

Watershed Protection Master Plan: *Prioritization of Major Capital Projects*

November 16, 2016

Photo source: Alberto Martinez, *Austin-American Statesman*, 2009.

Watershed Protection Mission:

Protect the lives, property, and environment of our community by reducing the impact of flooding, erosion, and water pollution.

Flooding



Public Safety

Erosion



Property Protection

Water Quality Degradation



Environmental Protection

Master Plan Process

Assessment

**Solution
Development**

Implementation

Public Involvement

Master Plan: Primary Mission Goals

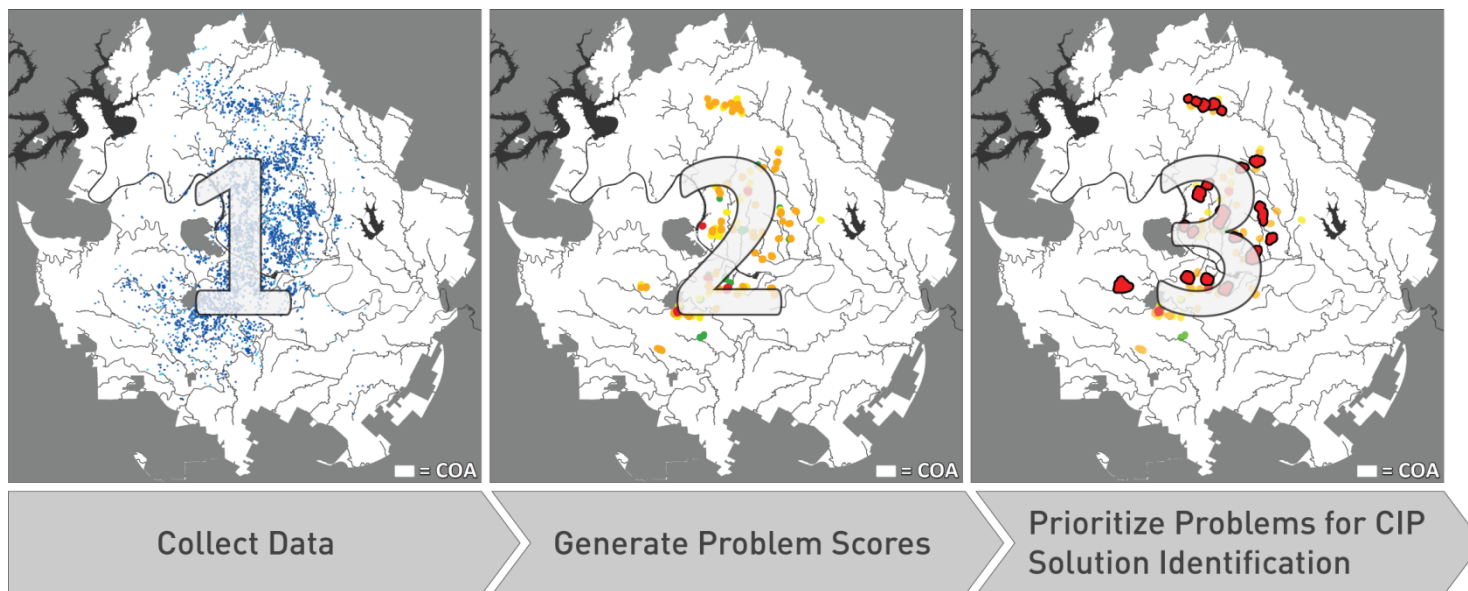
1. **Flood Mitigation:** Protect lives and property by reducing the impact of flood events.
2. **Erosion Control:** Protect channel integrity and prevent property damage resulting from erosion.
3. **Water Quality Protection:** Protect and improve Austin's waterways and aquifers for citizen use and the support of aquatic life.

Master Plan Common Goals

- **Public Use & Natural Character:** Improve the urban environment by fostering additional beneficial uses of waterways and drainage facilities.
- **Regulatory Compliance:** Meet or exceed all local, state & federal permit and regulatory requirements
- **Assets Maintenance:** Maintain the integrity and function of Utility Assets
- **Optimization/Mission Integration:** Optimize City resources by integrating flood, erosion, and water quality control measures.

Watershed Problem Scores

- Collect Data
- Generate Problem Scores
- Assess & Prioritize Problem Areas
- Address Worst Problems First





