

Distribution Integrity Management Programs (DIMP)

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American Public Gas Association

2009 Big Ten Basketball Champs



What Is APGA?

- The National Trade Association for Publicly-Owned Gas Utilities
- Created in 1961
- Over 700 member utilities

What is the APGA Security and Integrity Foundation

- 501 c3 Non-profit foundation created by APGA in 2005 to assist small operators
- Receives funding from the Pipeline And Hazardous Materials Safety Administration (PHMSA) thru cooperative agreement
- Provides OQ evaluations and O&M procedures, in addition to DIMP

Distribution Integrity Management Programs (DIMP) Rule

- Proposed in June, 2008
- Reviewed by technical committee December, 2008
- Final rule expected in late 2009
- 18 months to develop written DIMP plan
- APGA SIF is developing a model plan and plan development tool

History & Future

- 2001 – Liquid Integrity Management Rule
- 2003 – Transmission IMP Rule
- 2004 – DOT Inspector General Testifies
- 2005 – PHMSA Issues Phase 1 Report
- 2006 – GPTC Prepares Guidance
- 2008 – Notice of Proposed Rule 6/25/08
- 2009 – Expect final rule in the Fall
- 18 months for implementation

Phase 1: DIMP Structure

- 1. Development of an integrity management plan
- 2. Know your infrastructure
- 3. Identify threats (existing and potential)
- 4. Assess and prioritize risk
- 5. Identify and implement measures to mitigate risks
- 6. Measure and monitor performance and results
- 7. Report results

Know Your Infrastructure

- Material(s) of construction
- Leak history
- Repair history
- Inspection records:
 - Cathodic protection
 - Leakage surveys
 - Exposed pipe inspections

Implement Actions to Reduce Risks

- **DIMP does not presume that additional actions will always be required.***
- GPTC offers suggestions for each threat
- Operators may elect to continue existing inspection/repair/replacement programs, choose actions from the GPTC list or develop their own actions to address threats

* See next slide for the exception

*Except For Inappropriate Operation

- Each plan must have a section titled “Assuring Individual Performance”
- List risk management measures to evaluate and manage the contribution of human error and intervention to risk (e.g., changes to the role or expertise of people), and implement measures appropriate to address the risk.
- We expect this to go away in the final rule

Continued

- Also list existing programs the operator has implemented to comply with
 - Sec. 192.614 (damage prevention programs);
 - Sec. 192.616 (public awareness);
 - Subpart N (qualification of pipeline personnel),
 - 49 CFR Part 199 (drug and alcohol testing).
- We expect this to go away, too.

More Specific Requirements

- Excess Flow Valves on new and replaced single residential services > 10 psig
- Leak classification system
 - Locate the leak
 - Evaluate its severity
 - Act appropriately to mitigate the leak
 - Keep records
 - Self assess

EFV Installation Requirements

- New and replaced only (no retrofit)
- Services to single residences (not branched services, not multi-family, not commercial or industrial)
- Continuously operating ≤ 10 psig
- Would not interfere with clearing liquids from the service and no history of plugging due to debris in the gas

Measure and Monitor Results

- How will you measure whether your program is successful at reducing risks?
- Internal and external performance measures
 - Internal – Used by the utility
 - External – Submitted to the State/Federal regulators

Plastic Pipe Reporting

- We expect plastic pipe failure reporting to remain voluntary, but
- Expect additional reporting requirements for mechanical coupling failures
- Issues have been raised in Texas, Minnesota, Ohio and Maryland
- Want to know if premature failures are occurring with any type fitting

GPTC Guidance

- Geared toward larger operators
- Guidance only, not mandatory
- Lists of infrastructure knowledge elements
- Lists of questions for threat assessment
- Lists of possible additional measures
- Lists of possible performance measures
- Published soon in advance of the final rule

Introducing SHRIMP!

- Simple, Handy, Risk-based Integrity Management Plan



SHRIMP

- On-line software product similar to tax preparation software (TurboTax)
- SHRIMP asks the user a series of questions about the system and its inspection and maintenance history
- Questions change based on answers
- Output will be a nearly complete DIM Plan

SHRIMP Timing

- Due 6 months after final rule
- GOAL: Have SHRIMP trial version available when final rule is issued (~ Fall, 2009)
- That way utilities can decide whether to use SHRIMP or other means to develop DIMP

SHRIMP Development

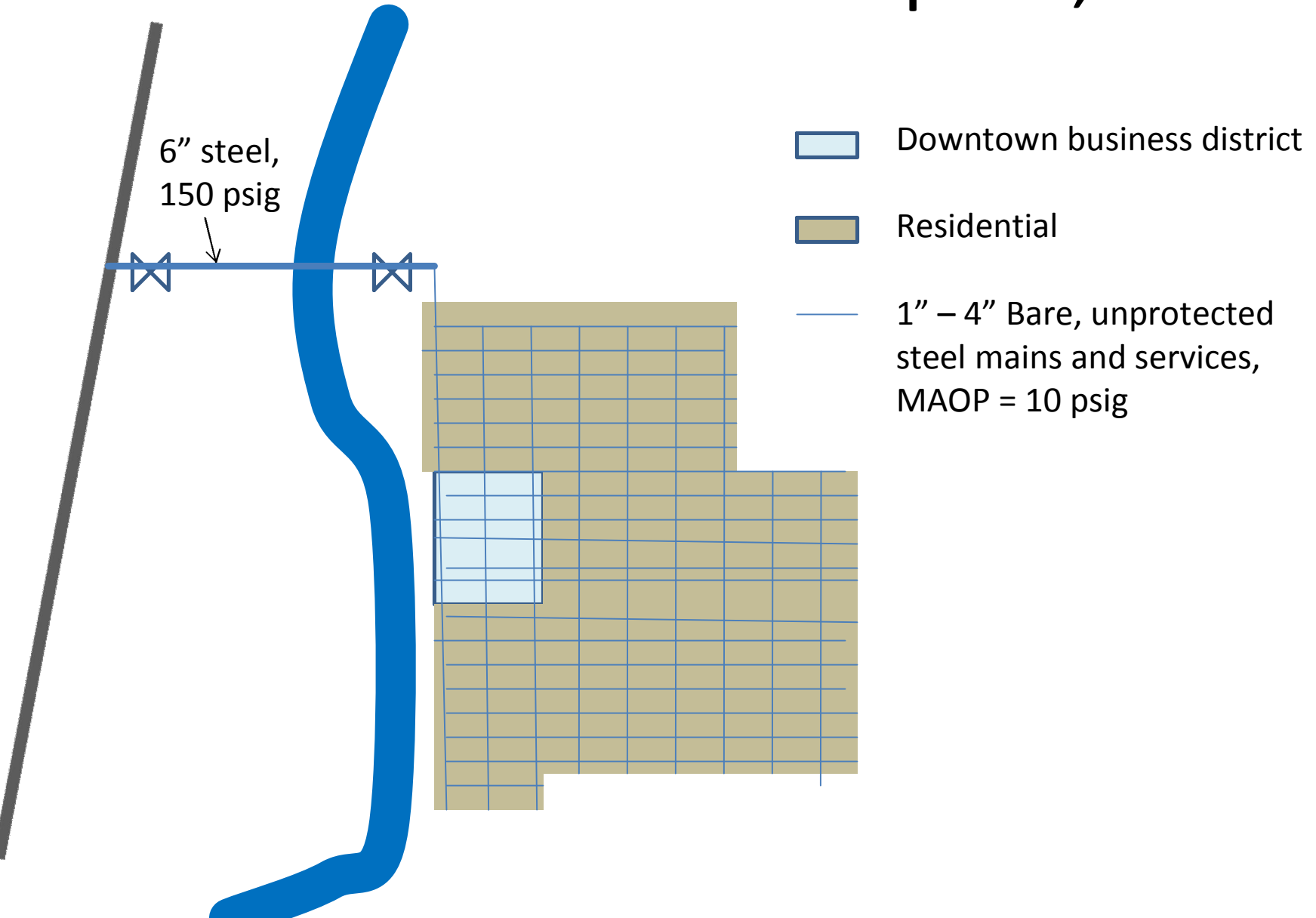
- Advisory Group made up of state regulators, federal regulators and industry
- Technical Toolboxes is software developer
- Heath and Associates, Technical Consultant
- Viadata, Technical Consultant

