

# CRITICALITY



*When you know better you do better*

*Maya Angelou*

# CRITICALITY OF ASSETS



Eric Saylor, Cincinnati, OH



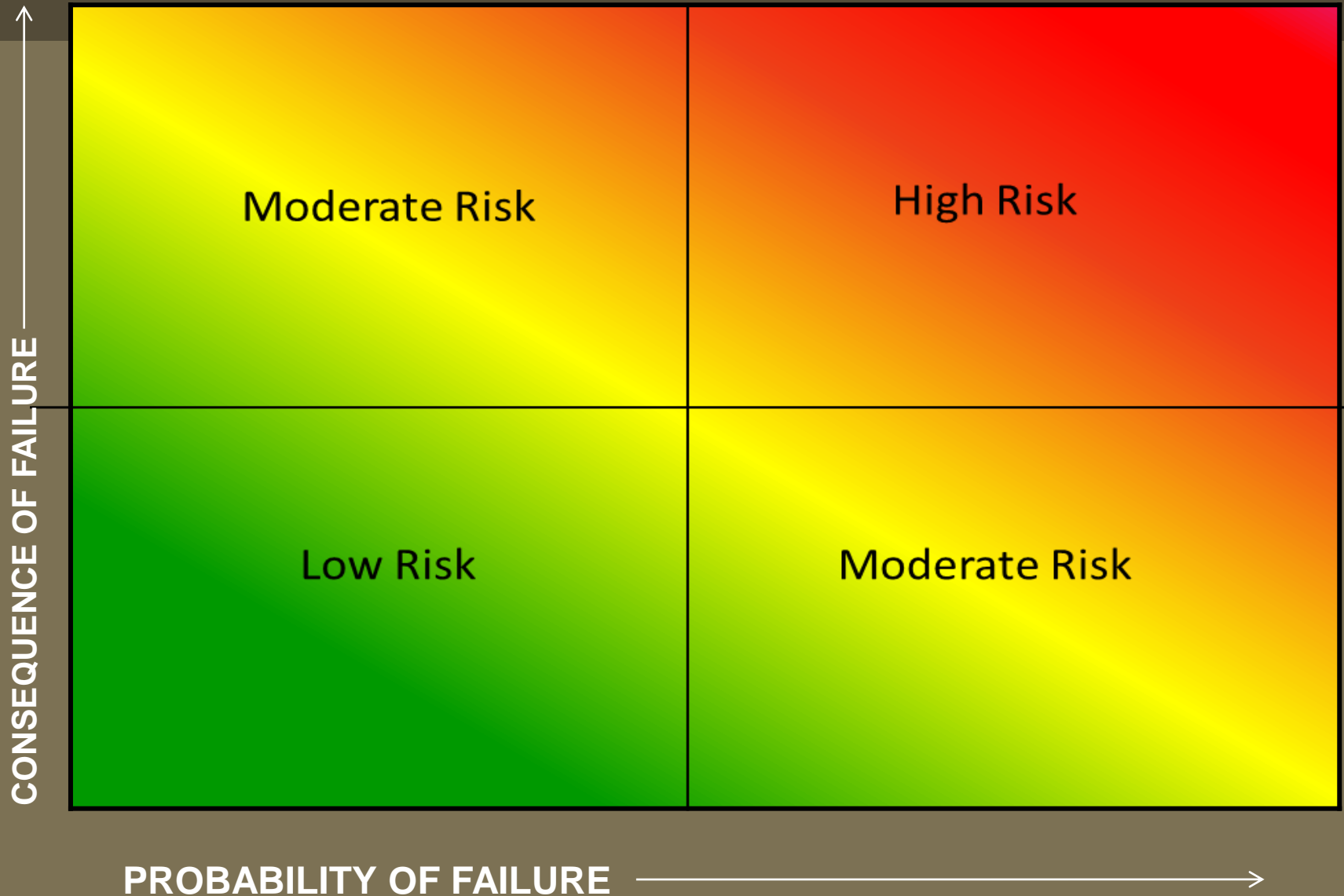
What is the likelihood that an asset will fail?

