



Schnabel
ENGINEERING

Rehabilitation of Lower Longview Lake Dam

Chris Stanley, PE - City of Raleigh

Gerald Robblee, P.E. – Schnabel Engineering

**East Citizen's Advisory Council
Meeting**

June 18, 2012

City of Raleigh/Schnabel Project Team

■ City of Raleigh

- Chris Stanley, PE – Project Engineer/Project Manager
- Scott Bryant, PE – Senior Project Engineer
- Danny Bowden – Stormwater Utility Manager

■ Schnabel Engineering

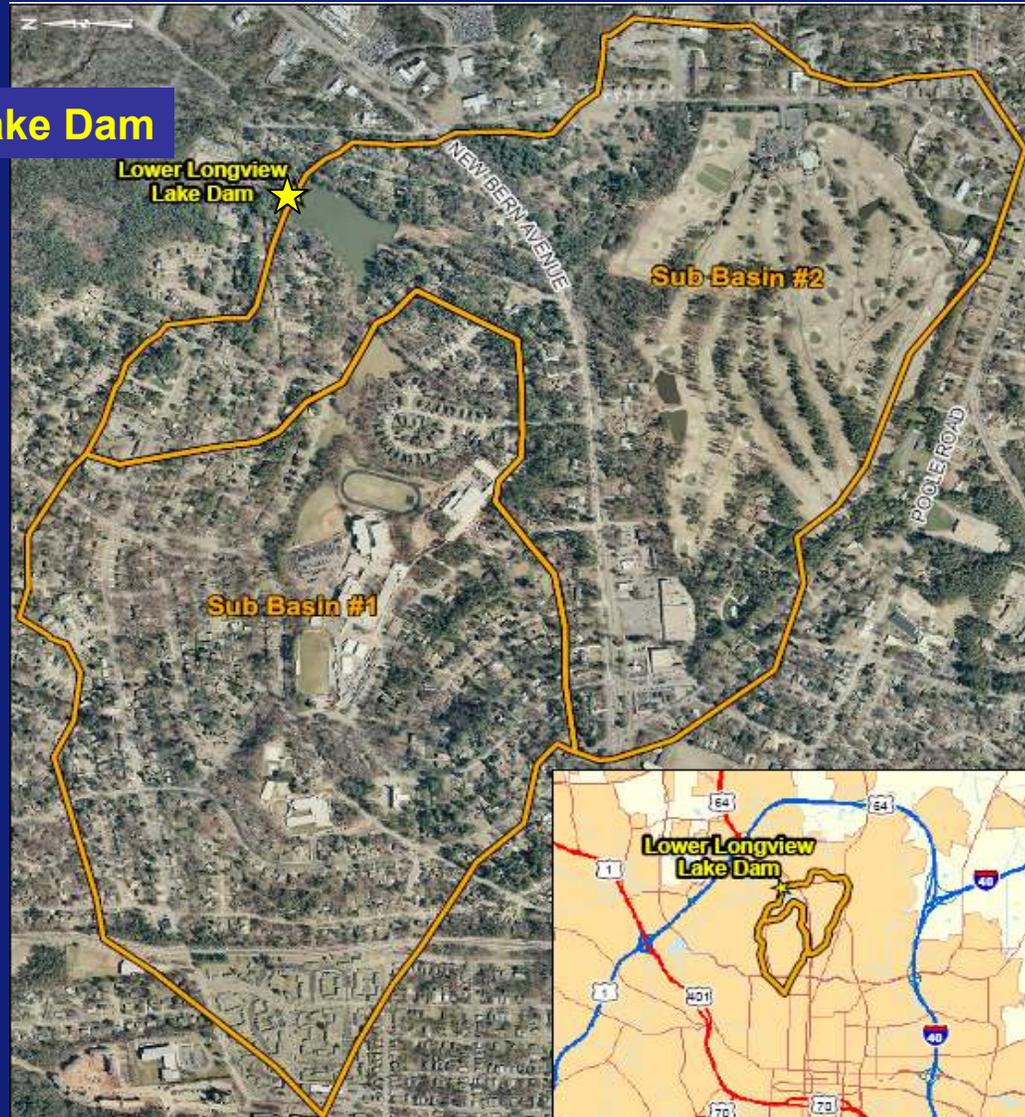
- Gerald Robblee, PE – Project Manager



Project Location & Dam Safety Classification

Lower Longview Lake Dam

Small High Hazard Dam



Dam Crest



Downstream Slope



Upstream Slope



Pertinent Dam Data – Existing Dam

- Earthfill
- Structural height of ~20 ft
- Hydraulic height of ~14 feet
- Crest width varies (~20 to ~25 feet)
- Spillway – Box Culvert ~8x16
- Crest elevation varies from El 207 ft to El 210 at abutment contacts.

