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Anacostia Flood Risk Reduction

Levee Rehabilitation Case Study

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MAFSM
11th Annual Conference
October 15, 2015

Discussion Topics

- Levee System Overview
- Evaluate Existing Conditions
- Plan Improvements
- Complete Rehabilitation
- Provide Sustainability
- Looking Forward

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1 LEVEE SYSTEM OVERVIEW

Anacostia Levee System

Constructed in the 1950s, the levee includes:

- **More than five miles of earthen levees**
- **Twin 8x4 pressure conduits 2500 feet long**
- **Four flood control pumping stations**
- **Gravity outfall**

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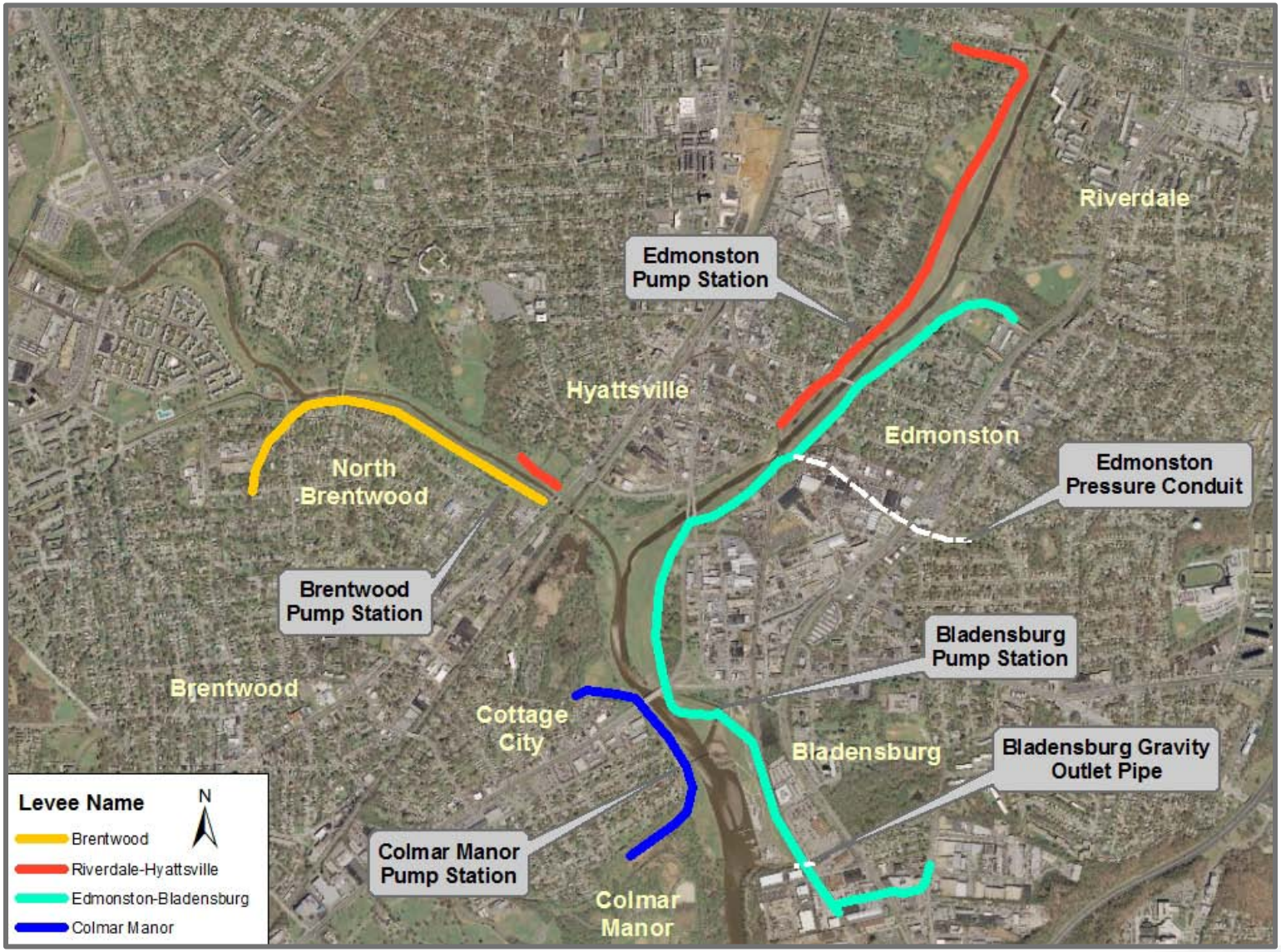