Creek Flood – Structures & Roadway Crossings

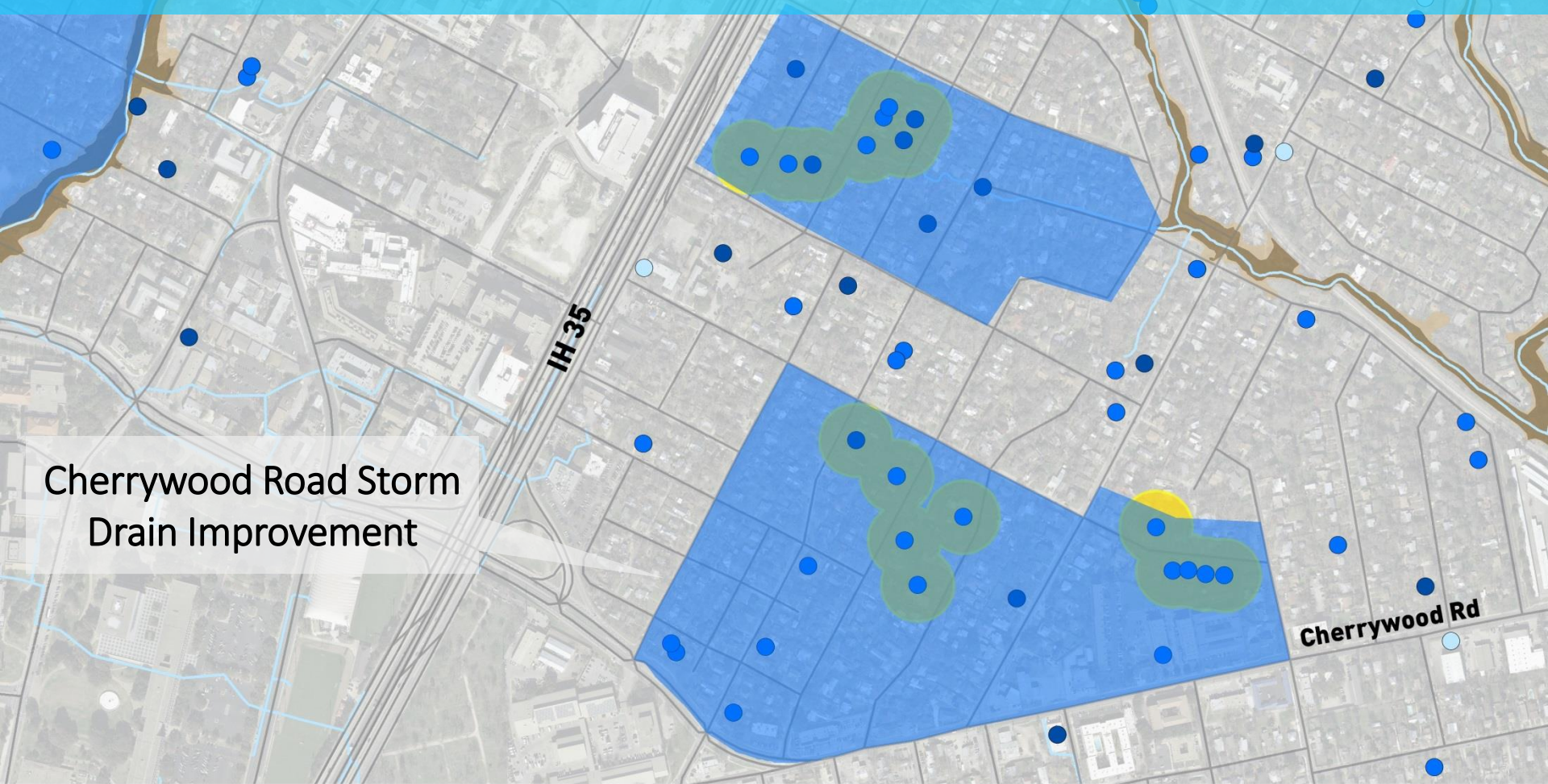
Creek Flood Data – Structures





Local Flood

Local Flood Data – Citizen Complaints



Cherrywood Road Storm
Drain Improvement

Local Flood Complaint Points by Type

- Building
- Yard
- Street

- Clusters of Five or More Complaints
- Identified Problem Areas
- 25-Year Floodplain
- 100-Year Floodplain

