements

Sidewalks
- 50,768 Assets
- 15 Attributes
- 701,865 Data Elements

Signs
- 129,385 Assets
- 30 Attributes
- 3,842,820 Data Elements

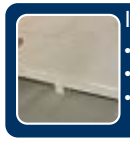
Signal Intersections
- 958 Assets
- 9 Attributes
- 8,577 Data Elements

Street Lights
- 65,347 Assets
- 33 Attributes
- 2,129,127 Data Elements

Traffic Signals
- 4,814 Assets
- 38 Attributes
- 179,550 Data Elements

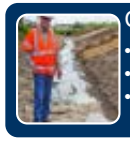
Stormwater

Channel Features
- 17,860 Assets
- 10 Attributes
- 178,600 Data Elements



Inlet
- 39,803 Assets
- 41 Attributes
- 1,631,431 Data Elements

Manhole
- 10,295 Assets
- 31 Attributes
- 319,145 Data Elements

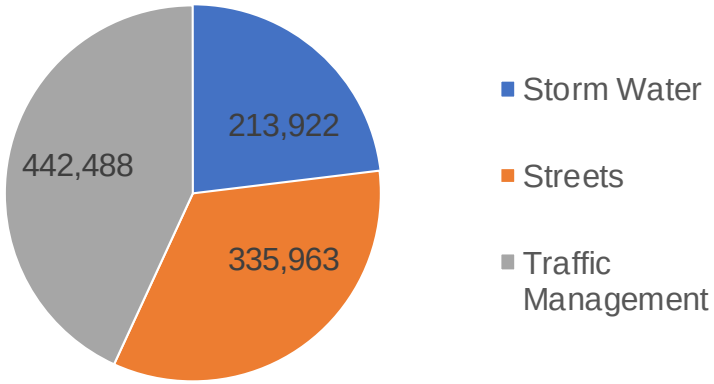


Channels
- 15,890 Assets
- 17 Attributes
- 270,521 Data Elements

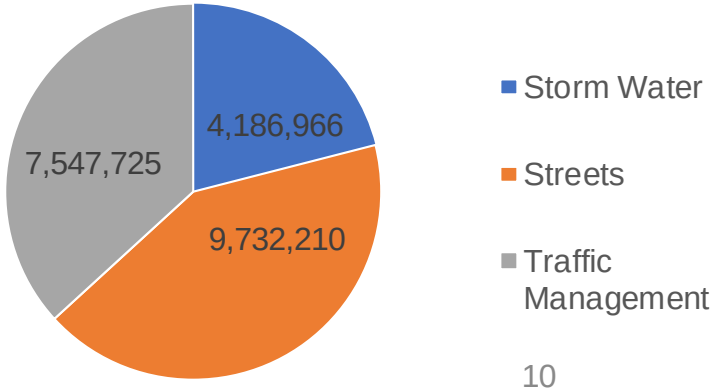
Pipes
- 70,392 Assets
- 17 Attributes
- 1,196,664 Data Elements