Ongoing Investment in Levee System

- Construction of new screw pumps
- Replacement of flapper valves
- Installation of automatic bar screen cleaners
- Emergency generator installations at each pumping station

- No levee failures, overtopping or breaches
- Engaged in H&H Analysis

Levee owner was advised that the levee system would not meet the standards for FEMA accreditation.

What does that mean?

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2 EVALUATE EXISTING CONDITIONS

- **Field Inspection**
  - **Penetrations**
  - **Structures**
- **Concrete Testing**
- **Utility Coordination**
- **Review of Historical Records**

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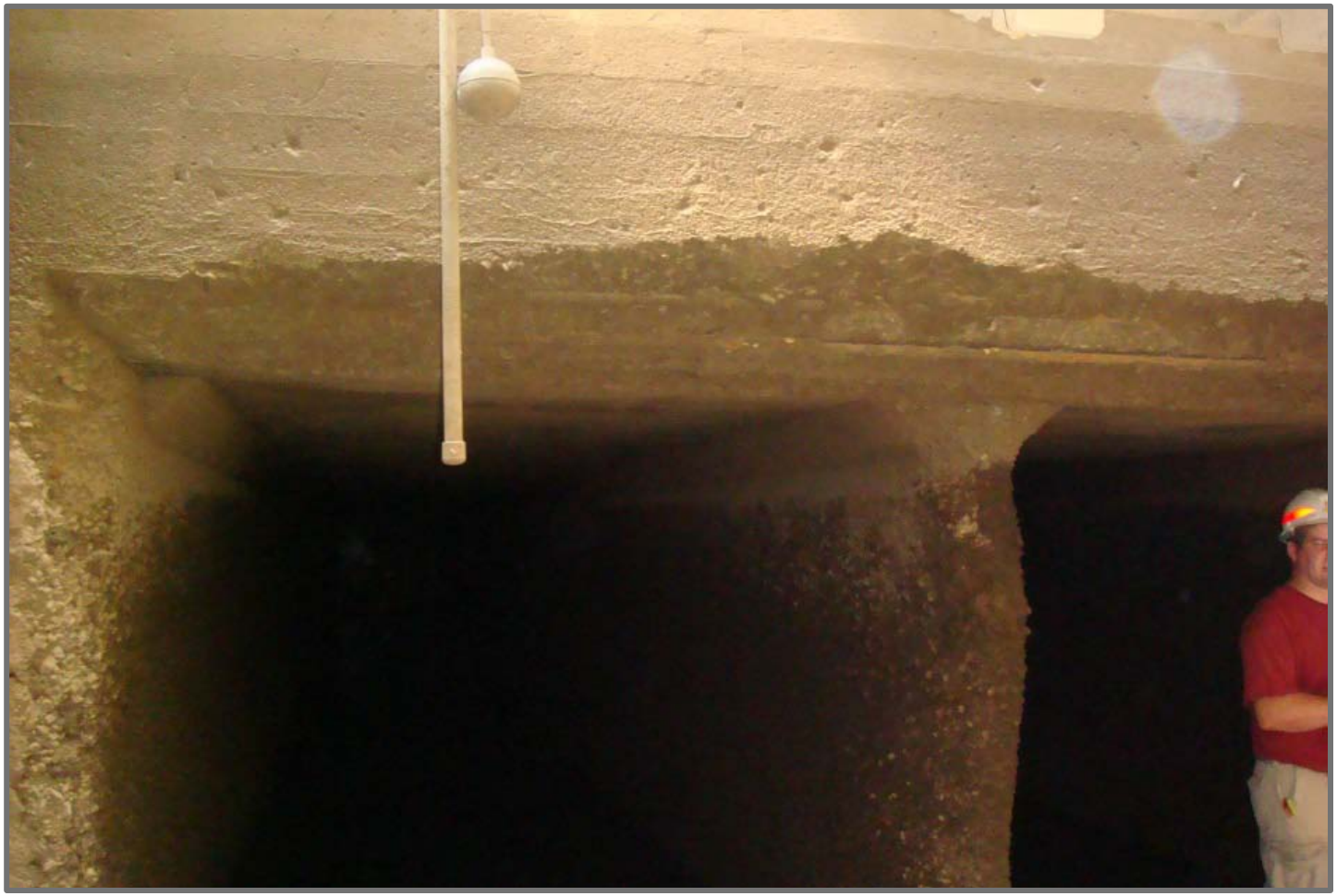