Hypothetical Case Study

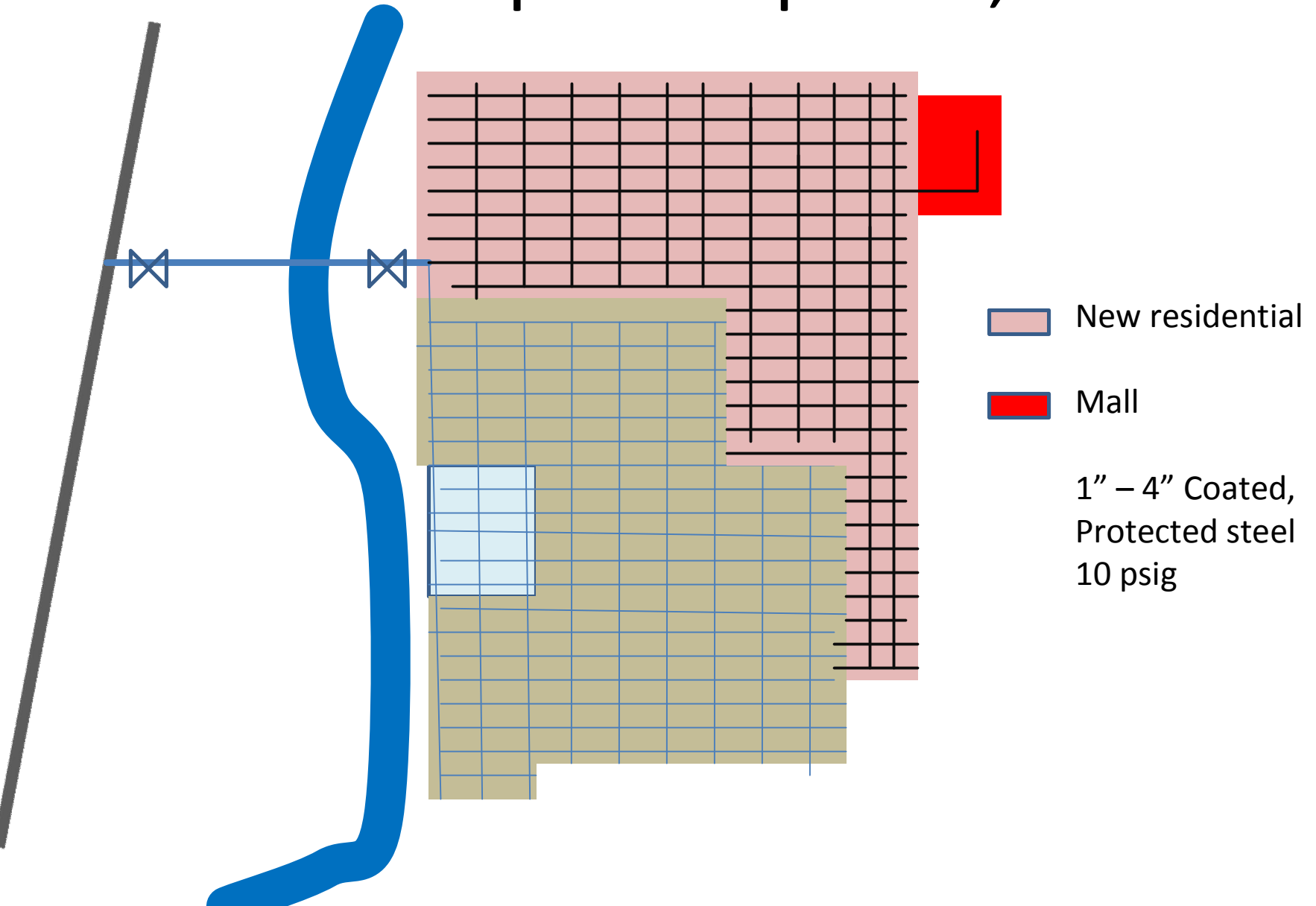
- The following is a case study of how SHRIMP will work to assist a user to develop a DIM plan