- Streets
- Creeks



0 300 600
Feet

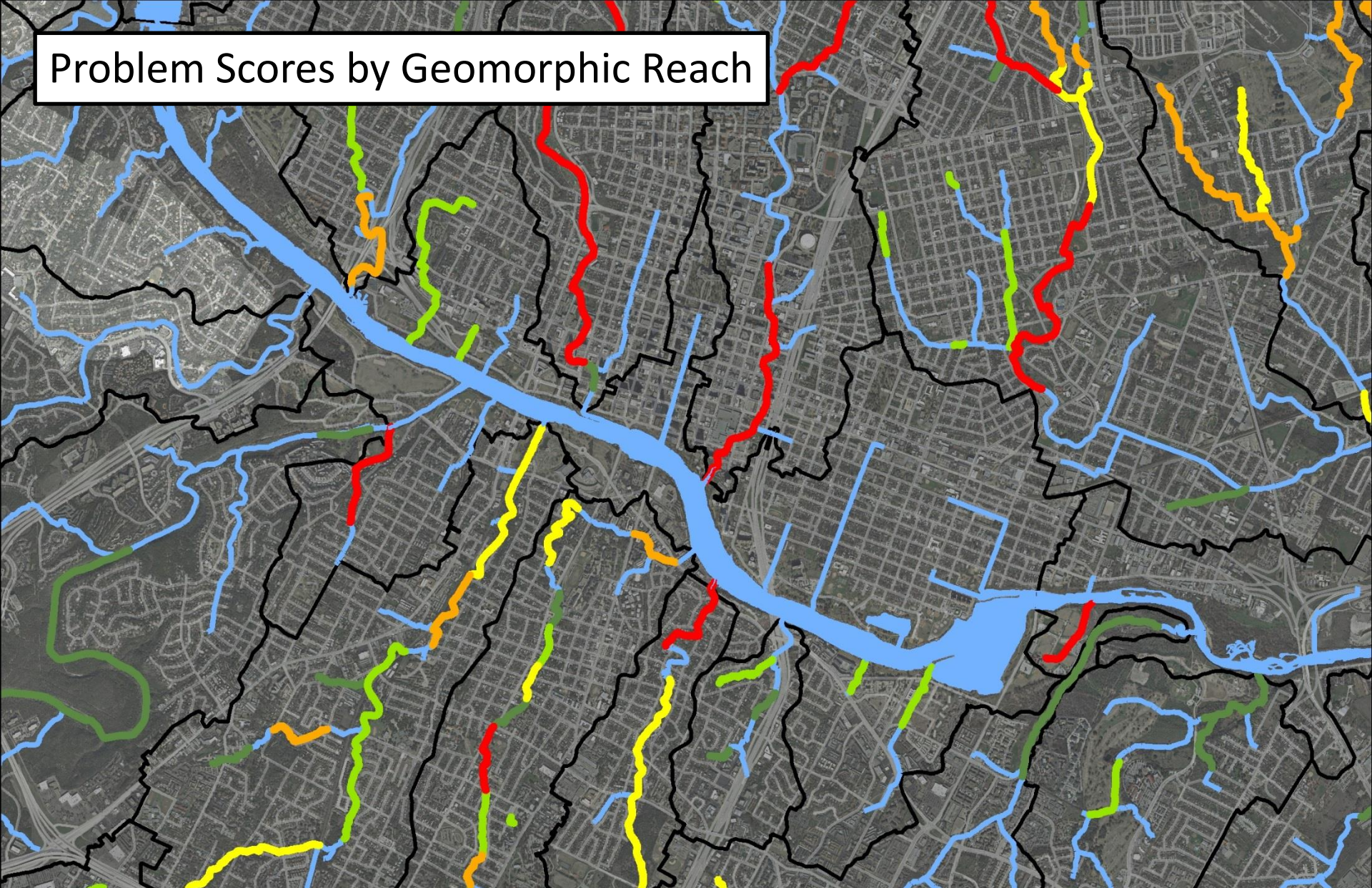


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Erosion

Problem Scores by Geomorphic Reach

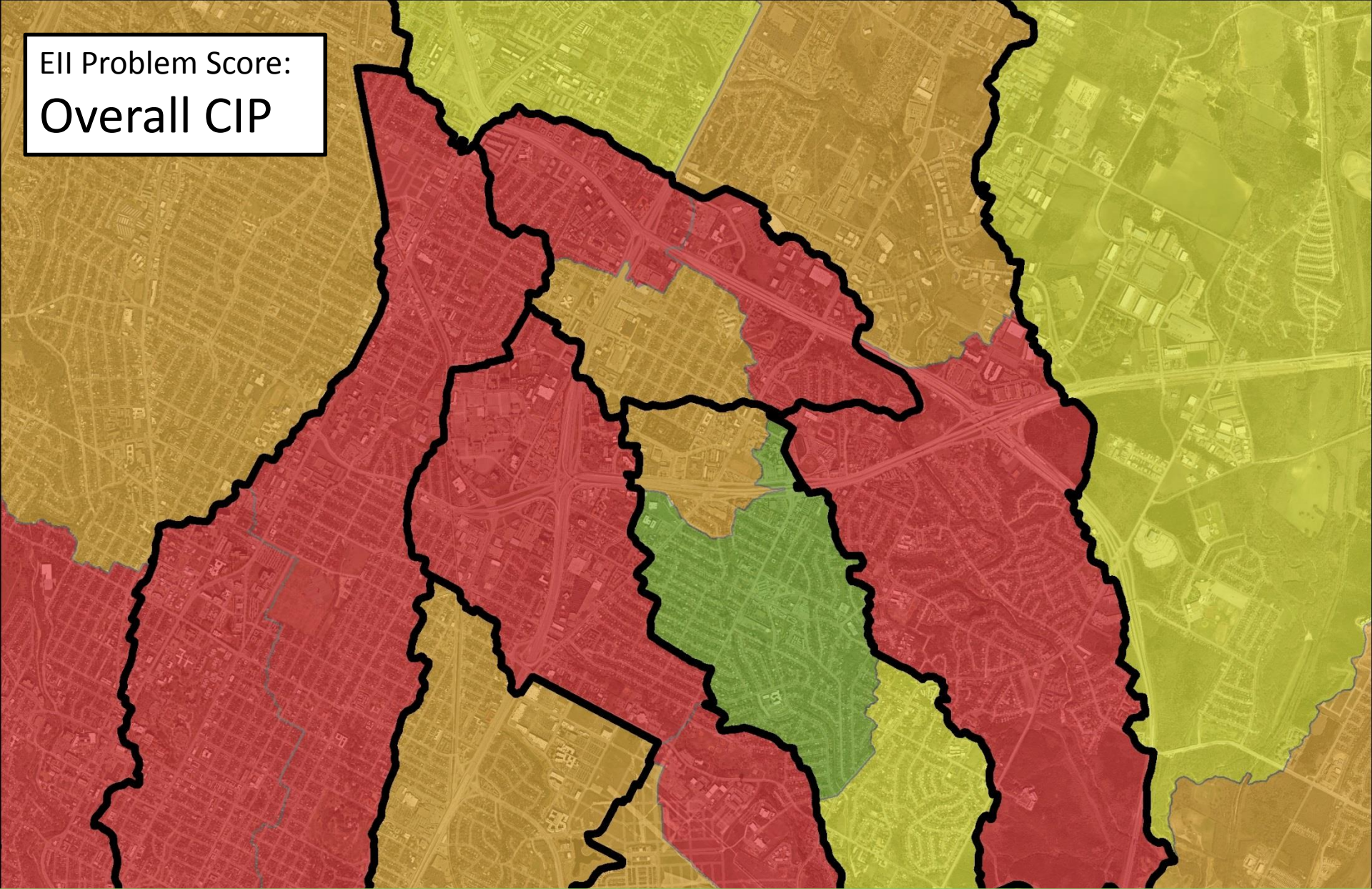