What is the consequence if the asset does fail?





# ASSET RISK



# FAILURE MODES

MORTALITY

LEVEL OF  
SERVICE

CAPACITY

FINANCIAL  
INEFFICIENCY

# FAILURE MODES

MORTALITY



# FAILURE MODES

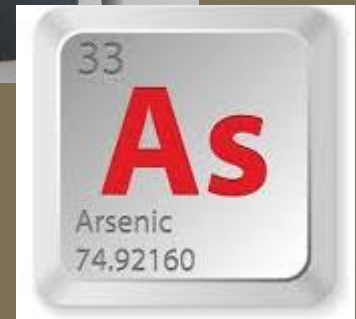
LEVEL OF  
SERVICE



HAVE 4''



NEED 6''



# FAILURE MODES

CAPACITY





# FAILURE MODES

## FINANCIAL INEFFICIENCY



More to fix than to  
replace



# ASSESSING CONSEQUENCES?



The diagram illustrates the Triple Bottom Line concept. It consists of three stacked, rounded rectangular boxes. The top box is red and contains the word 'FINANCIAL'. The middle box is green and contains the word 'ENVIRONMENTAL'. The bottom box is purple and contains the word 'SOCIAL'. The boxes are arranged in a descending staircase pattern from top-left to bottom-right.

**FINANCIAL**

**ENVIRONMENTAL**

**SOCIAL**

**CONSIDER THE TRIPLE BOTTOM LINE**

# CALCULATING CRITICALITY

**POF = PROBABILITY OF FAILURE**

**COF= COST OF FAILURE**

**Redundancy Factor = RF**

**Criticality = POF X COF X RF**

# WAYS TO REDUCE RISK

Routine &  
Preventative  
Maintenance

Redundancy

Spare Parts

Specialized  
Training

Replace  
Assets Early

Monitoring

# ASSESSING CRITICALITY: A SIMPLE EXAMPLE



HIGHEST RISK

LEAST RISK

STANDARDS



# FACTORS TO CONSIDER FOR

Age of Well

Condition of  
Well

Clogging of  
Well

Aesthetic  
Water  
Concerns

Depth of  
Well

# PROBABILITY OF FAILURE

# Scores for PoF

Well Name	POF Factor
Westside Well	4
Eastside Well	2
Northside Well	4
Southside Well	1
Central Well	4