Pipe Features
- 38,784 Assets
- 7 Attributes
- 271,509 Data Elements

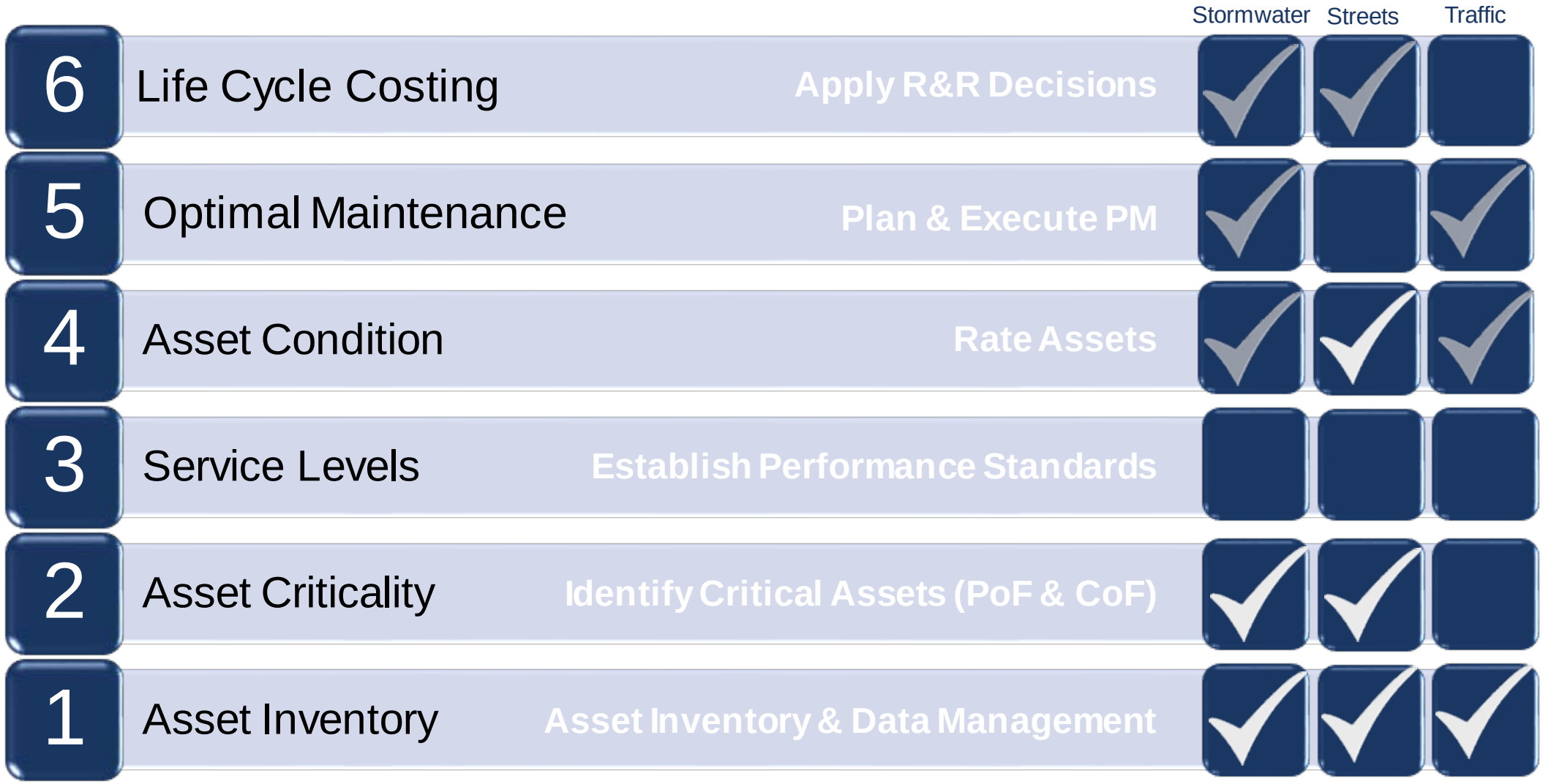
Assets in Inventory – 992,373



Data Elements - 20,512,839



Progress Against Program Elements



Practical Applications

- Pavement Condition Assessment

- SW Storm Drain Rehabilitation Program

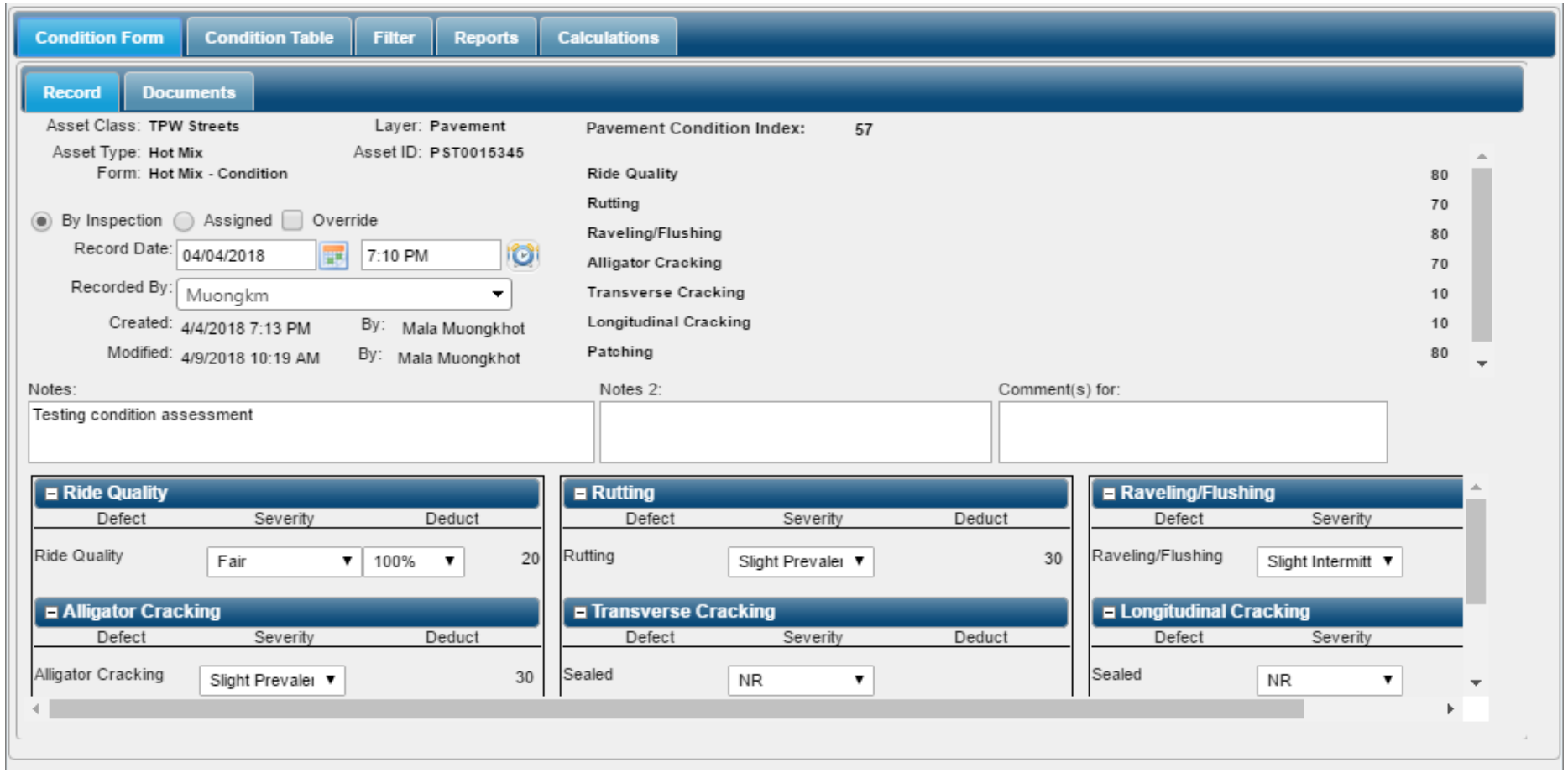
Pavement Condition Assessment/Inventory

- 2016 Inventory
- 3200 lane miles
- Additional assets:
  - Streetlight
  - Traffic Signals
  - Sidewalks
  - Pavement Markings