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C2-COREA-S2
TOP

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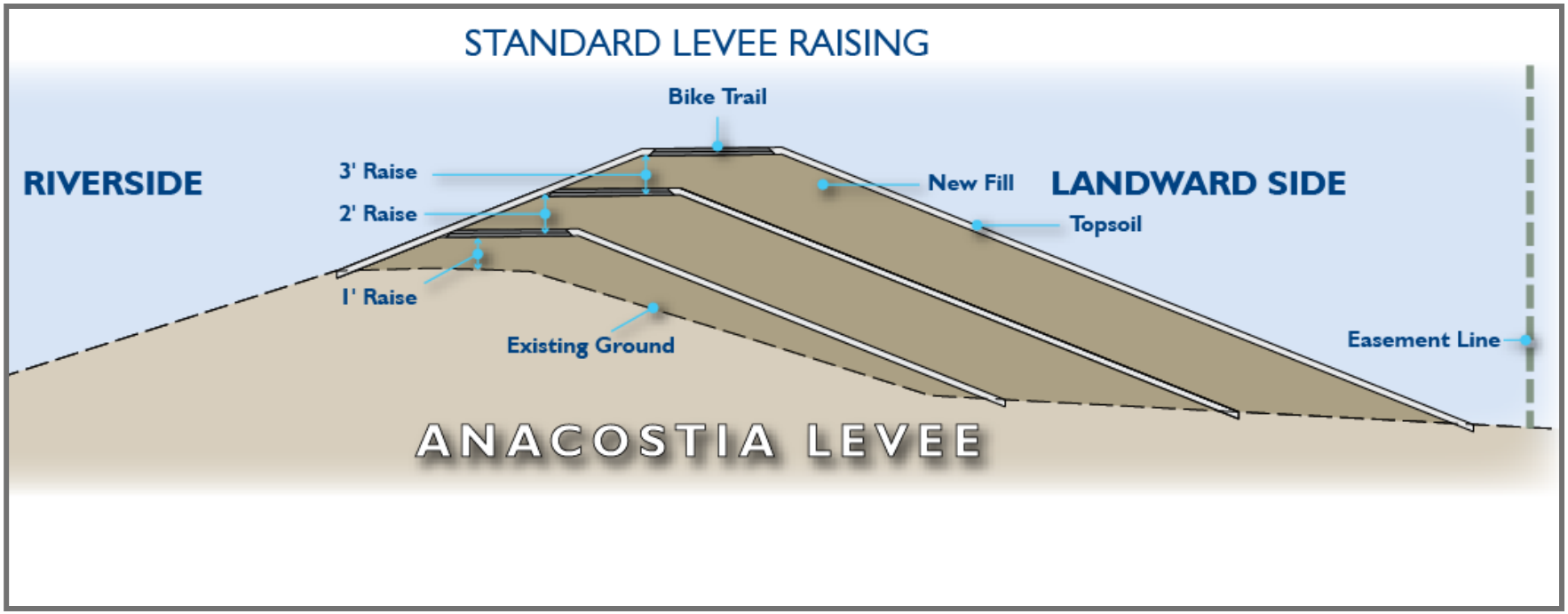
Subsurface Investigation

Concept Design Report

- **Summarized alternatives**
- **Cost Benefit Analysis**
- **Property and community impacts**

Typical Section



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3 PLANNING

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Stakeholders Outreach

- Public Outreach
- Elected Officials
- Property Owners
- Maintenance Division

Outreach Methods

- **Briefings to elected officials**
- **Community meetings, press releases and website updates**