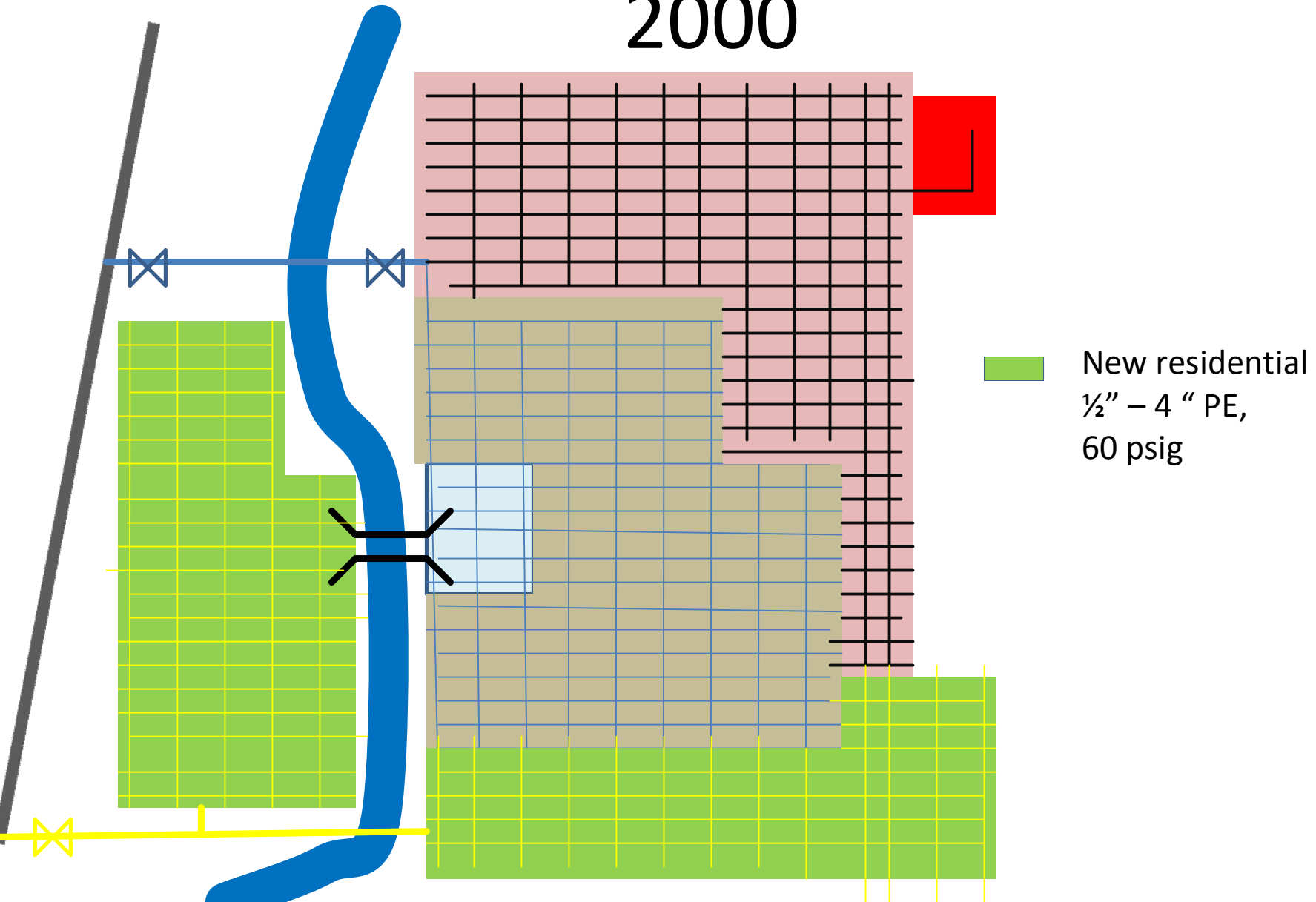
Welcome to Kastanopolis, 1950



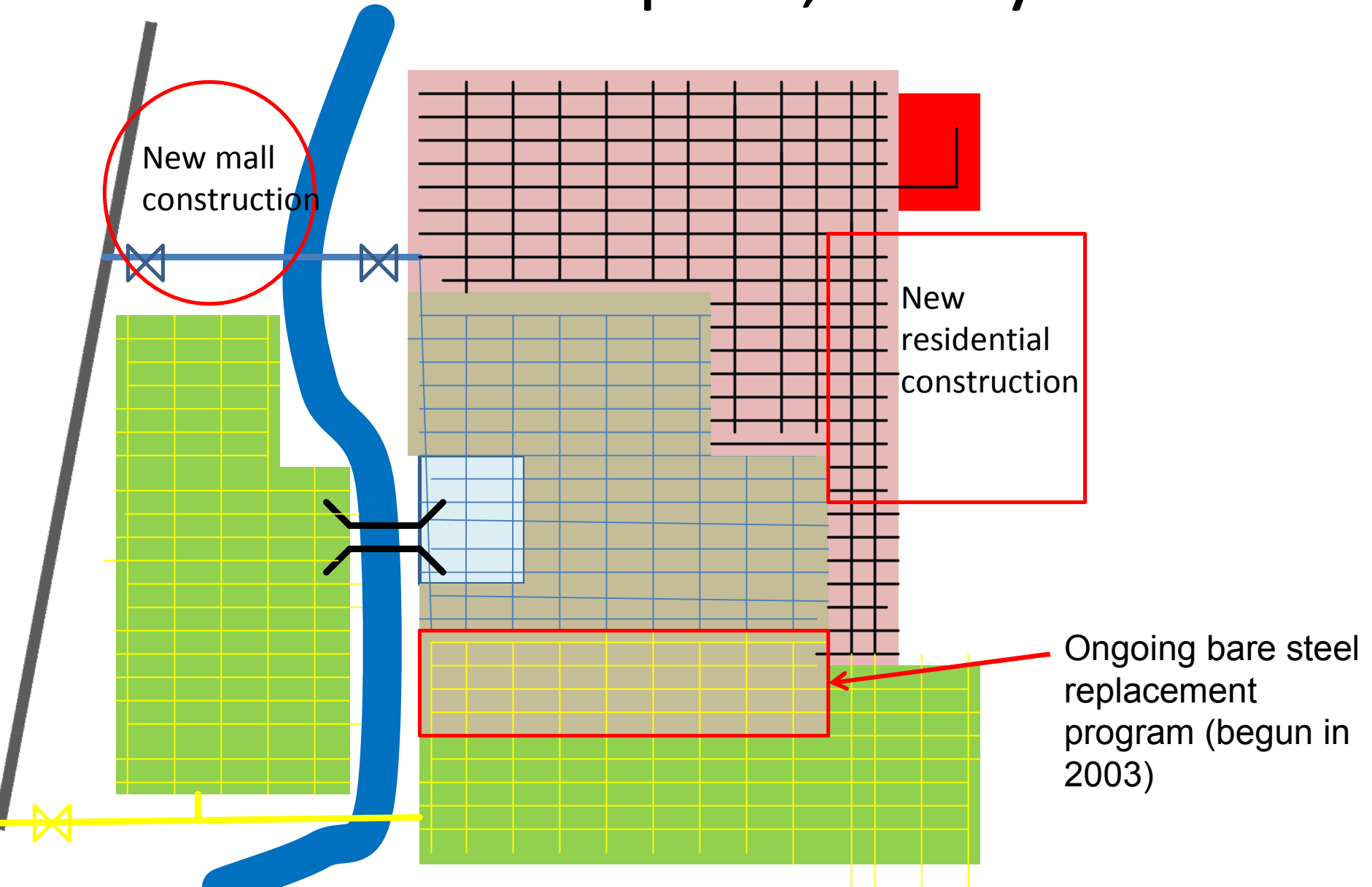
Kastanopolis Expands, 1975



Kastanopolis Expands Further, 2000



Kastanopolis, today



Running SHRIMP

- Go to the website <http://shrimp.gas-distribution.com/>
- Enter OPS ID or pick your state
- Pick your system from list or enter name
- SHRIMP is pre-loaded with OPS Annual Report Data
- User is asked to verify it is correct