Periodic Condition Assessment

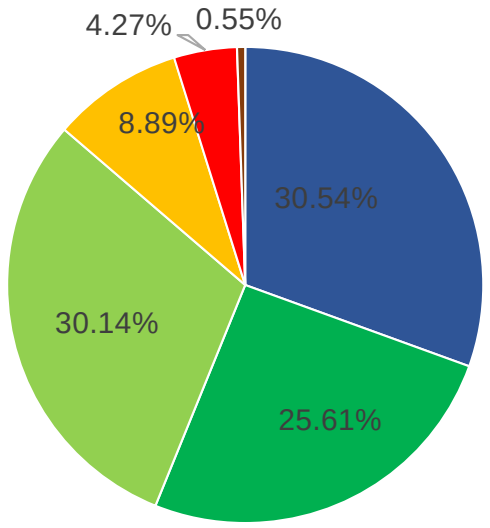
Pavement Condition Index (PCI) is a numerical index between 0 and 100, which is used to indicate the condition of a specific section of road pavement.

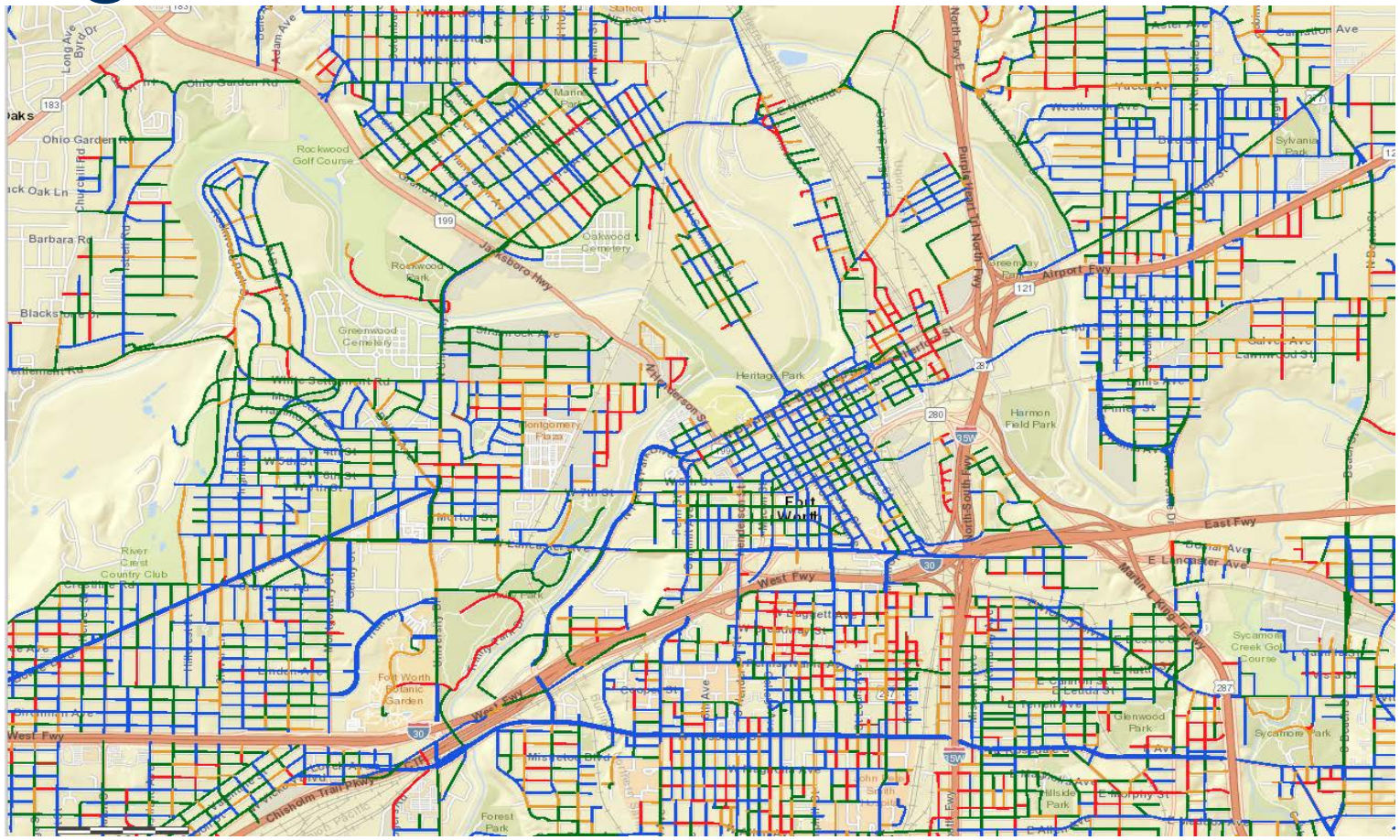
Overall Condition Index (OCI) utilizes the PCI but also takes into account other factors such as, curb/gutter condition and missing curb.