Project Goals –

- Provide Safe Structure
 - Maintain Right of Way for Albermarle Ave
- Limited Water Quality Benefit
 - Contain “First Flush”

Dam Safety Deficiencies

- Slopes too steep
- Trees and brush on slopes
- Seepage
- No operating low-level outlet
- Inadequate spillway capacity
- Scour in existing spillway outlet channel

Other Issues

- City street over dam
 - Existing gas and water line in dam
- City sewer in spillway outlet channel
- Proximity of residences
- Millburnie Ave ~400 ft downstream

Rehabilitation Design Constraints

- Must pass spillway design flood
- Roadway needs to meet City of Raleigh standards
- Only minor changes to dam crest elevation
- Maintain reservoir pool elevation
- Maintain hydraulic characteristics

Other Rehabilitation Goals

- Protect sanitary sewer
- Find, then remove or abandon existing low-level outlet
- Construct a new low-level outlet

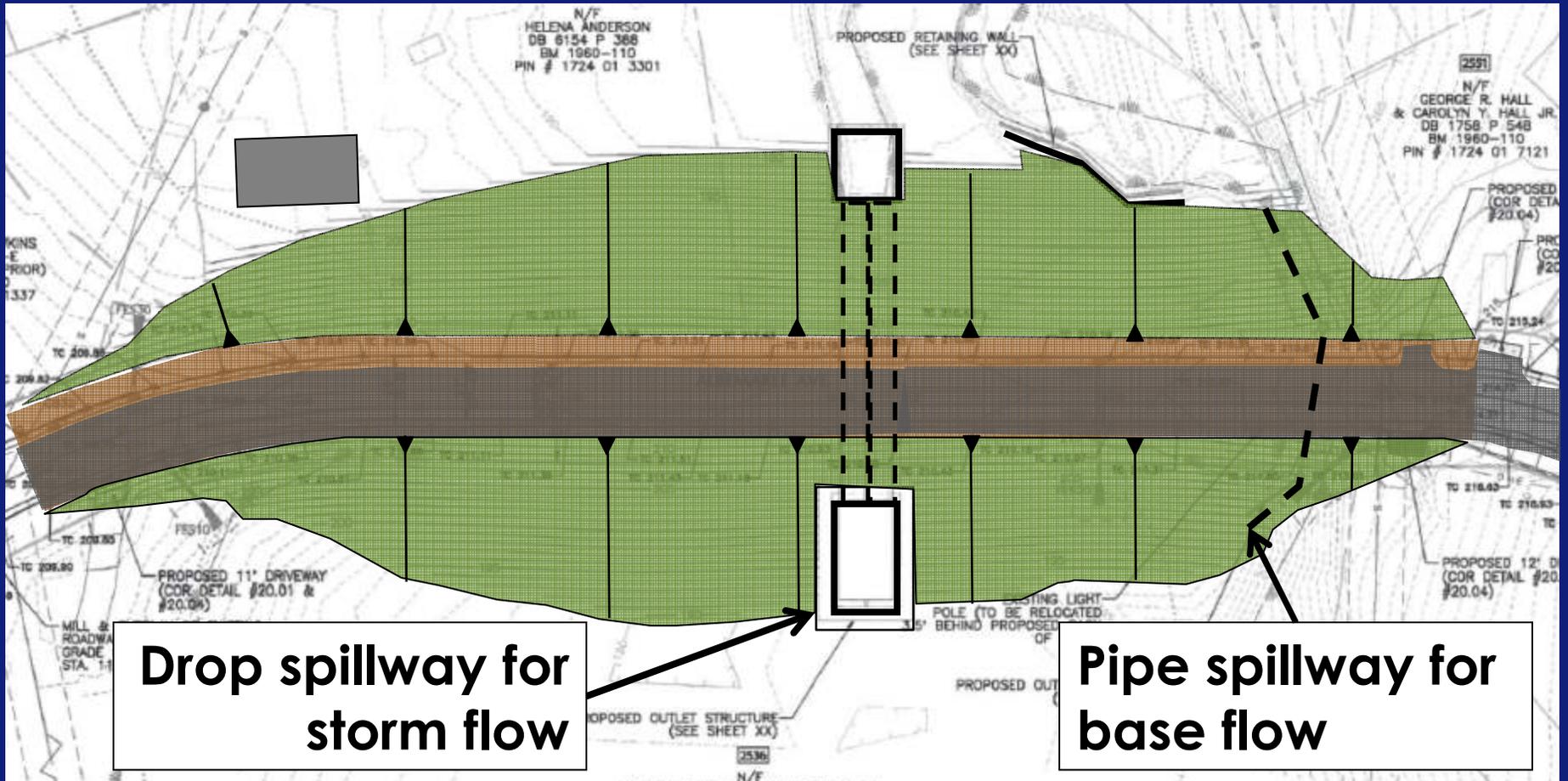
Rehabilitation Design Configuration

- Place 12-inch pipe in existing spillway to pass base flow
- New spillway in center of dam
- Drop structure and double barrel conduit
- 3-stage weir – contain “first flush”
- Pass SDF (1/3 PMP)
- Widen dam crest (road & sidewalk) to 36 ft
- Flatten slopes (3H:1V)

Disposition of Utilities

- Water Liner Replaced
 - Shut-offs on abutments
 - Encased steel pipe casing with vents/drains
- Gas line re-routed and removed
- Install replacement street lights
- Install new storm drains