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4 COMPLETE REHABILITATION

4 Separate Contracts to Address Deficiencies

- **Levee Rehabilitation**
- **Flood Control Pumping Stations Repair and Upgrades**
- **Pressure Conduit Access Vaults, Cleaning and Evaluation**
- **Steep Slope Improvements to allow for Maintenance**

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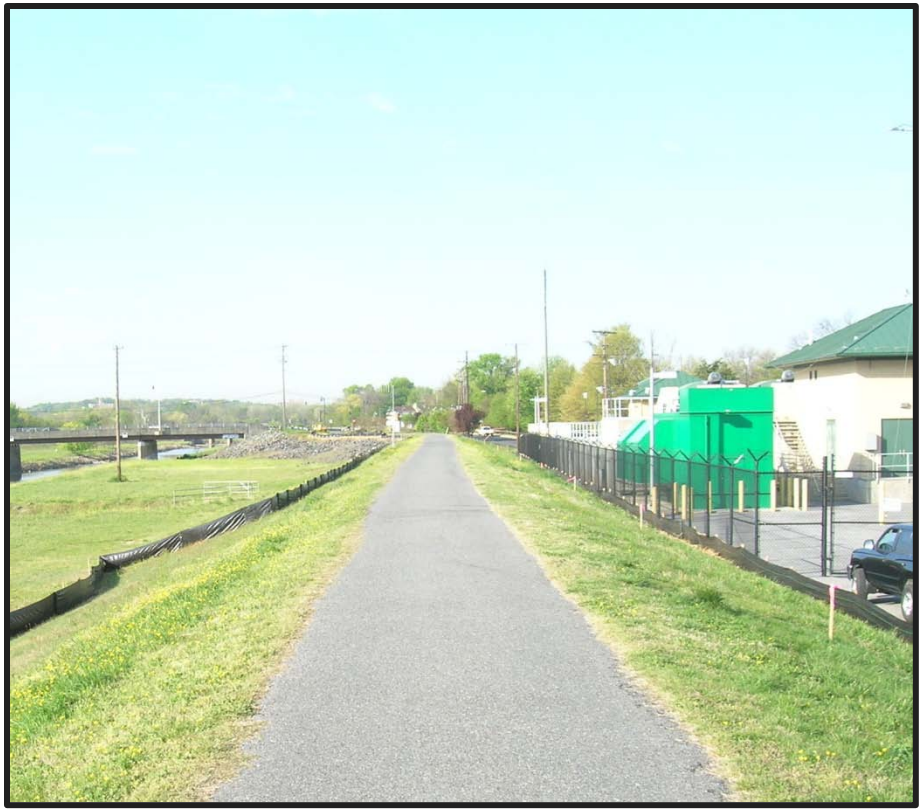