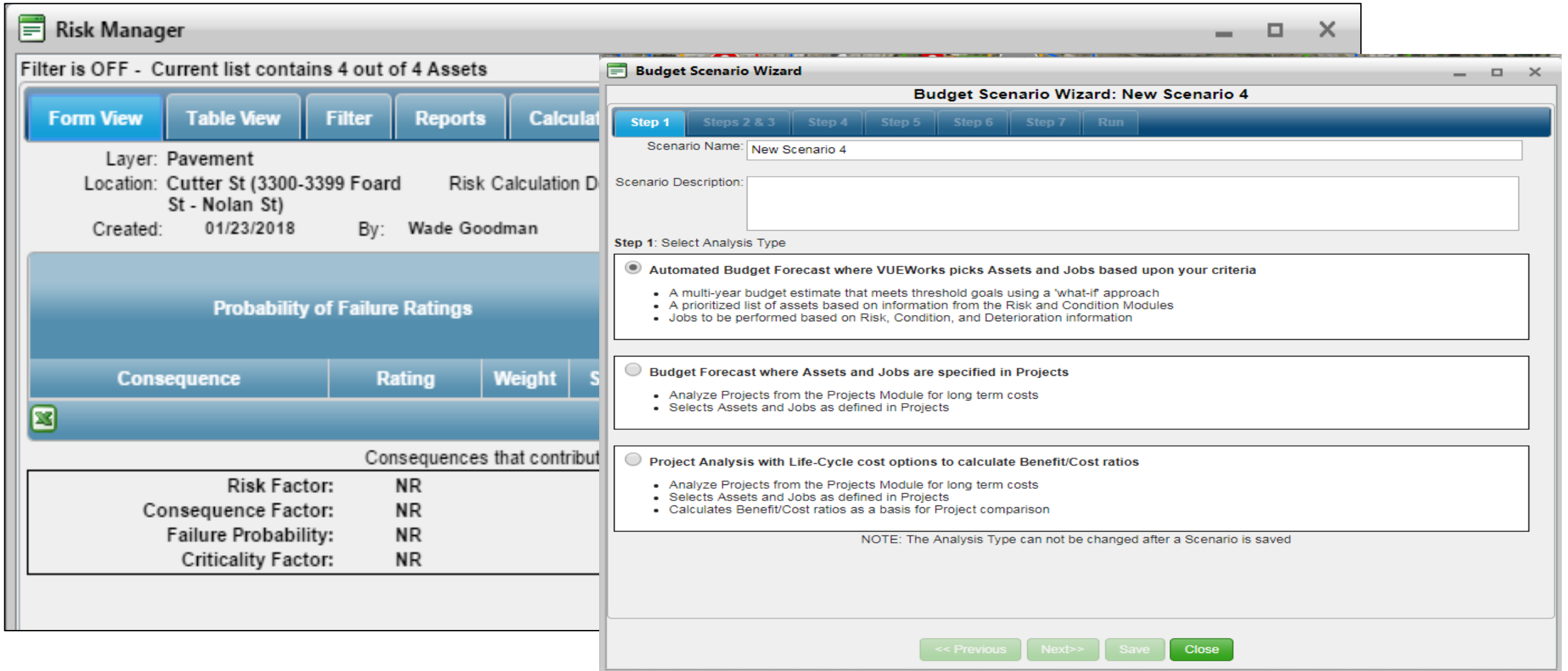
Condition Scoring

PCI		Condition
Low	High	
91	100	Excellent
81	90	Very Good
61	80	Good
41	60	Fair
21	40	Poor
0	20	Failed