# FACTORS TO CONSIDER FOR

Cost of  
Repair

Number of  
Customers  
Served

Number of  
Critical  
Customers

Time of  
Repair

Redundancy

# CONSEQUENCE OF FAILURE

# Scores for CoF

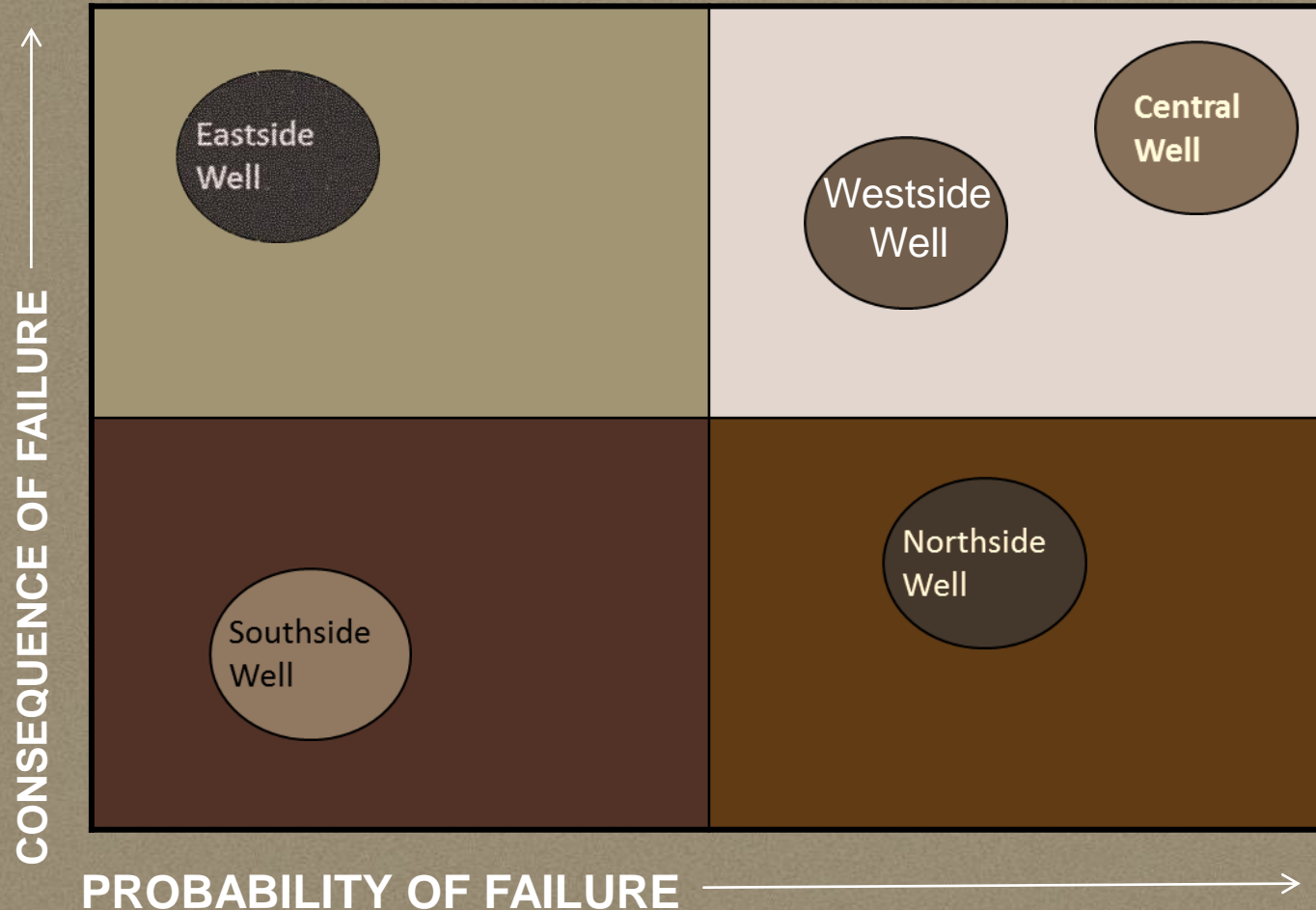
Well Name	COF Factor
Westside Well	4
Eastside Well	4
Northside Well	3
Southside Well	2
Central Well	5

# Risk Scores for Wells

Well Name	POF	COF	TOTAL RISK SCORE
Westside Well	4	4	16
Eastside Well	2	4	8
Northside Well	4	3	12
Southside Well	1	2	2
Central Well	4	5	20