Erosion Data – Erosion Assessments



Water Quality

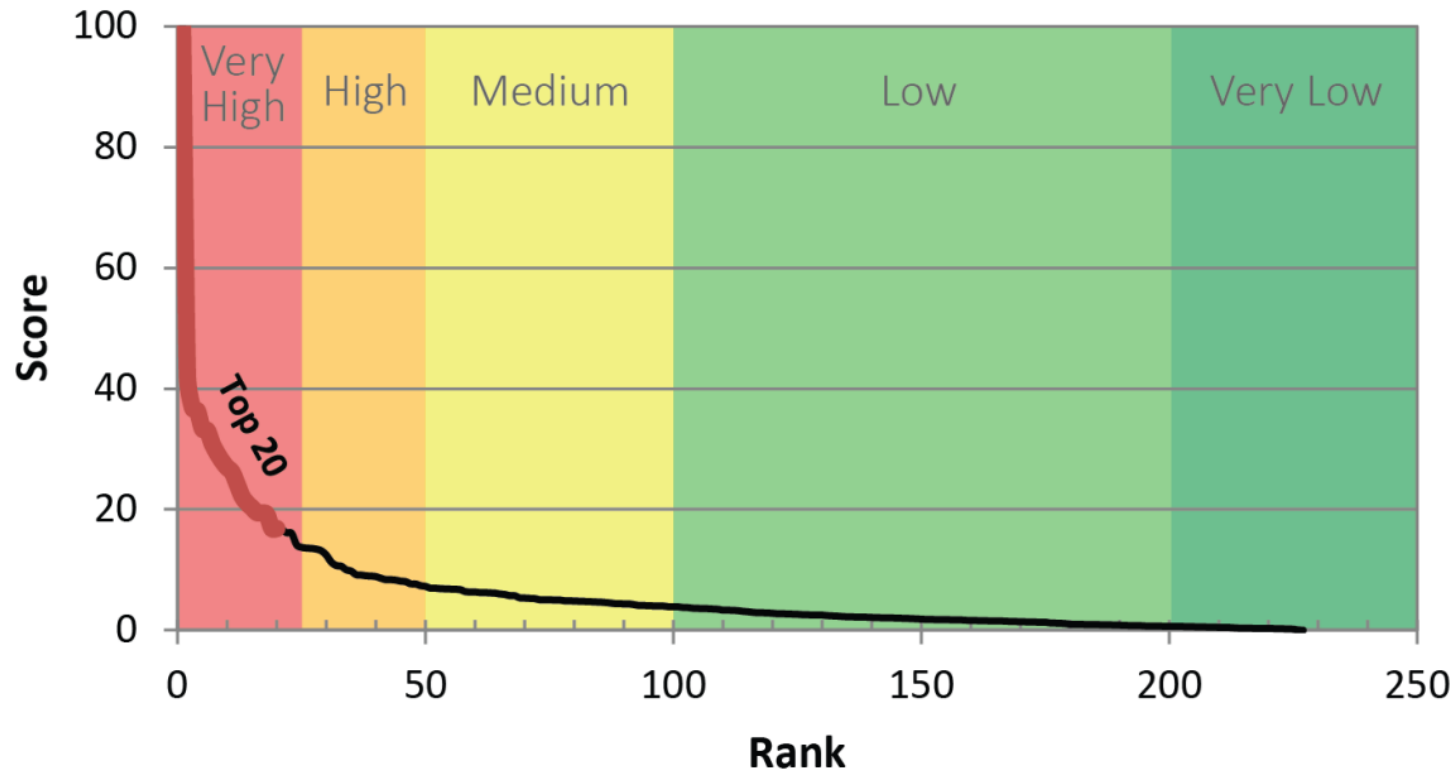
EII Problem Score:
Overall CIP



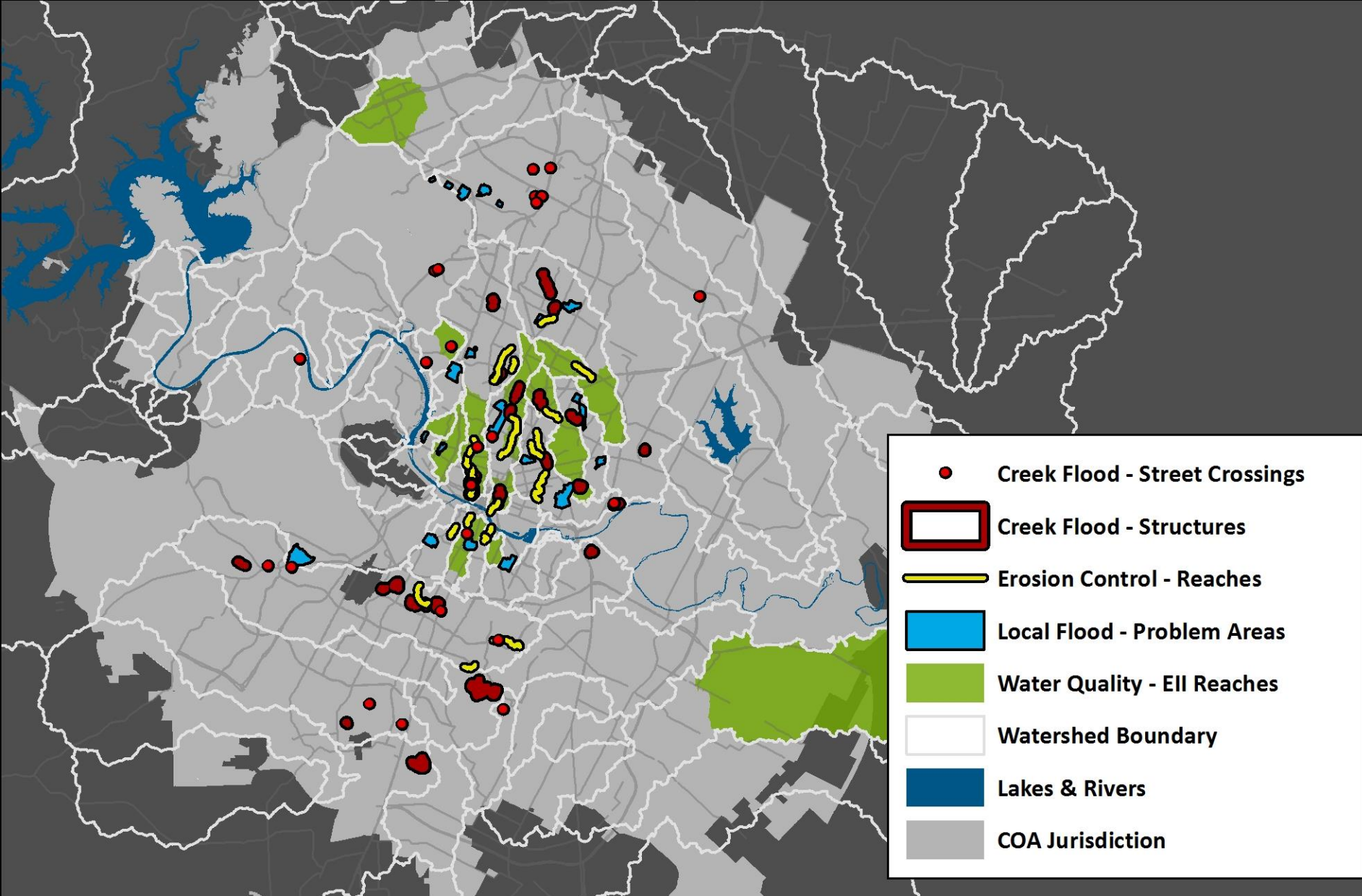
Water Quality Data – Environmental Integrity Index