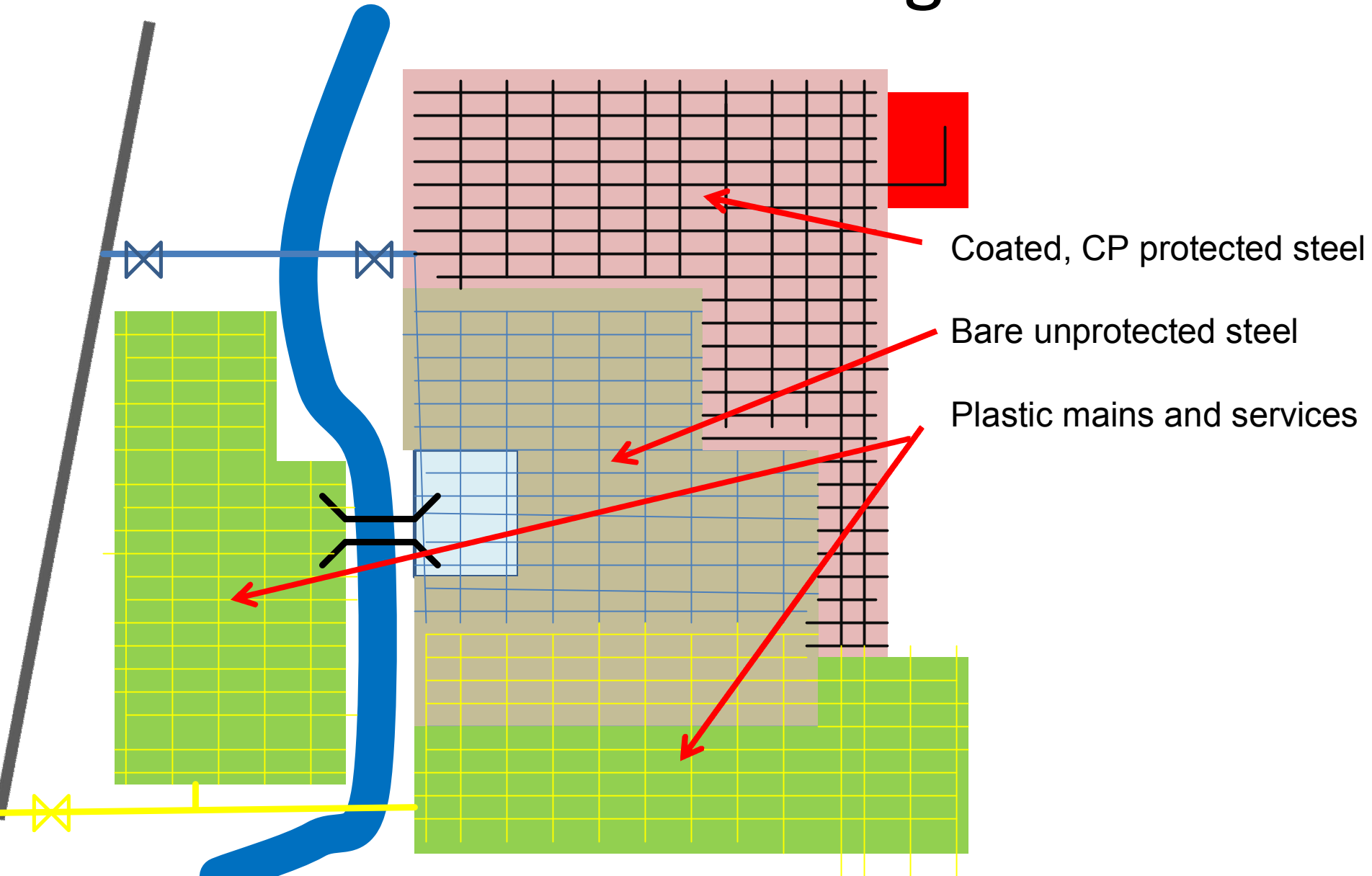
1st Step: Threat Assessment

- Asks questions to assess the probability of each of 8 threats to distribution integrity:
 - Corrosion
 - Excavation
 - Natural Forces
 - Other Outside Force
 - Equipment Defect/Failure
 - Material Defect/Failure
 - Inappropriate Operations
 - Other

Know Your Infrastructure

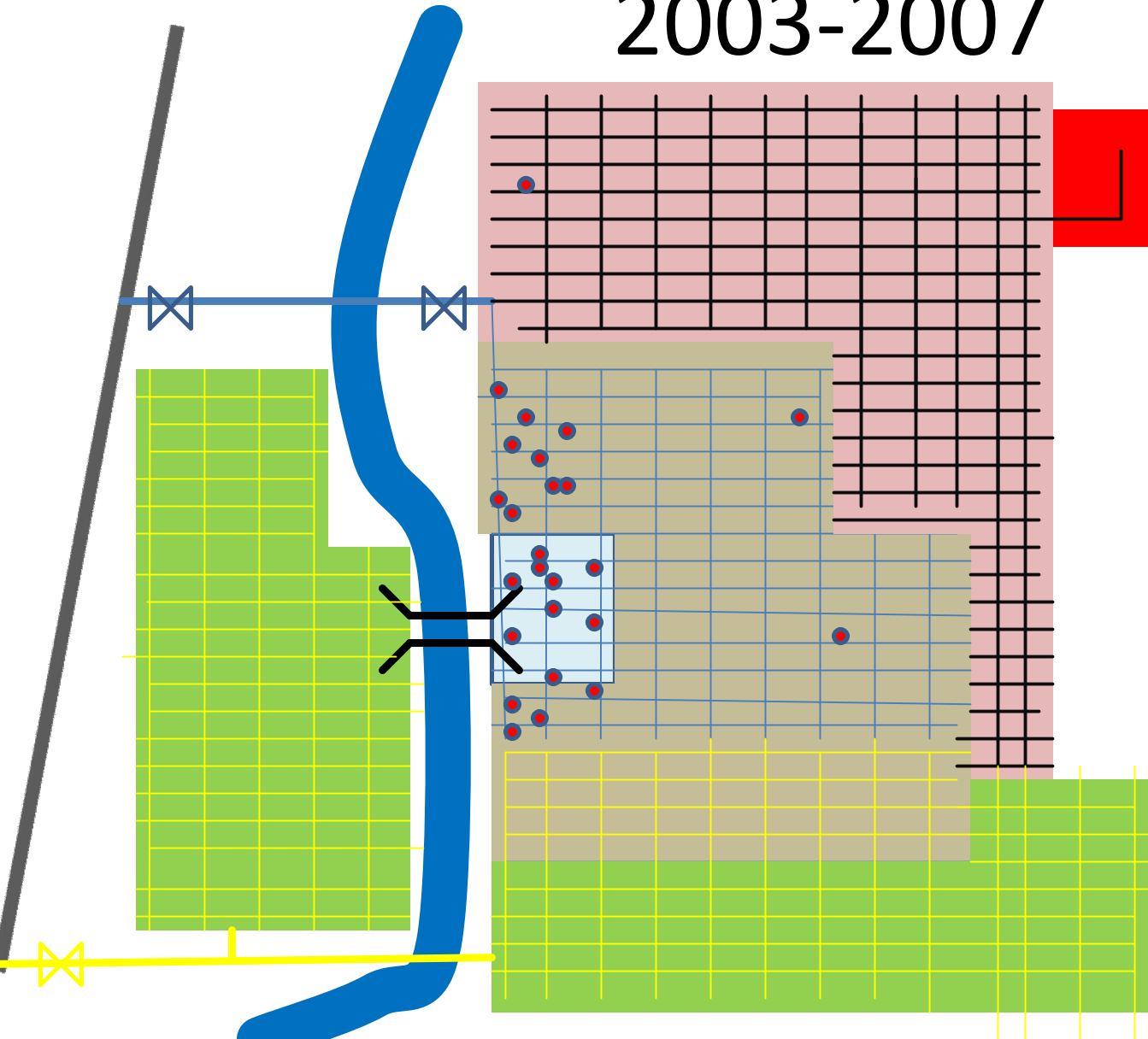
- Involve your “Subject Matter Experts” – the people who inspect and maintain the system
- Assemble your construction, inspection and maintenance records
- SHRIMP provides a list of suggested records at the beginning of each threat assessment