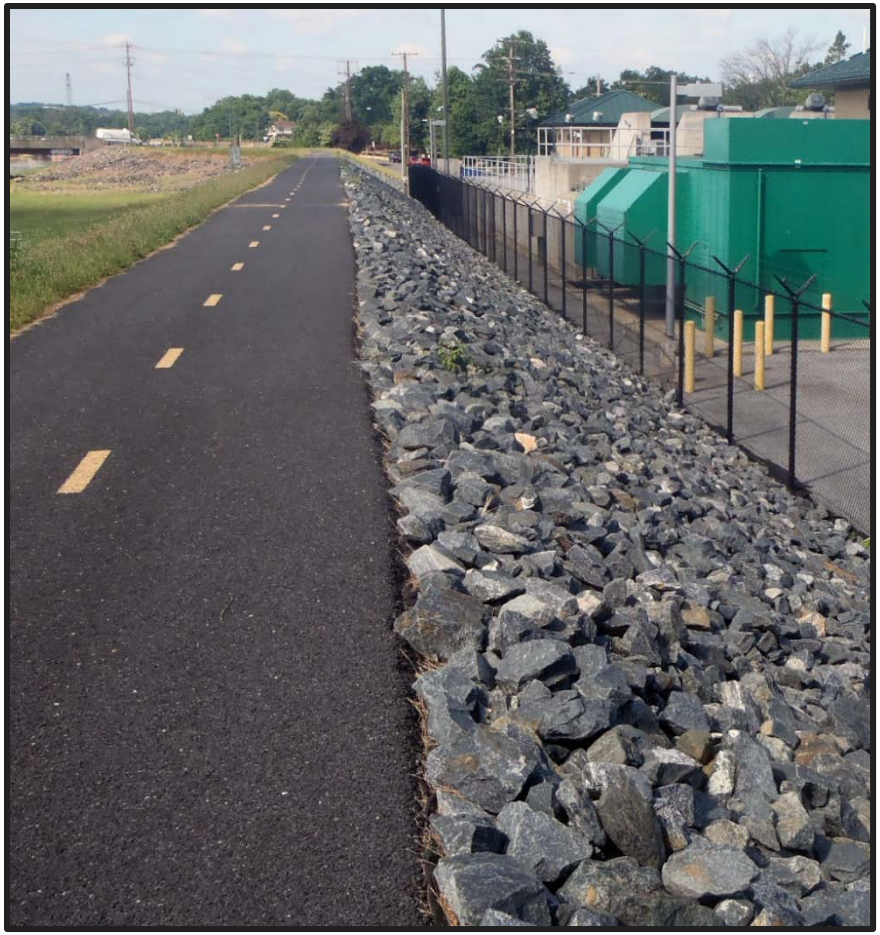

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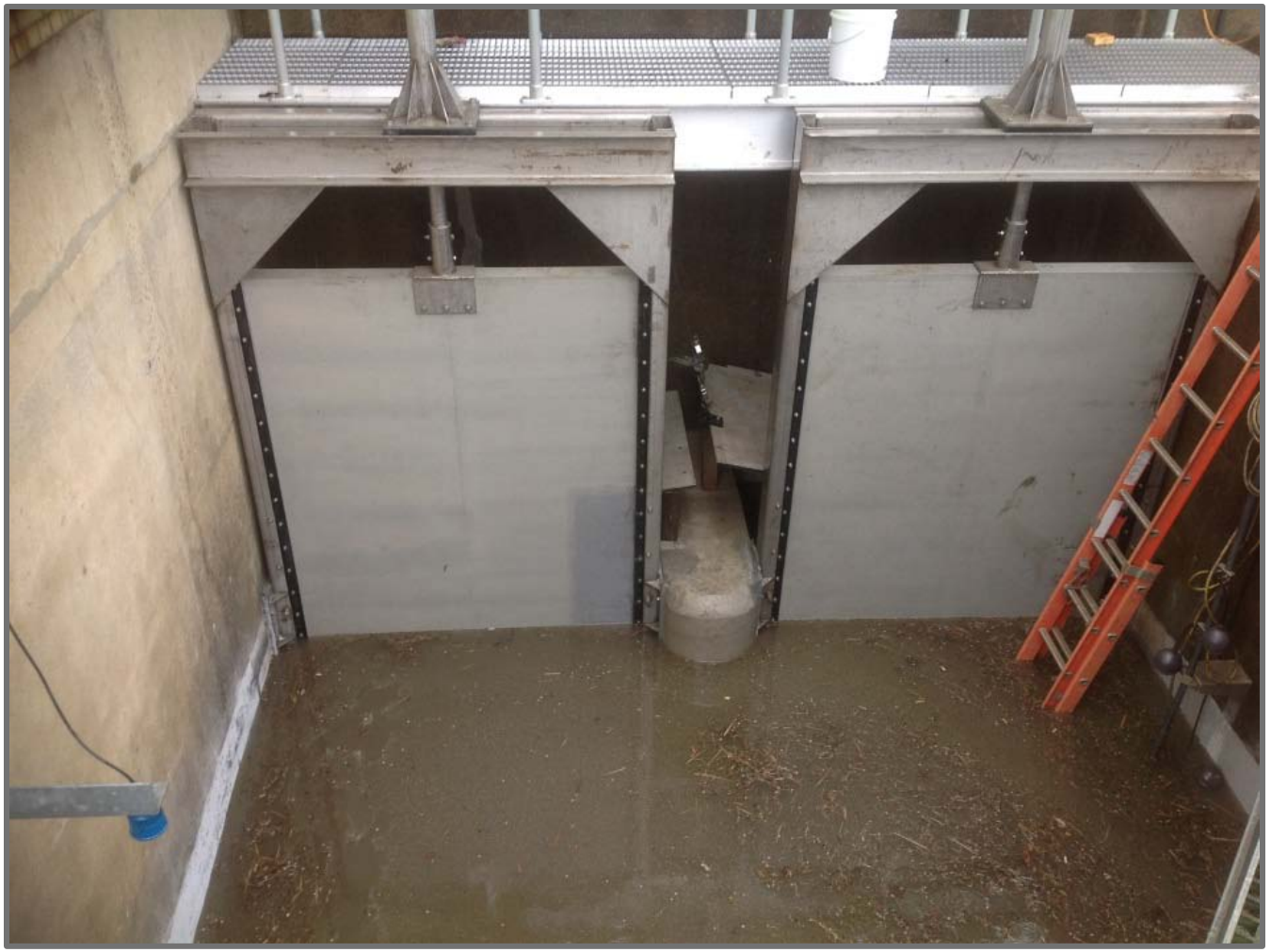