# VISUAL DISPLAY OF EXAMPLE DATA



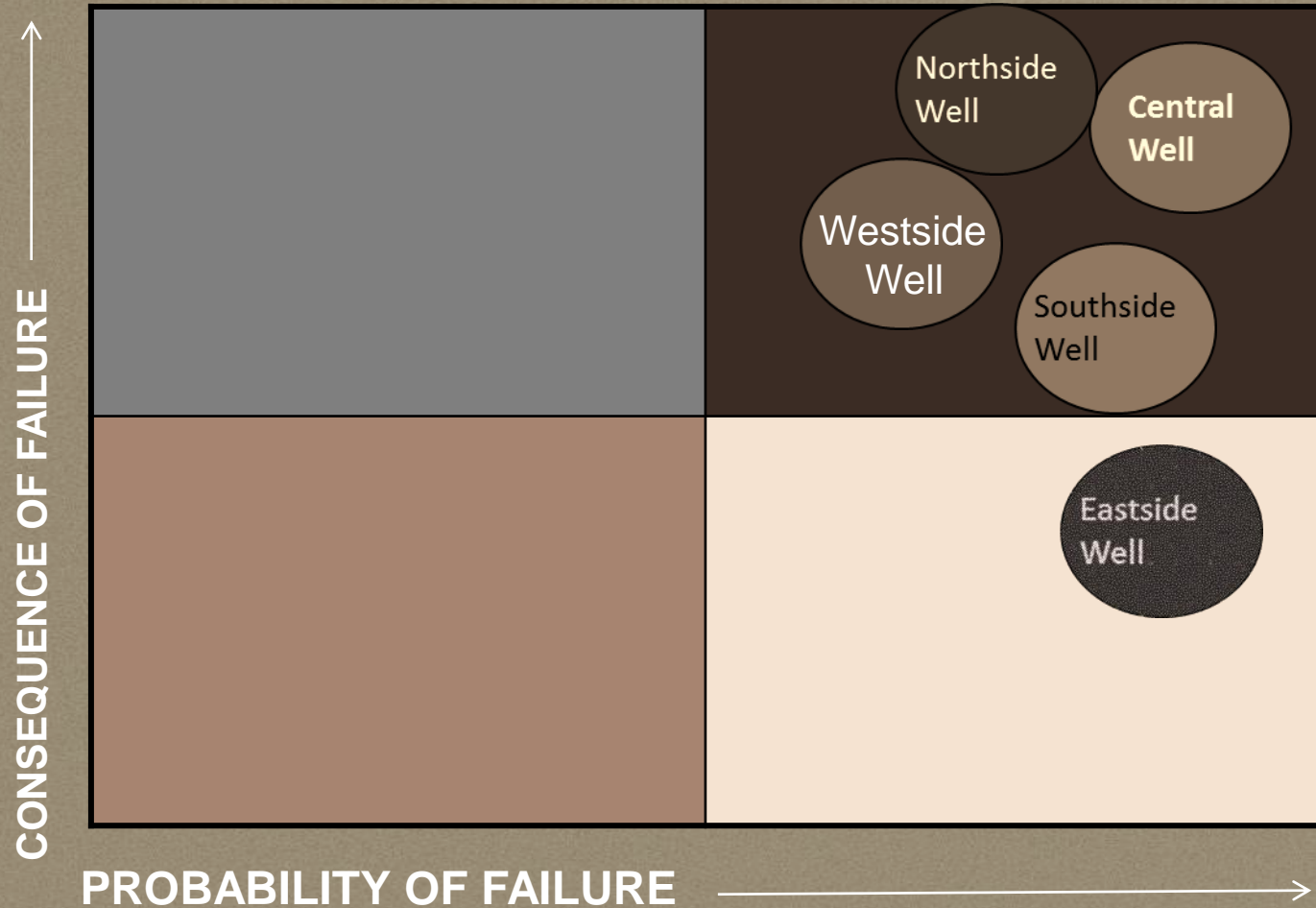
# What does the data say?