Corrosion Threat Segments



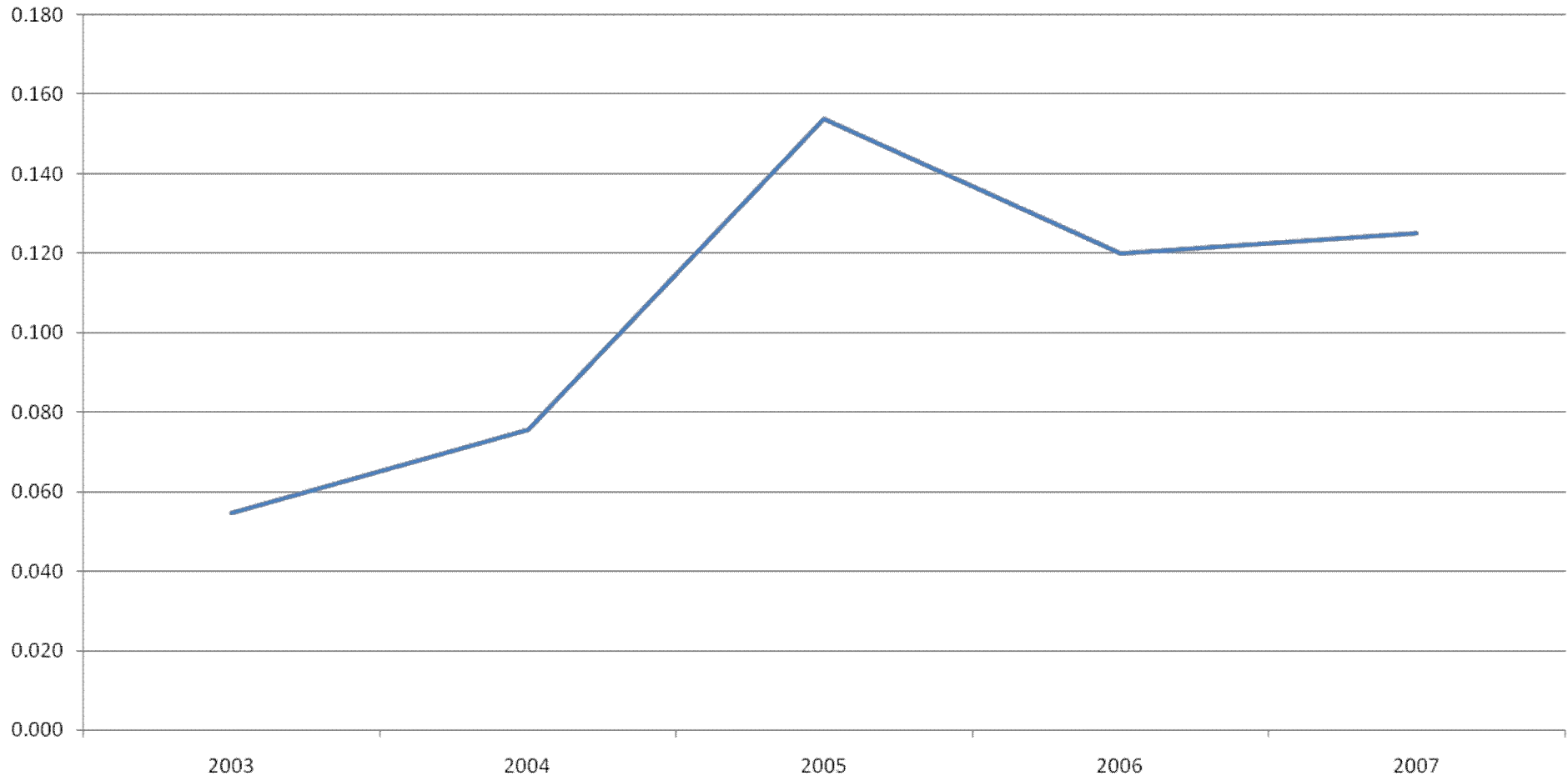
Corrosion Leaks Repaired

2003-2007

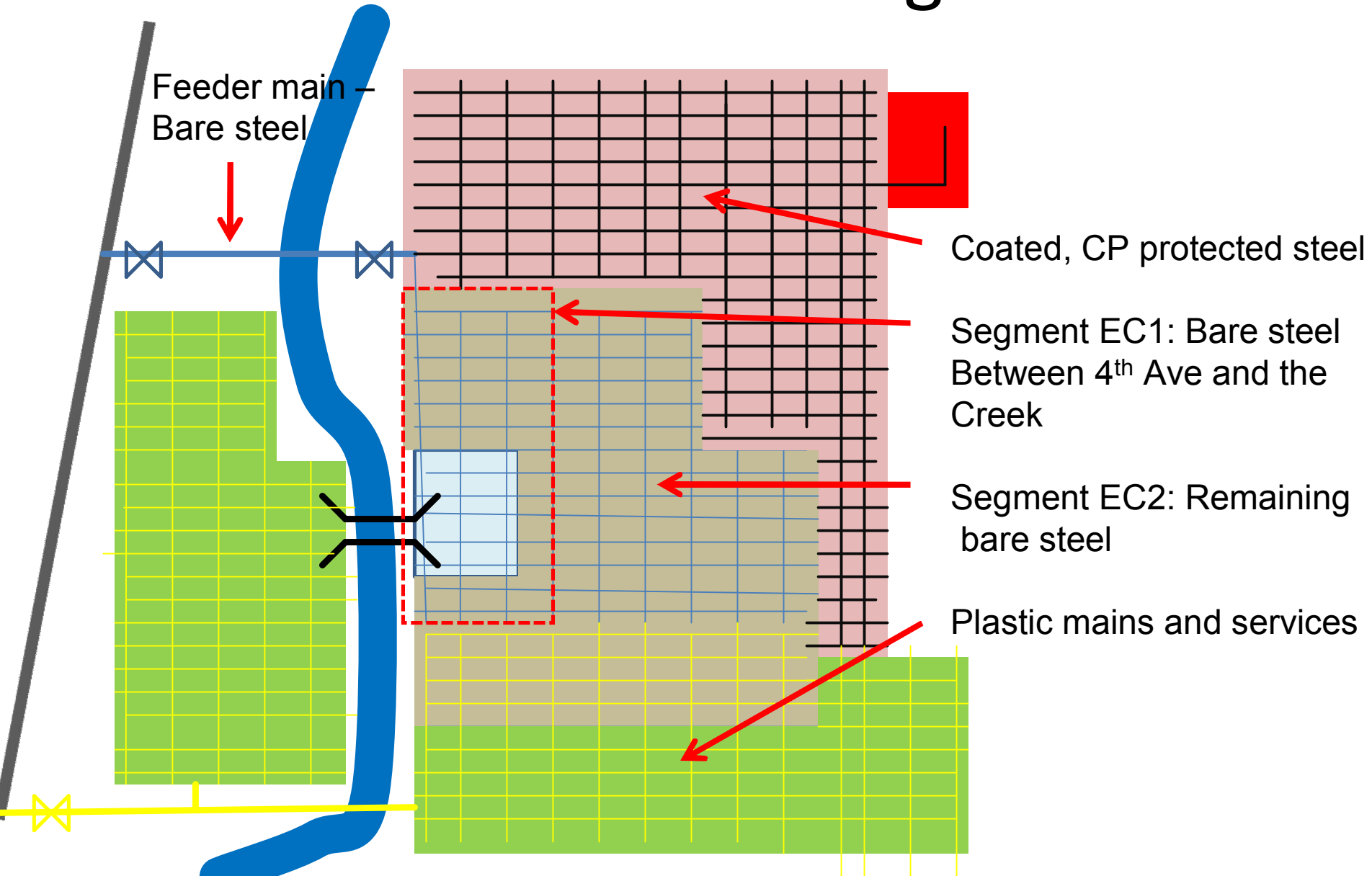