Problem Score Distribution

**Problem Score Distribution:
Erosion Geomorphic Reaches**



Example scoring distribution



All Missions – Top 20 Priority Problem Areas





Watershed Protection

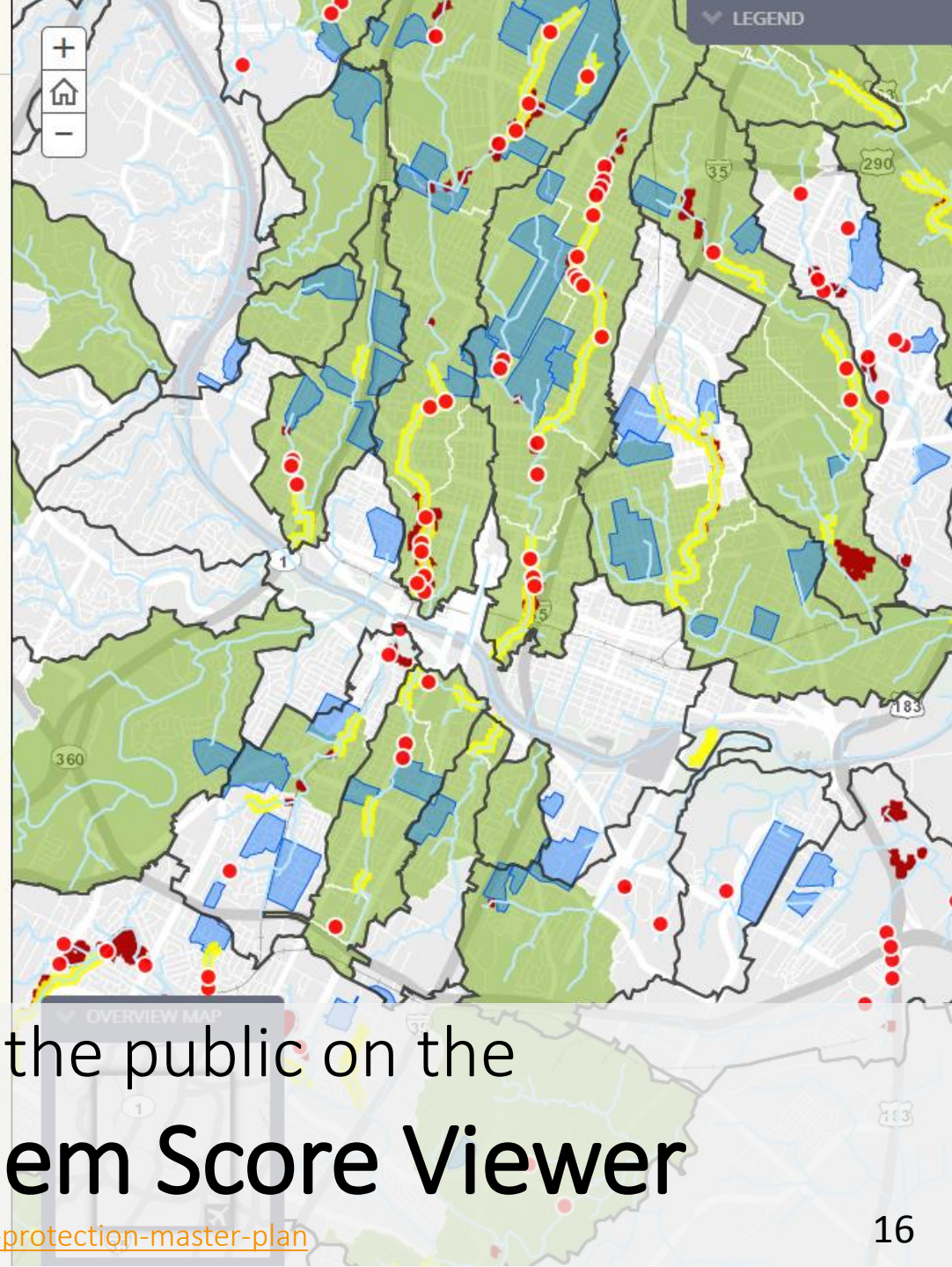
Master Plan "Problem Score" Viewer

The City of Austin's Watershed Protection Department (WPD) protects the lives, property, and environment of our community by reducing the impacts of flooding, erosion, and water pollution. WPD performs technical studies to **identify problem areas** where watershed protection goals are not being achieved. This approach enables direct comparisons between watersheds and **promotes consistency** among all missions.

Worst Problems First: The "Problem Score Approach"

Problem Score systems quantify and prioritize problem areas for each of the department missions: **Creek Flood, Local Flood, Erosion Control, & Water Quality**. Each mission develops problem scores to assign a numeric value and severity description to watershed problems, such as individual erosion sites or structures in floodplains. The areas with the highest problem scores are designated **"Very High" or "High" severity problem areas**, and are considered to be at the highest risk of flood, erosion, or water quality degradation.

High & Very High Severity Problem Areas	Reference
 Creek Flood Road Crossings	 Creeks
 Creek Flood Structures (buildings)	 Watersheds



Scores now available to the public on the
Master Plan Problem Score Viewer

Evaluate Data

- What causes the problem?
- What is the most effective solution?
 - Capital (primarily structural solutions)
 - Programmatic (wide range including educational, maintenance, permitting, planning and design)
 - Regulatory (most effective as a preventative measure)
- What missions are impacted?
- Do partnership opportunities exist?