**DOES IT MAKE  
SENSE?**

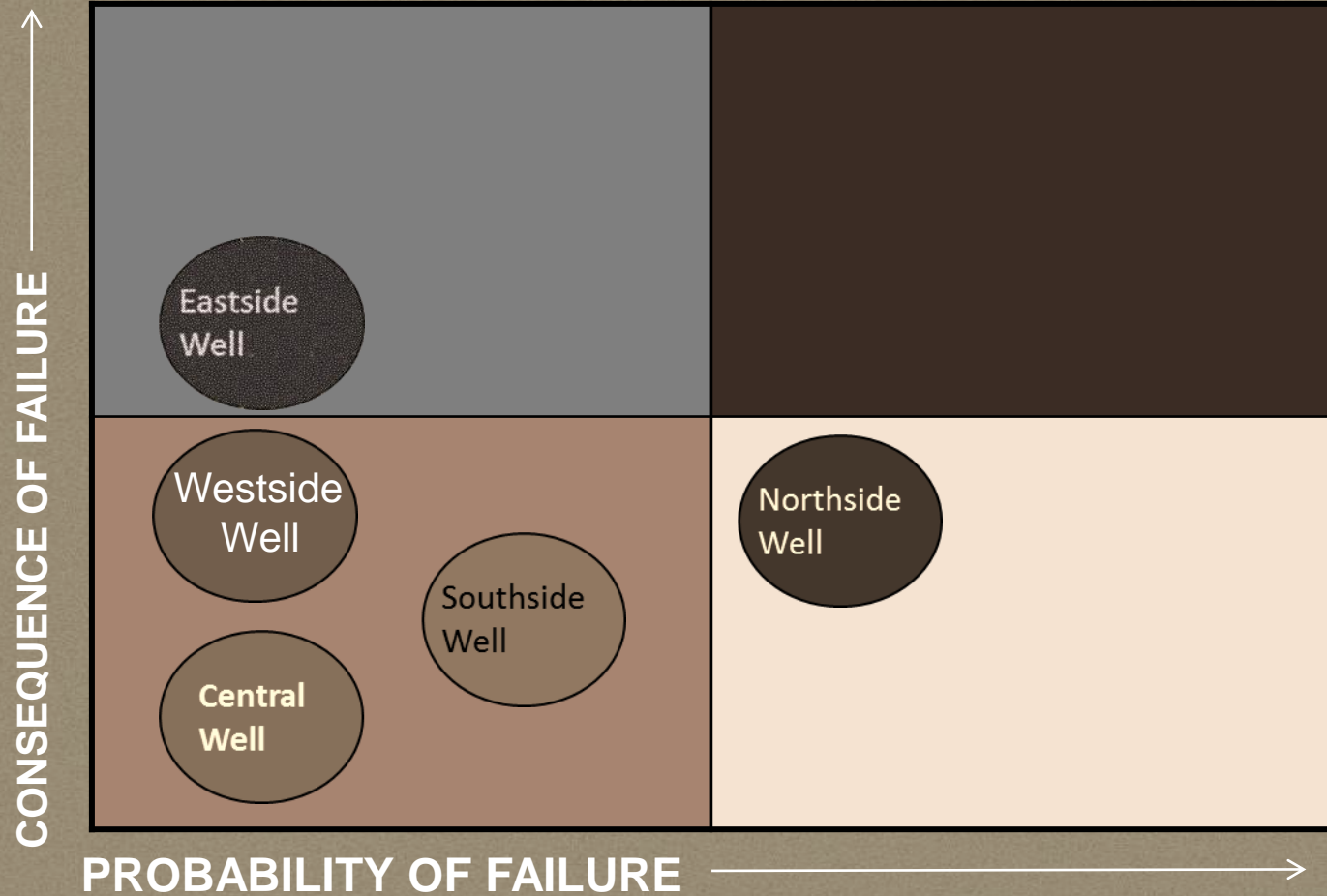
**DO YOU CARRY TOO  
MUCH RISK, NOT  
ENOUGH OR JUST  
RIGHT?**



# WHAT IF IT LOOKED LIKE THIS?



# Or this?

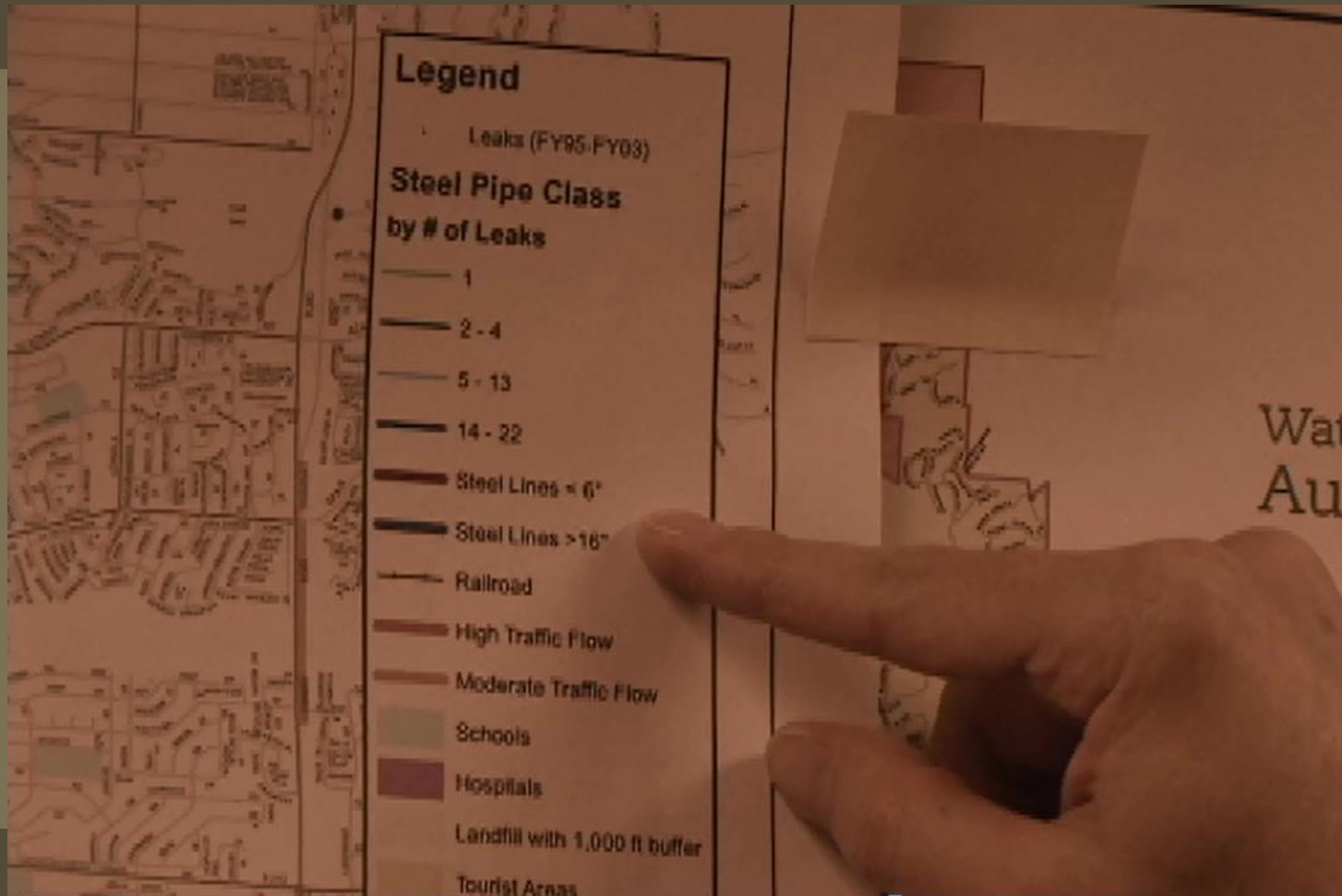


# CRITICALITY CHANGES

- ✓ **CRITICALITY IS NOT STATIC**
- ✓ **EACH DAY CRITICALITY CHANGES SLIGHTLY**
- ✓ **NEED TO REASSESS CRITICALITY AT LEAST EVERY YEAR IF NOT SOONER**
- ✓ **REASSESS WHEN MAJOR CHANGES ARE MADE (UPGRADES, REPLACEMENTS, MAJOR CONSTRUCTION, REHABILITATION, REDUNDANCY ADDED)**



# CRITICALITY IN ACTION



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# QUESTIONS?