Trend in Corrosion Leaks Repaired

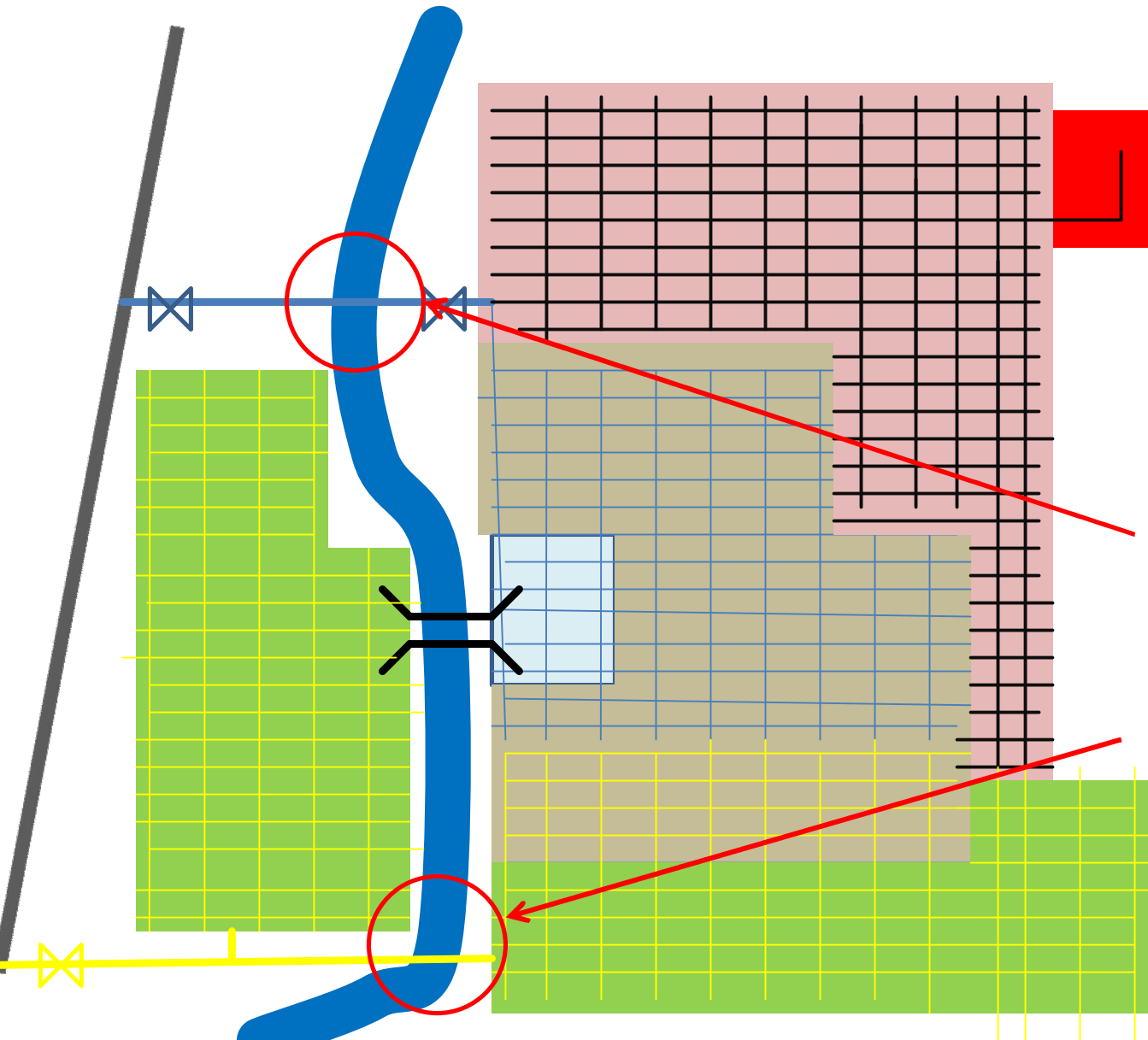
Corrosion Leaks Repaired/mile of metal main