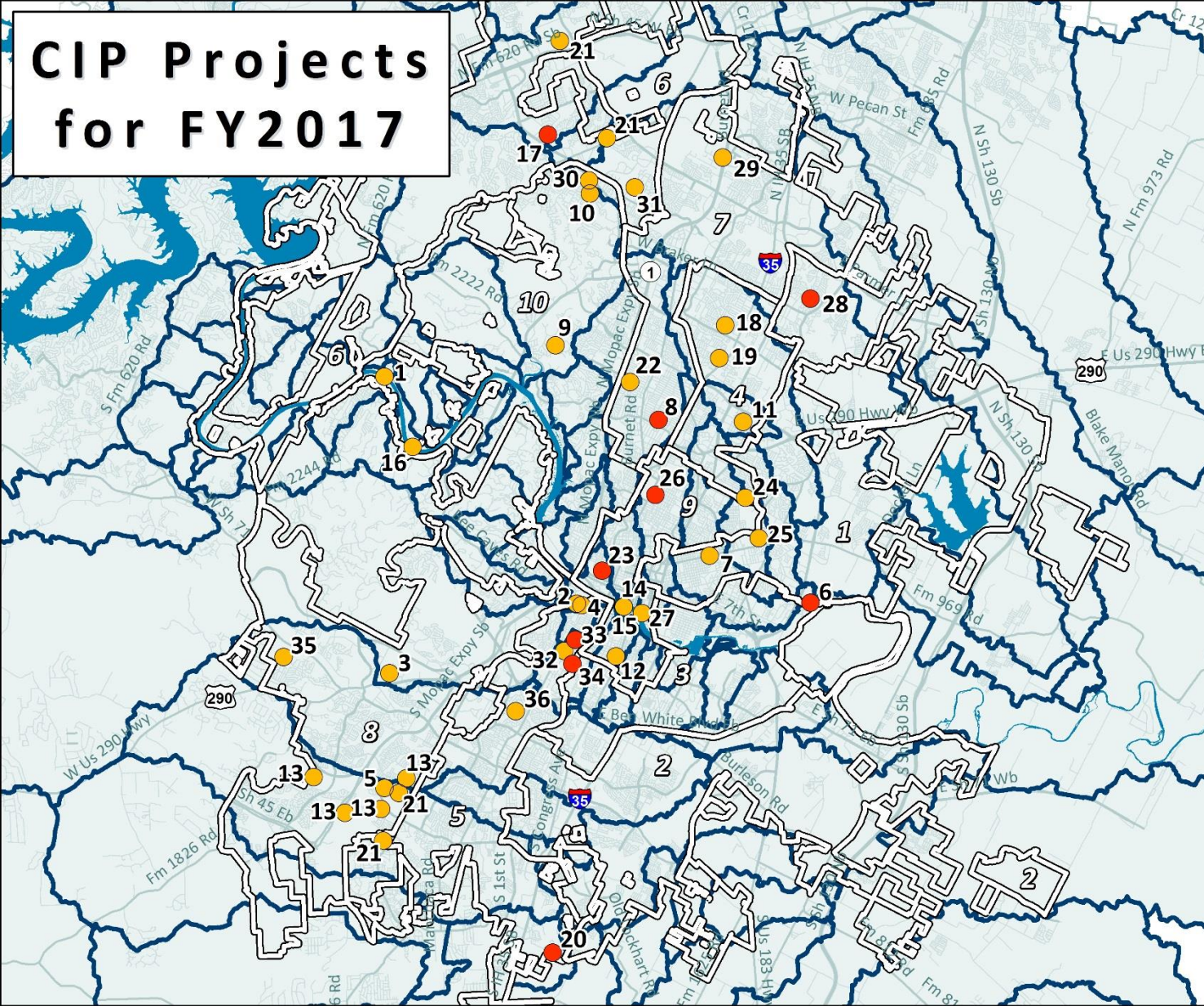
How We Use Our Problem Scores

- To Prioritize and Inform our Annual Budget Process
 - Program level of service needs
 - Capital project identification
- Input to Capital Planning Office Annual Strategic Plan

Projected Capital Project Cost

- **2001 original cost estimates**
 - Primary Drainage System: \$700-900 M
 - Storm Drain System: \$100-300 M
 - Includes 17 watersheds
- **2015 updated cost estimates**
 - Primary Drainage System: \$1.1-1.4 B
 - Storm Drain System: \$700-800 M
 - Includes 30 watersheds
 - **Estimated \$1.8 - 2.2 Billion**

CIP Projects for FY2017



FY17 Appropriation Project

- New in FY17
- Ongoing

 Council Districts

 Watershed Boundaries

Water Features

Streets

0 1.5 3 6 Miles

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No.	CIP ID	Project Name
1	6660.022	Austin Lakes - Aquatic Control and Restoration
2	6660.047	Barton Creek - Eliza Springs Habitat Enhancement
3	5789.107	Barton Creek - Oak Acres Storm Drain Improvements
4	6660.036	Barton Creek - Sunken Gardens Site Repairs
5	5282.046	Barton Springs Zone - Water Quality Retrofits (formerly Maple Run)
6	5848.077	Boggy Creek - Stream Stabilization Downstream US Hwy 183 (New)
7	8598.003	Boggy Creek - TOD MLK Blvd Stormdrain Outfall
8	6039.109	Brentwood Drainage Improvements (New)
9	7492.012	Bull Creek - Cougar Run Dam (Pond ID 160) Modernization
10	7492.034	Bull Creek - Residential Pond (Pond ID 10) Maintenance
11	5282.057	Buttermilk Branch - BMK EII Reach
12	5789.106	East Bouldin Creek - Annie St Storm Drain Improvements
13	6660.061	Education Cave Restoration and Maintenance
14	6660.032	Lady Bird Lake - Invasive Riparian Management
15	6660.037	Lady Bird Lake - Shoreline Restoration
16	6660.034	Lake Austin - Bulkhead Demonstration Project at Emma Long
17	7492.042	Lake Creek - Woods Pond Capacity Evaluation/Expansion (New)
18	5754.086	Little Walnut Creek - Hazard Reduction WMA7 from Metric to Rutland
19	5848.026	Little Walnut Creek - Jamestown Tributary Channel Rehabilitation
20	5754.107	Onion Creek - Pinehurst Drive Subdivision (New)
21	6660.035	Recharge Feature Maintenance
22	7492.032	Shoal Creek - Northwest Park Pond (ID 1454) Maintenance
23	5754.076	Shoal Creek - Lower Shoal Creek Flood Hazard Mitigation (New)
24	5282.134	Tannehill Branch - Bartholomew Park Stormwater Improvements
25	5282.043	Tannehill Branch - Morris Williams Stormwater Improvements
26	5789.075	Waller Creek - Guadalupe St Storm Drain Improvements (New)
27	10878.001	Waller Creek - Waller Creek Tunnel Dewatering
28	5781.013	Walnut Creek - Flood Mitigation for February Drive Homes (New)
29	5754.089	Walnut Creek - McNeil Dr Crossing Upgrade
30	5789.102	Walnut Creek - Oak Knoll Drainage Improvements
31	5789.04	Walnut Creek - Whispering Valley Dr & West Cow Path Flooding Mitigation
32	5789.069	West Bouldin Creek - Del Curto Storm Drain Improvements
33	5789.127	West Bouldin Creek - Hether St Storm Drain Improvements (New)
34	6039.108	West Bouldin Integrated Master Plan (New)
35	7492.033	Williamson Creek - Oak Hill Regional Pond Dam Modernization (Pond ID 677)
36	5754.090	Williamson Creek Flood Hazard Mitigation Study: Cherry Creek to S. Congress