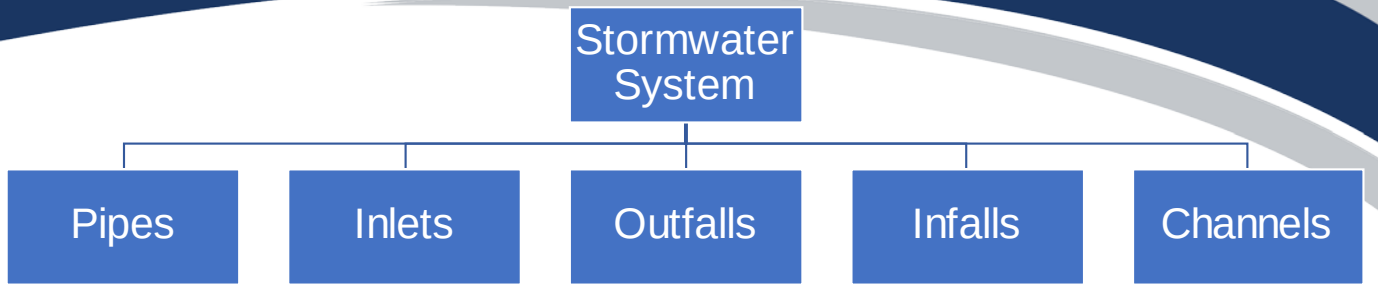


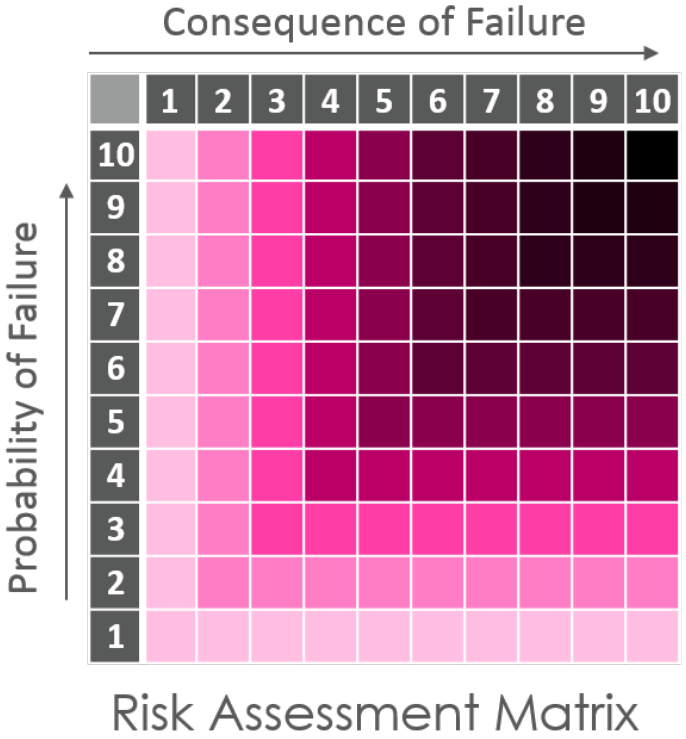
Risk and Forecasting



Storm Drain Rehabilitation Program

Criticality of Stormwater Infrastructure





Probability of Failure x Consequence of Failure = Criticality

Storm Drain Rehabilitation – BRE Criteria

- Criteria: Probability of Failure (POF) and Consequence of Failure (COF)

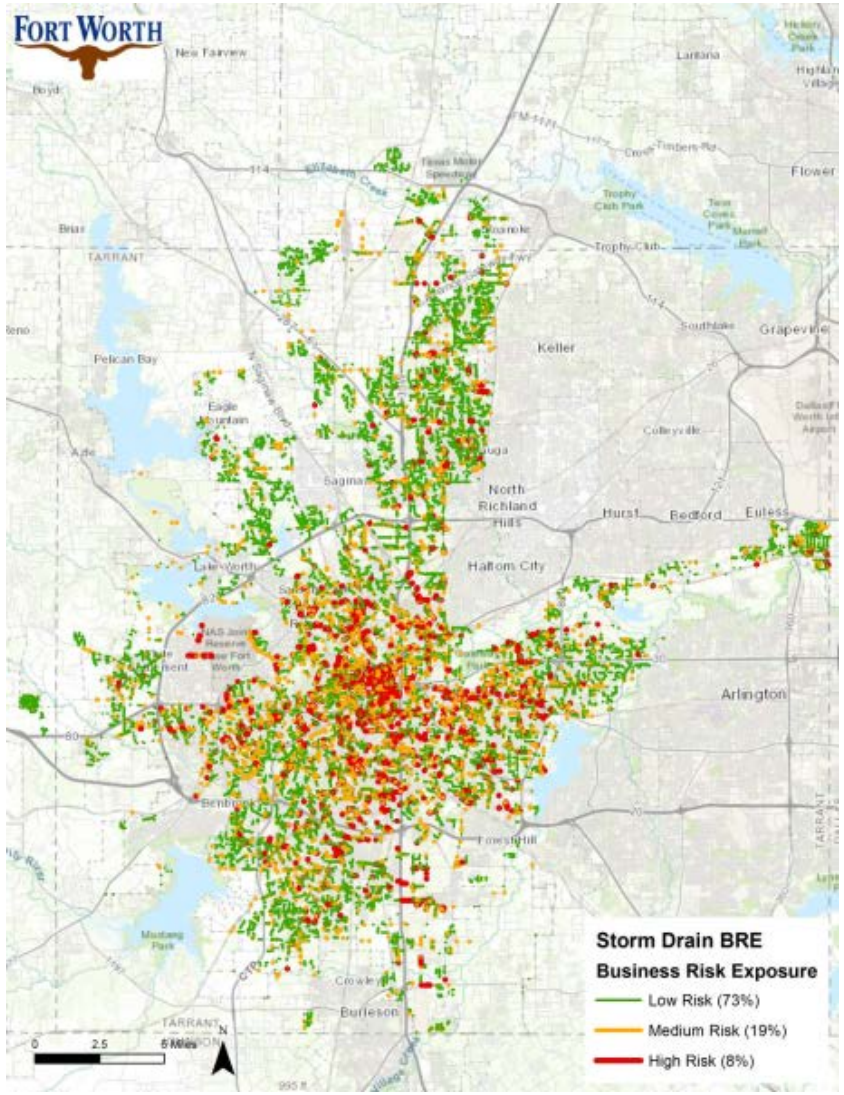
Probability of Failure	Description	Weight (%)
Percent Consumed	remaining useful life	30%
Capacity	pipe capacity vs contributing runoff	10%
Operating Environment	zoning designation	20%
Material	pipe material designation	20%
Soils	expansive soils by geologic formation	20%
TOTAL		100%