Corrosion Threat Segments



Natural Forces Threat Segments

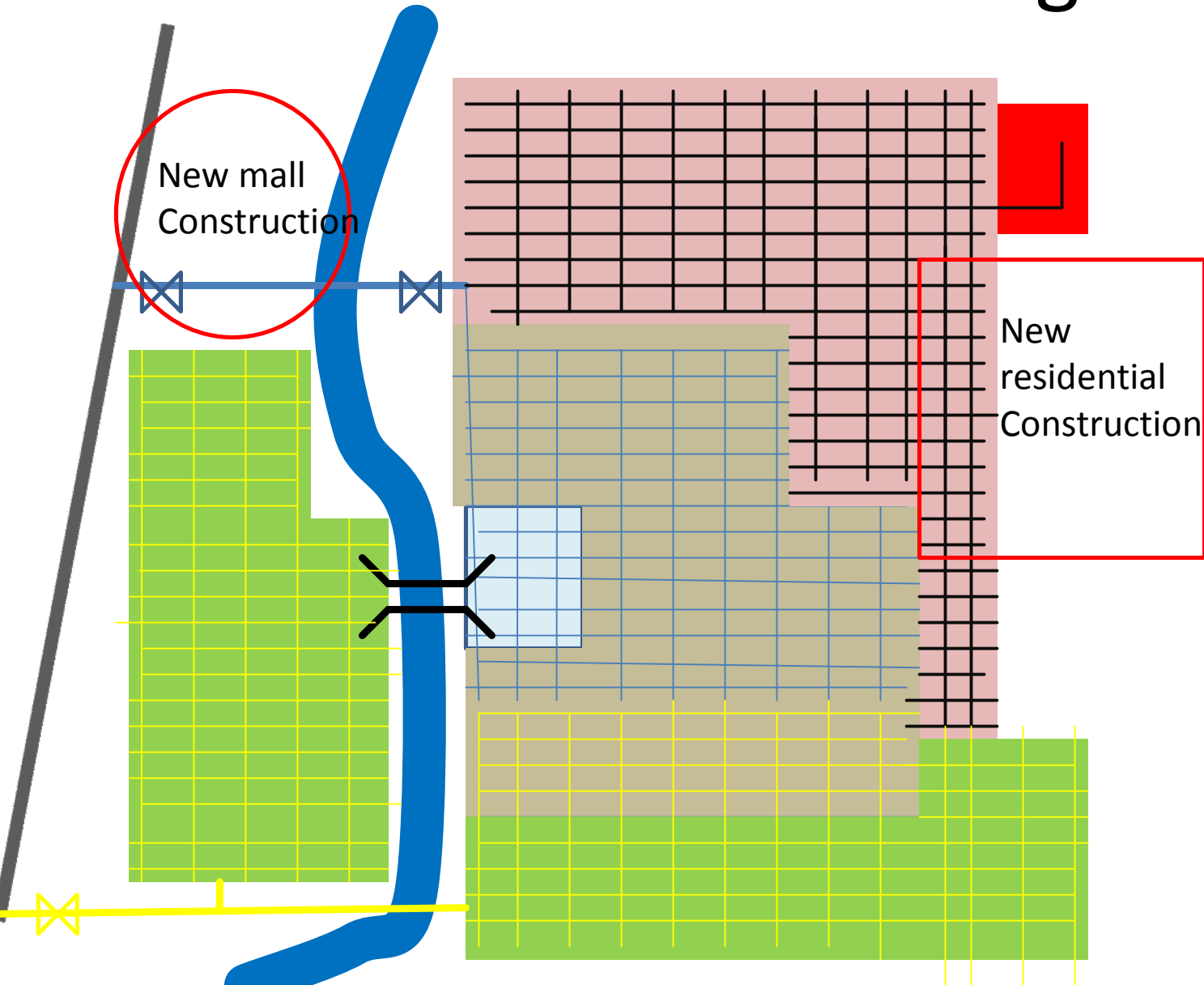


Creek crossings

1950 feeder main installed by trenching and is vulnerable to erosion

New crossing installed by boring and is too deep to be vulnerable to erosion

Excavation Threat Segments



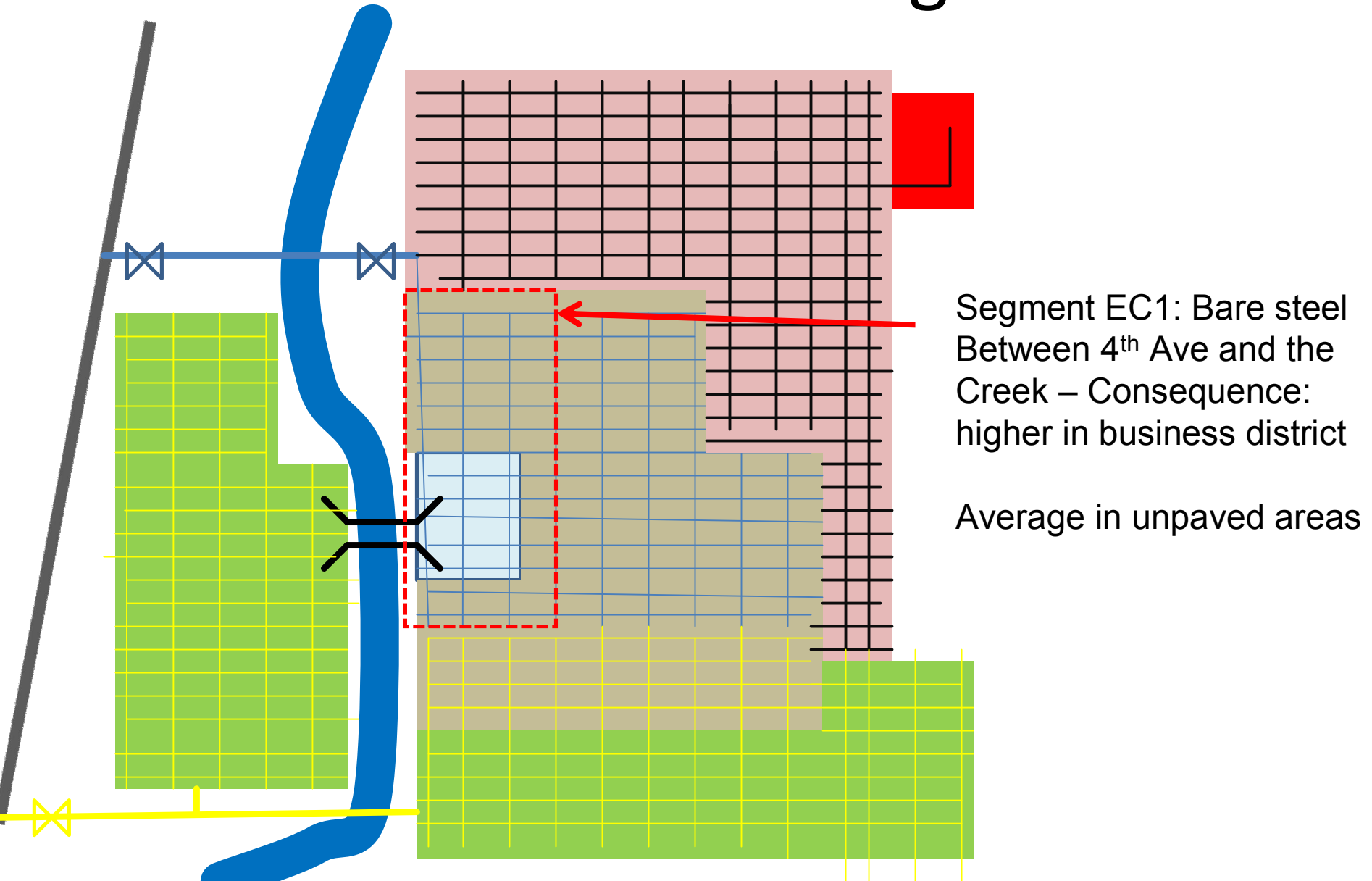
2nd Step: Factoring In Consequences

- Risk = Probability times consequences of a failure
- Transmission IMP focused on identifying high consequence areas
- DIMP avoids this – because almost all areas served by distribution are populated, therefore all areas are high consequence
- SHRIMP does consider consequence, however