2001-2016 Capital Project Accomplishments

Crystalbrook Flood Control Project

Completed 2004

- Included a levee and floodwall, a box culvert, a bypass channel, 12,000 linear feet of storm drain, and slope stabilization
- Provided 100-year flood protection for 175 homes
- Preserved 3,500 linear feet of the natural stream channel , which scored in the highest categories for Aquatic Life Support and Non-Contact Recreation,
- Preservation of more than 1,000 protected trees > 19-inch in diameter.

2001-2016 Capital Project Accomplishments

Onion Creek Buyouts

Ongoing

- 746 flood risk properties acquired to date
- Combination of funding sources



2001-2016 Capital Project Accomplishments

Hoeke Lane Low Water Crossing

Completed 2013

- Road overtopped in minor storm events and was sole access for a residential neighborhood
- Elevated and widened road at creek crossing
- Installed 14 culverts
- Provided sidewalk
- Installed curb and gutter

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2001-2016 Capital Project Accomplishments

Blunn Long Bow Storm Drain Improvements

Completed 2013

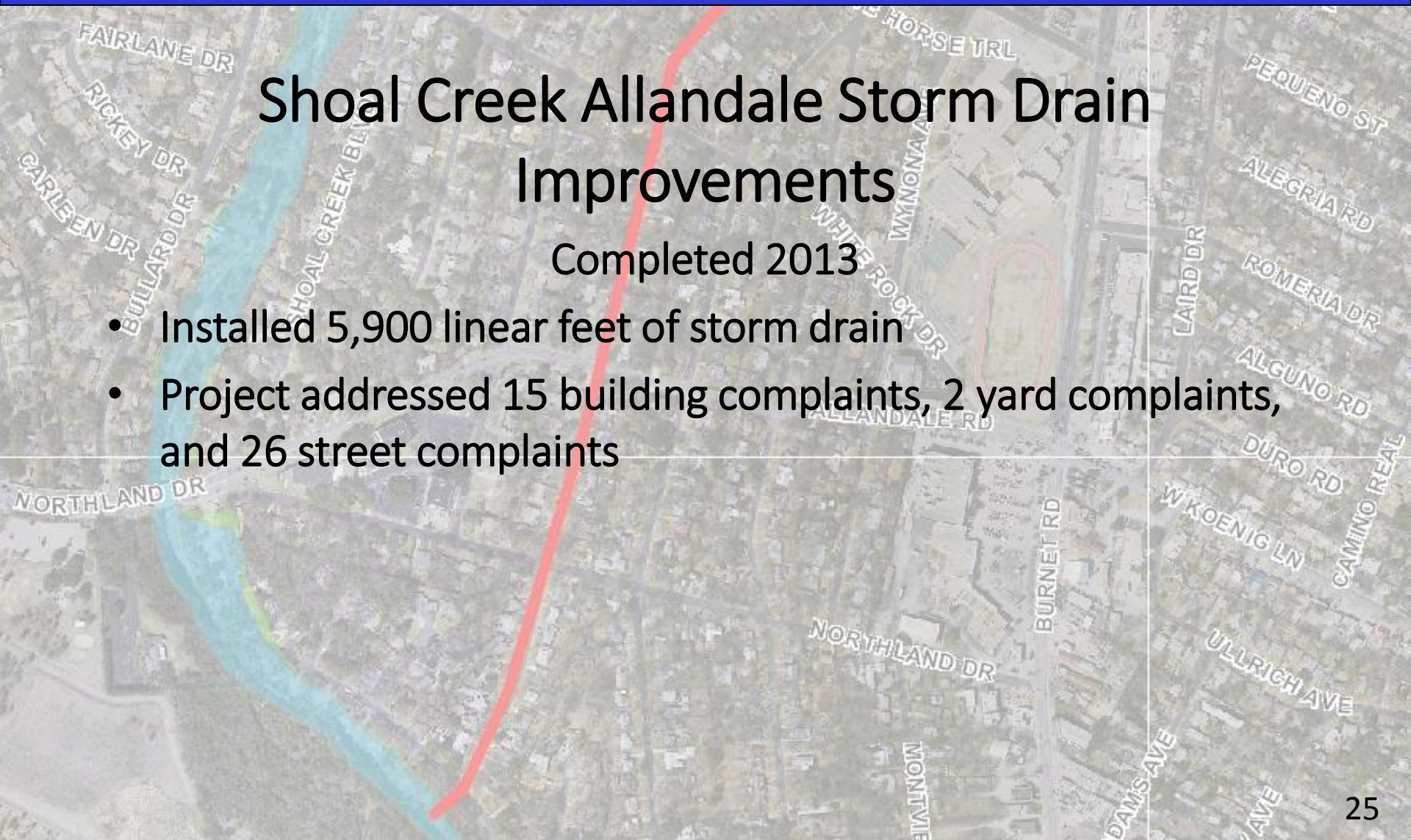
- Installed 6,200 linear feet of storm drain
- 25 homes benefitted from reduced flooding
- 6 locations of street flooding alleviated