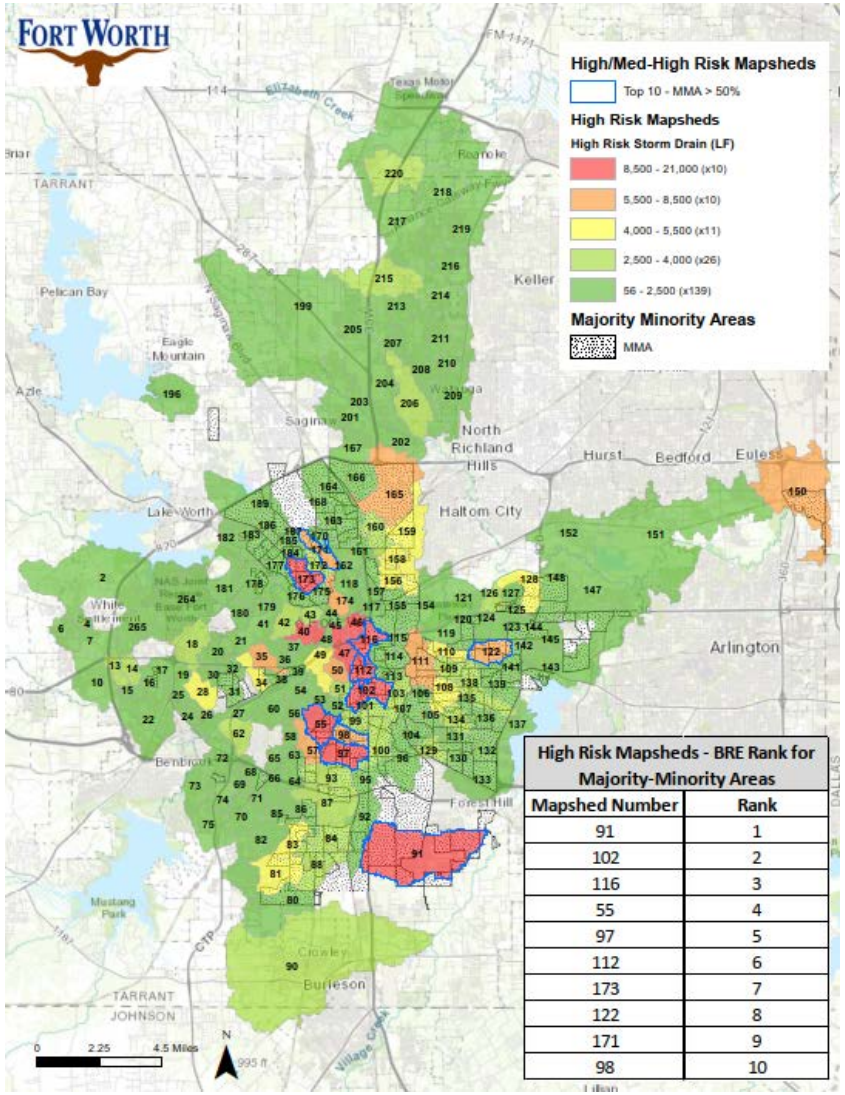
Consequence of Failure	Description	Weight (%)
Size	size as indicator of pipe flow and population	40%
Buildings	buildings served by pipes	15%
Roads	roads by class near pipe	15%
Critical Service	critical facilities served by pipes	15%
Sag Inlets	sag inlets connected to pipes	15%
TOTAL		100%

- $\frac{\text{POF x COF}}{10}$ = Business Risk Exposure (BRE)