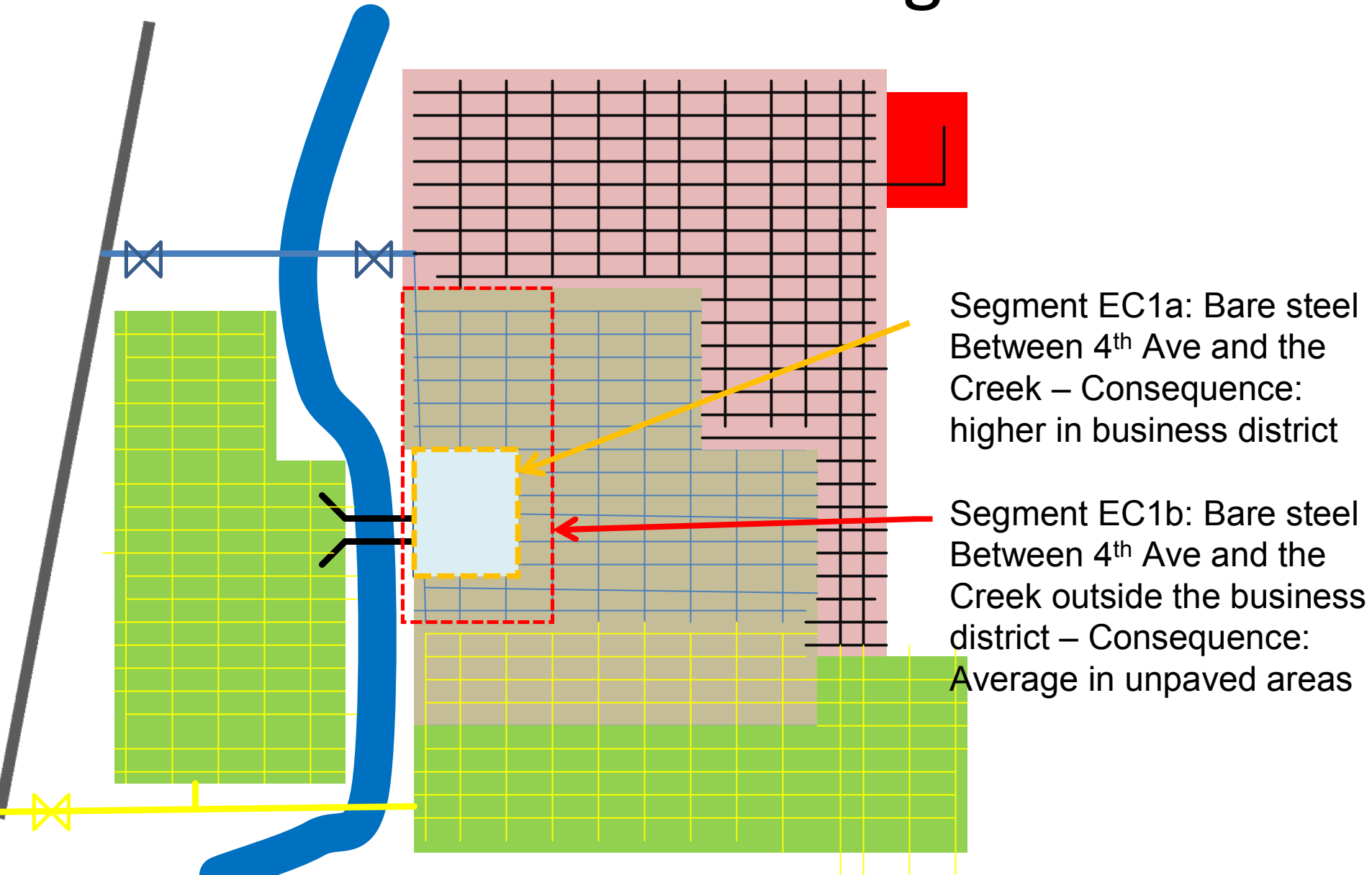
Consequence Factors

- User is asked for each segment would a failure here have greater consequences than average because of:
 - Larger diameter/higher pressure than most
 - In the business district under wall-to-wall pavement
 - The significance of the facility, and/or
 - The response time to get crews to it should it fail

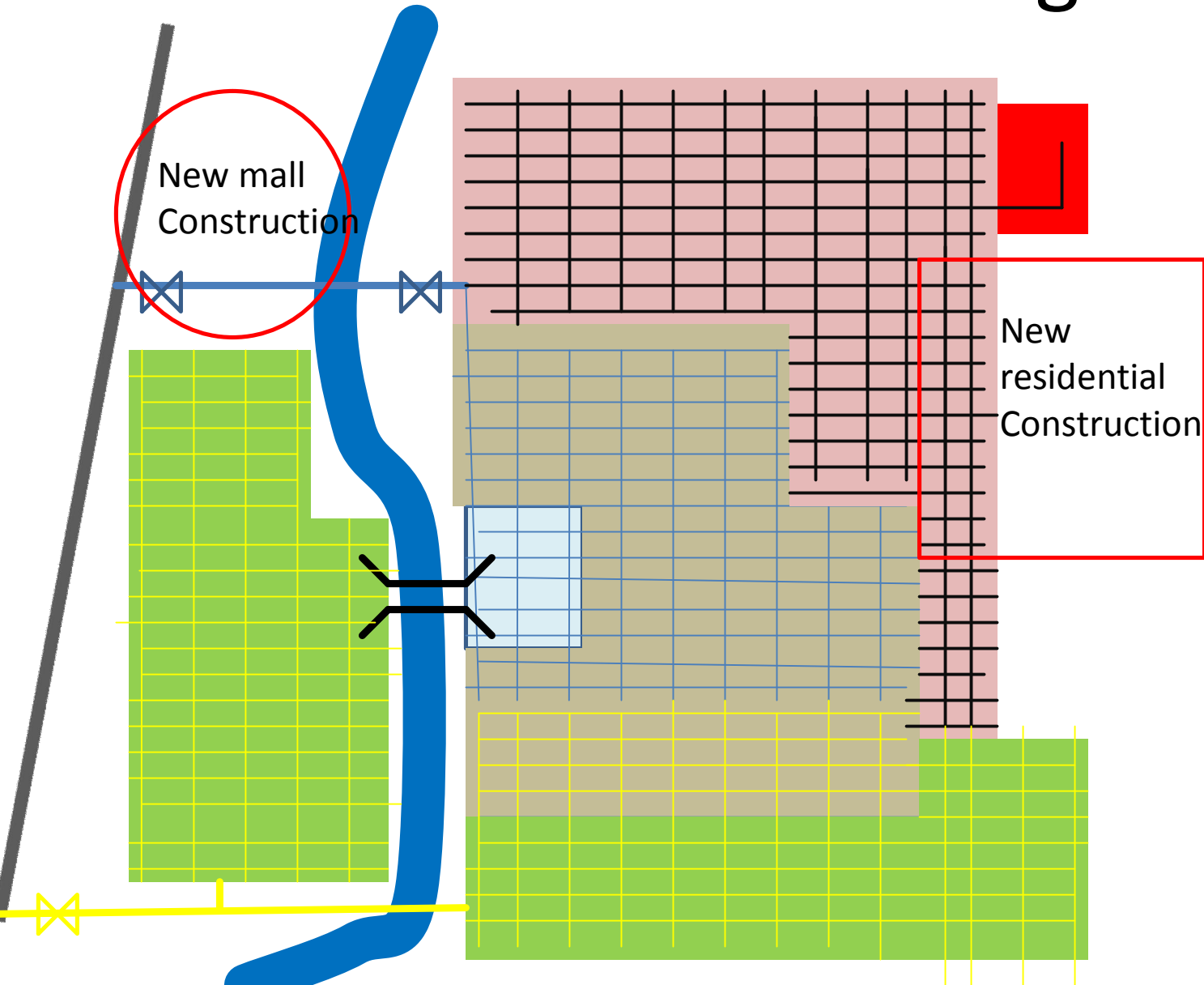
Corrosion Threat Segments



Corrosion Threat Segments



Excavation Threat Segments



3rd Step: Risk ranking

- Threat segments are ranked from highest lowest by SHRIMP
 1. Corrosion on bare steel in the business district
 2. Excavation near the feeder main
 3. Excavation on the Northeast side
 4. Corrosion on bare steel near the creek outside the business district
 5. Natural forces on 1950 creek crossing
- User can change the order, and enter an explanation why

4th Step: Select Additional/Accelerated Actions

- Starting with the highest relatively ranked threat, SHRIMP asks the user to choose actions to reduce the risk
- SHRIMP offers suggestions (from GPTC Guide)
- If user is already doing something about any threat, that can be written into the DIM Plan

Additional/Accelerated Actions

Corrosion on bare steel in
business district

Replace 5% per year

Excavation near the feeder
main

Inspect at least once per day

Excavation on the Northeast
side

Increased public awareness

Corrosion on bare steel outside
the business district

Increase leak surveys to once per year

Natural forces on two creek
crossings

Inspect after heavy rains

5th Step: Select Threat-Specific Performance Measures

- For each Additional/Accelerated Action, SHRIMP asks the user to select a performance measure
- SHRIMP uses the GPTC list for each threat
- The selected A/A Action will affect SHRIMP's recommended performance measure

Performance Measures

Corrosion on bare steel in business district	Replace 5% per year	Corrosion leaks repaired/mile and /service
Excavation near the feeder main	Inspect at least once per day	# of excavation damages
Excavation on the Northeast side	Increased public awareness	# of excavation damages
Corrosion on bare steel outside the business district	Increase leak surveys to once per year	Corrosion leaks repaired/mile and /service
Natural forces on two creek crossings	Inspect after heavy rains	# of natural force damage leaks repaired

Step #6: Create Written DIM Plan

- Summarizes all decisions made in previous steps
- Addresses all seven required elements
- Will include required provisions on LEAKS, EFVs and possibly (likely) mechanical coupling failure reporting

Potential audience

- Intended for small systems – will be free
- Could be used by larger utilities for isolated distribution systems (e.g. cities and towns with essentially stand-alone distribution systems)
- There will be a nominal fee for larger systems to support improvements and technical support

Questions?