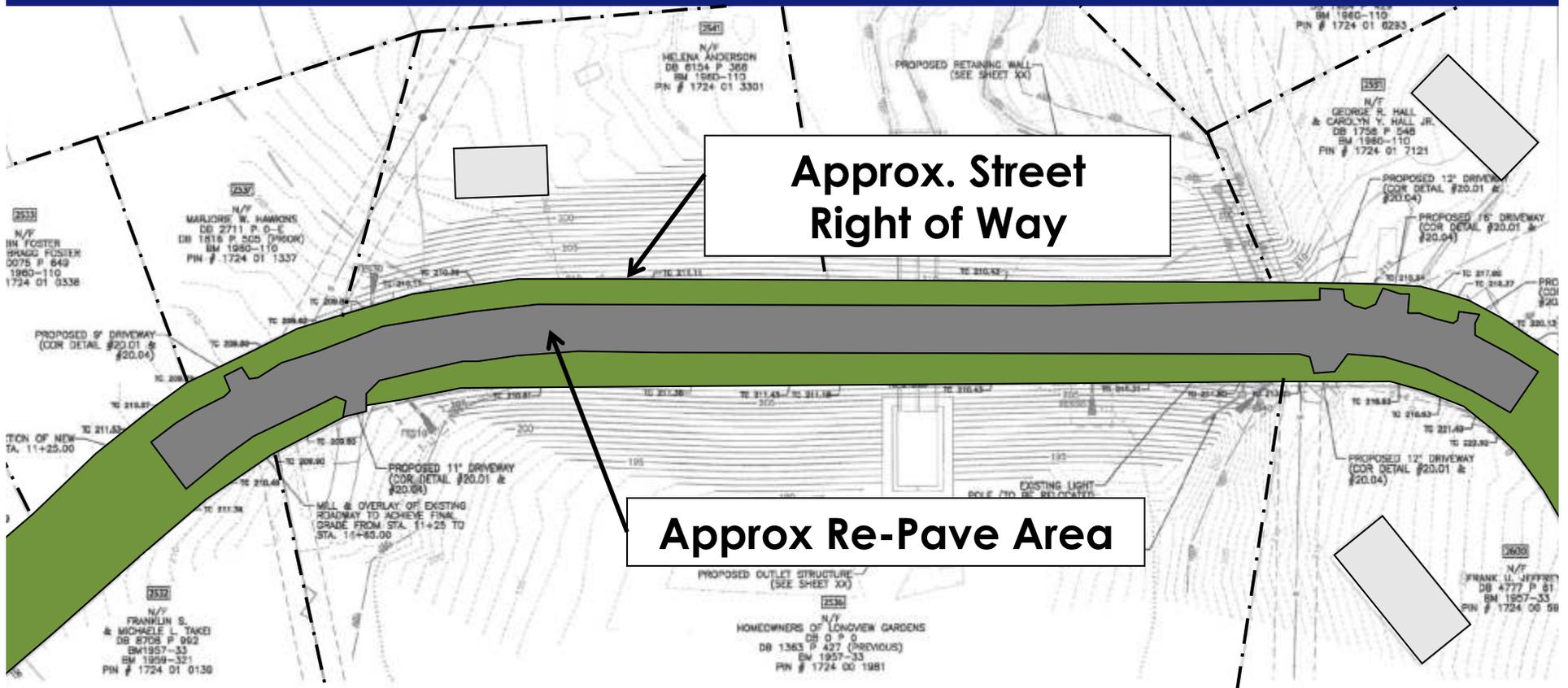
Proposed Embankment Grading



Drop spillway for storm flow

Pipe spillway for base flow

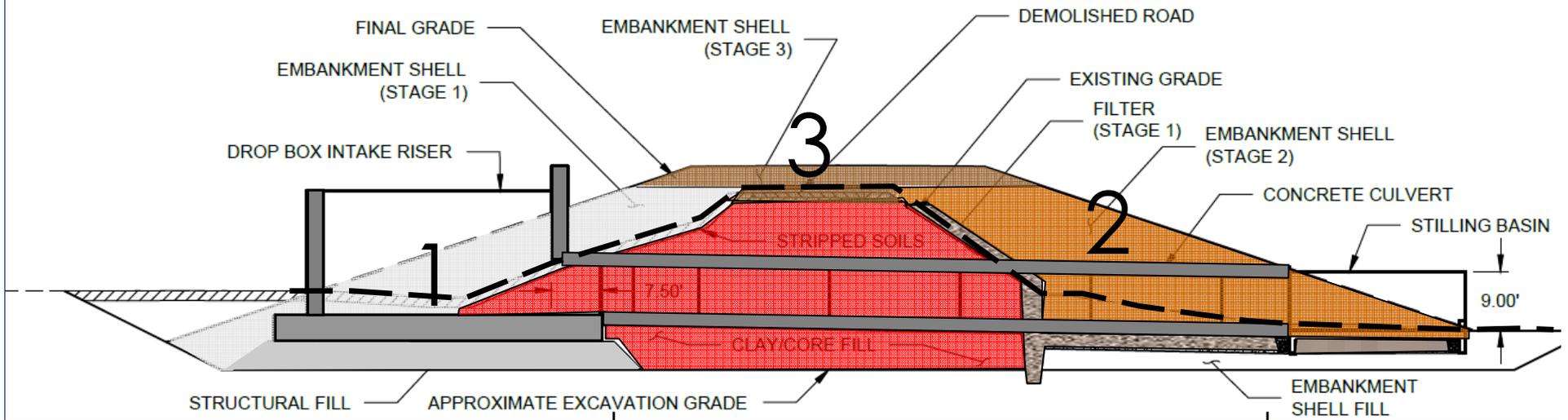
Re-Paving Limits



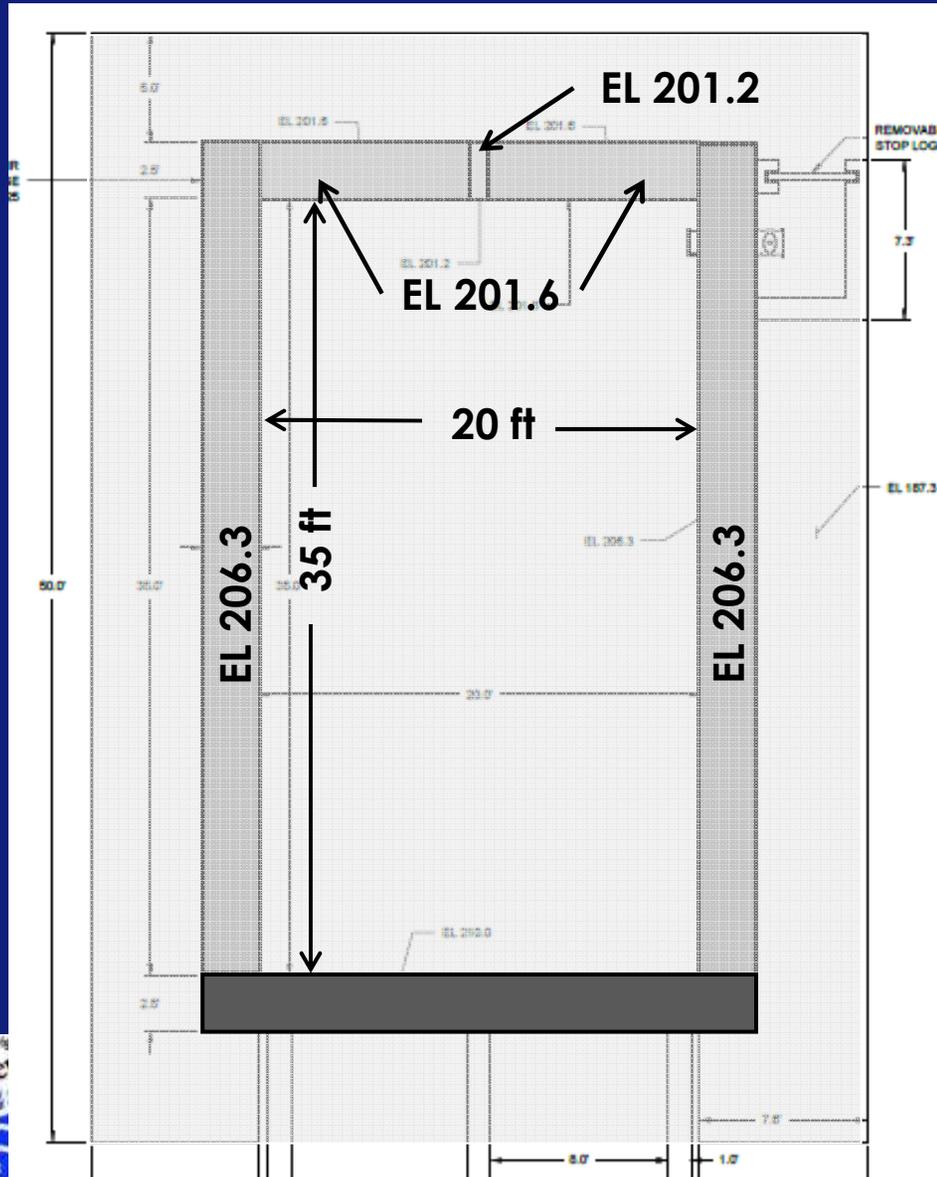
Approx. Street Right of Way

Approx Re-Pave Area

Section Through Dam & Drop Inlet Spillway



Spillway Plan



Base Flow Spillway
12" DIA PIPE @ EL 201.0

Construction and Post Construction

- Construction in Three Stages
- Stage 1
 - Drain reservoir
 - Build diversion cofferdam
 - Drop structure and double barrel conduit
 - Flatten upstream slope
- Stage 2
 - Demolish old spillway and bridge
 - Fill old spillway
 - Flatten downstream slope

Construction and Post Construction

■ Stage 3

- Install new water line
- Install storm drains
- Construct new roadway
- Install new street lights
- Leave bottom drain open

■ Post Construction

- Prepare Record Drawings and Submit to State for Approval
- After receiving State Approval, close bottom drain and allow reservoir to fill

Other Issues

- Easements (temp construction and drainage)
- Owner/Association Maintenance Agreement
- EAP & O&M Plan
 - Schnabel preparing
 - Owner/Association to maintain
 - City as partner
- Construction Impacts
 - Traffic
 - Reduced Access
 - Noise

Questions & Comments

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- Schnabel Engineering:
 - Gerald Robblee, PE – Project Engineer
 - 336-274-9456
 - grobblee@schnabel-eng.com

ADDITIONAL STORMWATER PROJECT AND CIP INFORMATION:

<http://www.raleighnc.gov/projects/content/PWksStormwater/Articles/StormwaterUtilityCIP.html>

Stormwater Utility Division Your Fees Working For You

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