Storm Drain Rehabilitation – BRE Priority

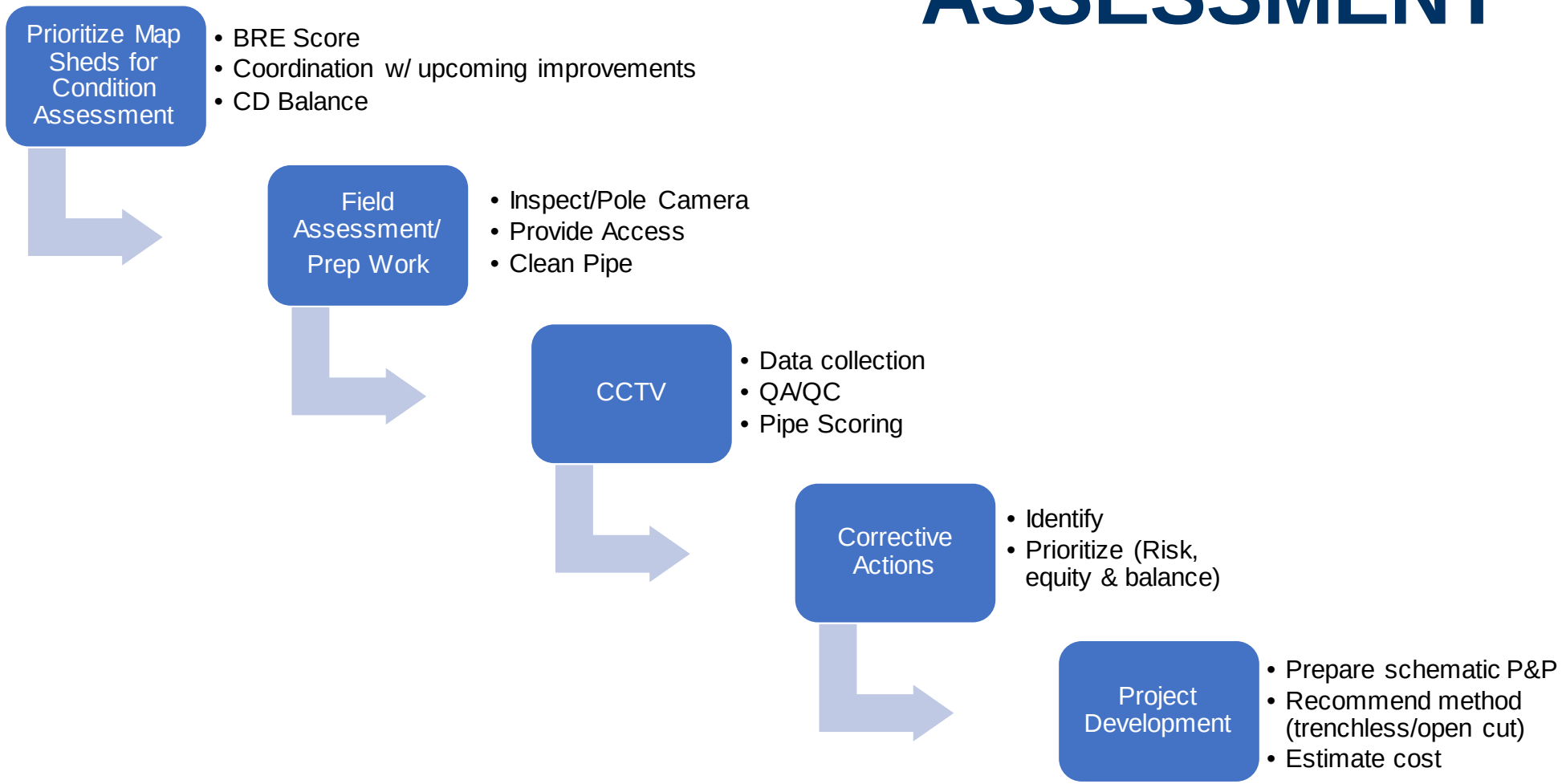
- Low Risk: 73%
- Medium Risk: 19%
- High Risk: 8%