2001-2016 Capital Project Accomplishments

Shoal Creek Allandale Storm Drain Improvements

Completed 2013

- Installed 5,900 linear feet of storm drain
- Project addressed 15 building complaints, 2 yard complaints, and 26 street complaints



2001-2016 Capital Project Accomplishments

Fort Branch Reaches 6 & 7 Channel Restoration

Completed 2014

- Stabilized 1,600 linear feet of stream bank
- New span bridge
- Flood Buyout of 5 homes in 25-year floodplain
- Installed 700 linear feet of storm drain

2001-2016 Capital Project Accomplishments

Shoal Creek NW Park to Foster Lane Erosion Stabilization

Completed 2003

- Stabilized 2,800 linear feet of eroding stream bank
- Secured eroding NW Park Detention spillway
- Secured exposed and threatened wastewater infrastructure

2001-2016 Capital Project Accomplishments

Williamson Lundelius-McDaniels Water Quality Pond

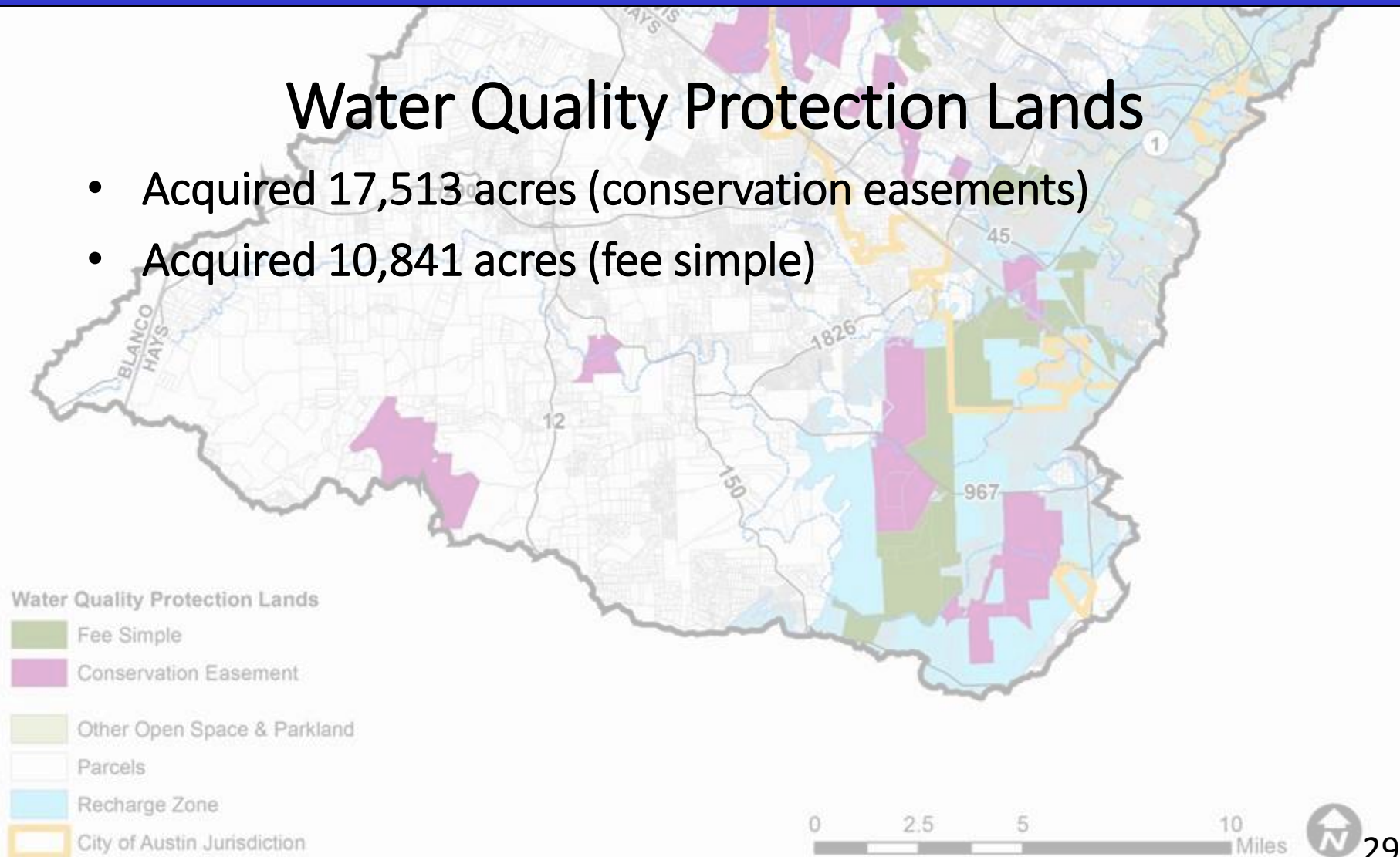
Completed 2011

- Provides treatment for over 200 acres in Barton Springs Zone
- Removes over 28,000 Lbs Total Suspended Solids annually
- Removes over 128 lbs Nitrogen annually

2001-2016 Capital Project Accomplishments

Water Quality Protection Lands

- Acquired 17,513 acres (conservation easements)
- Acquired 10,841 acres (fee simple)



2001-2016 Capital Project Accomplishments

Boggy Oak Springs Water Quality Pond

Completed 2007

- Provides treatment for 182 acres
- Removes 40,000 lbs Total Suspended Solids annually
- Reduces Chemical Oxygen Demand by 40%
- Reduces Nitrogen by 40%

Questions?

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