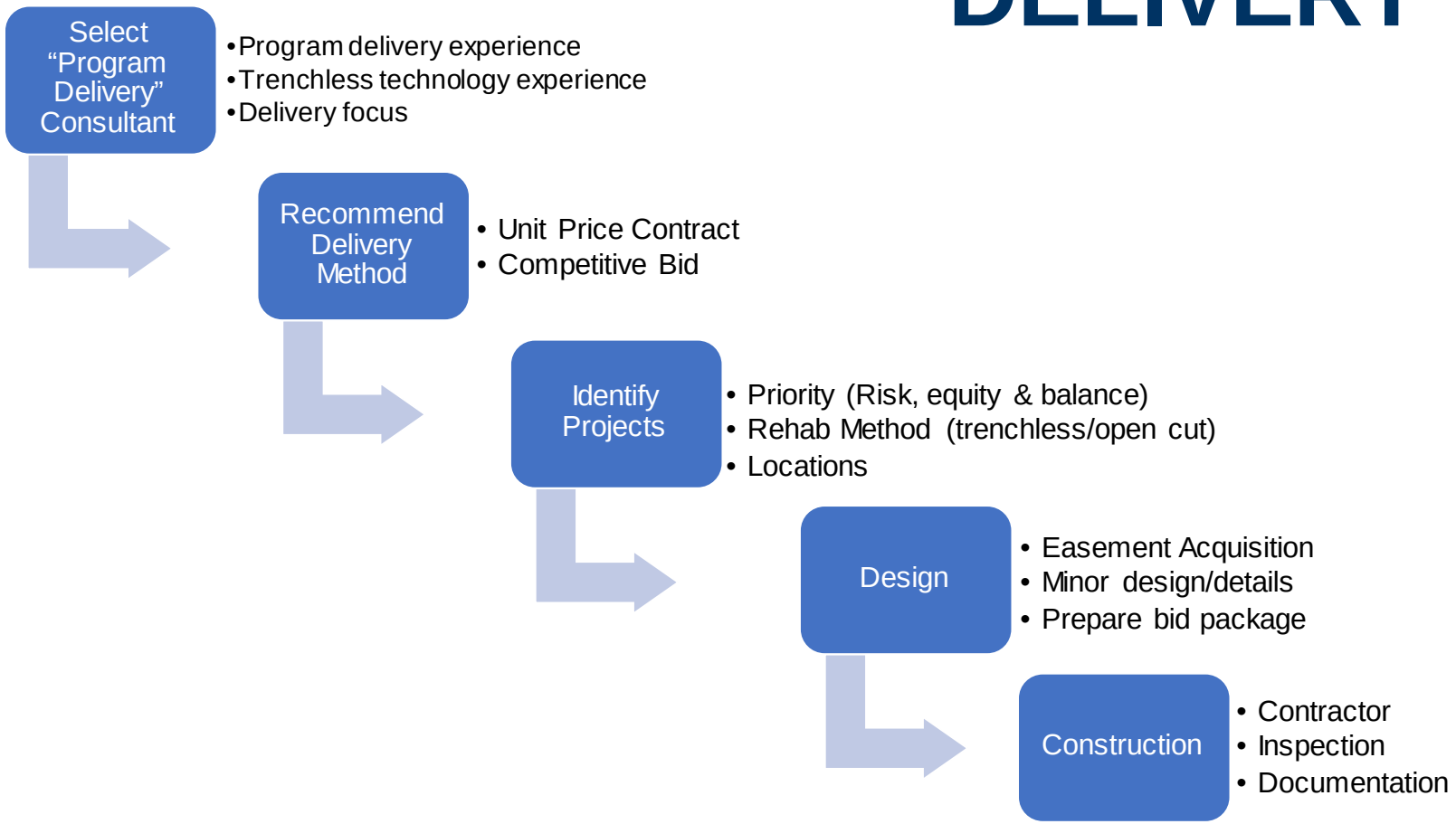


High Risk Mapsheds - BRE Rank for Majority-Minority Areas	
Mapshed Number	Rank
91	1
102	2
116	3
55	4
97	5
112	6
173	7
122	8
171	9
98	10

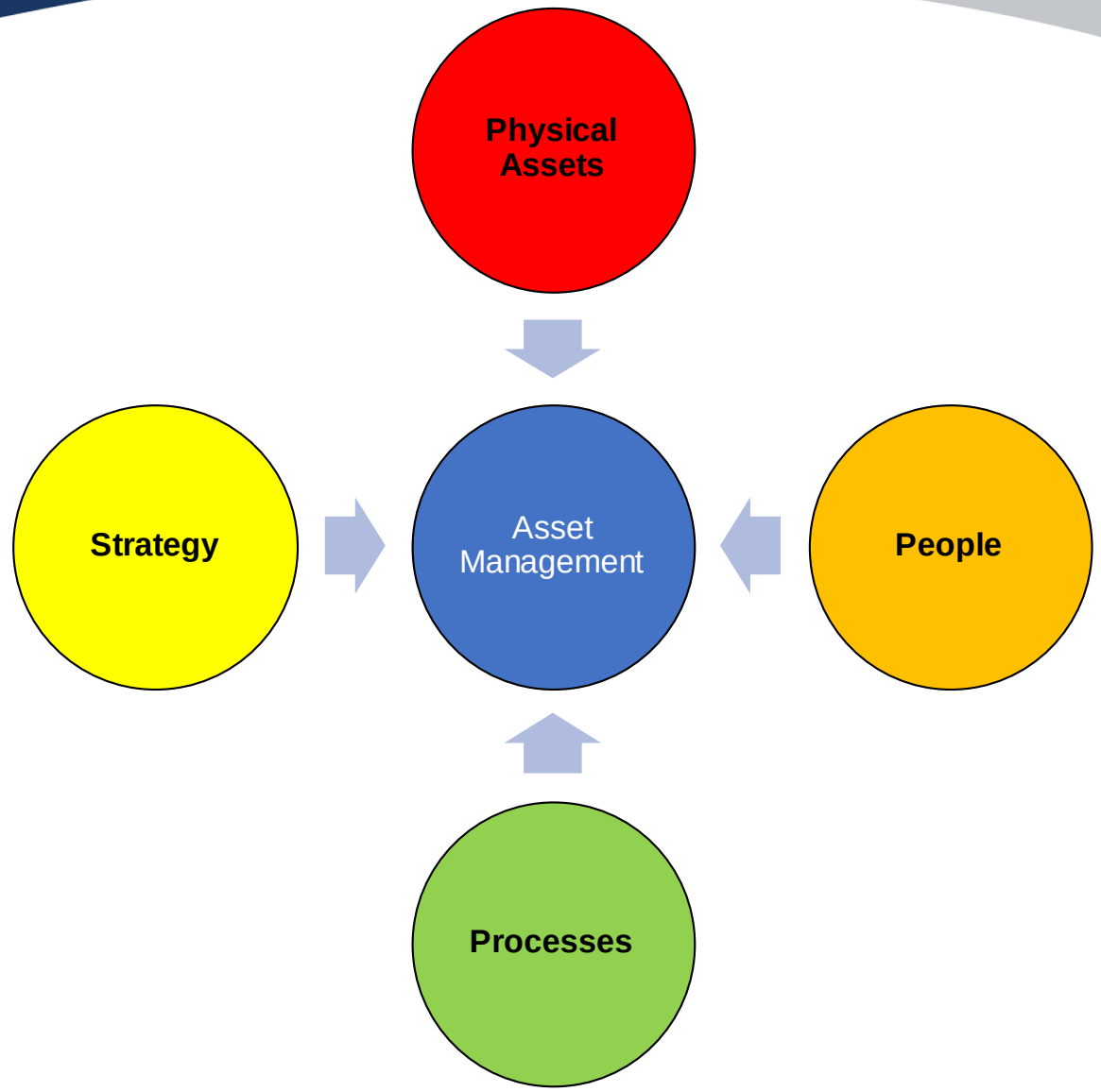
Storm Drain Rehabilitation
ASSESSMENT



Storm Drain Rehabilitation
DELIVERY



Asset Management Focus Areas



TPW Next Steps

Develop TPW-wide Asset Management “strategy” to guide on-going and future Asset Management efforts

- Continue education/training efforts
- Engage Asset Management experts to assist
- Develop Asset Management Road Map
- Develop TPW Strategic Asset Management Plan
- Formalize Asset Management Plans for Asset Groups

Questions?

Thank you!

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