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5 SUSTAINABILITY

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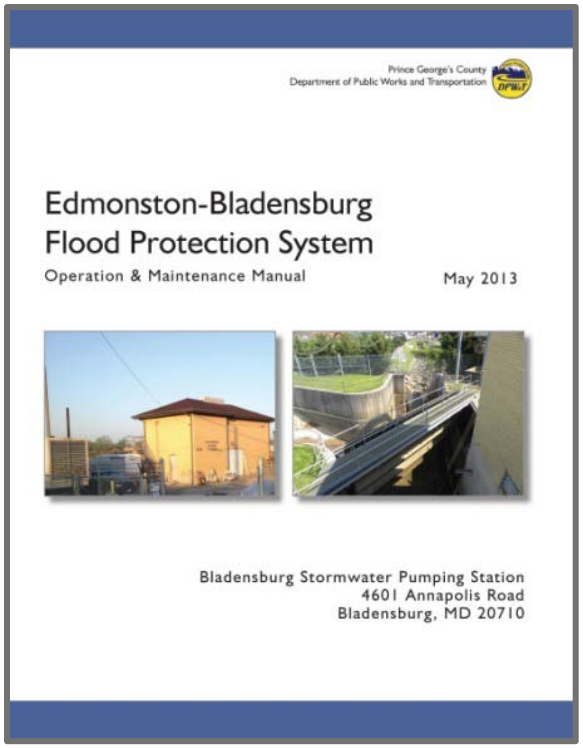

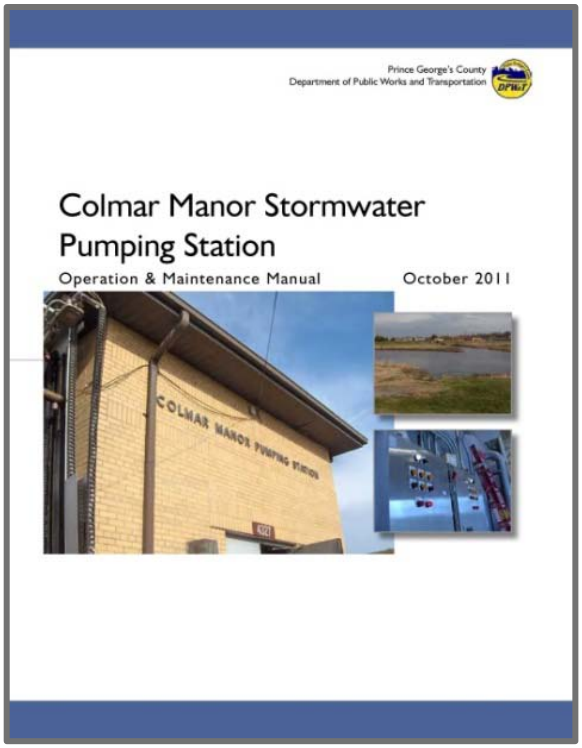

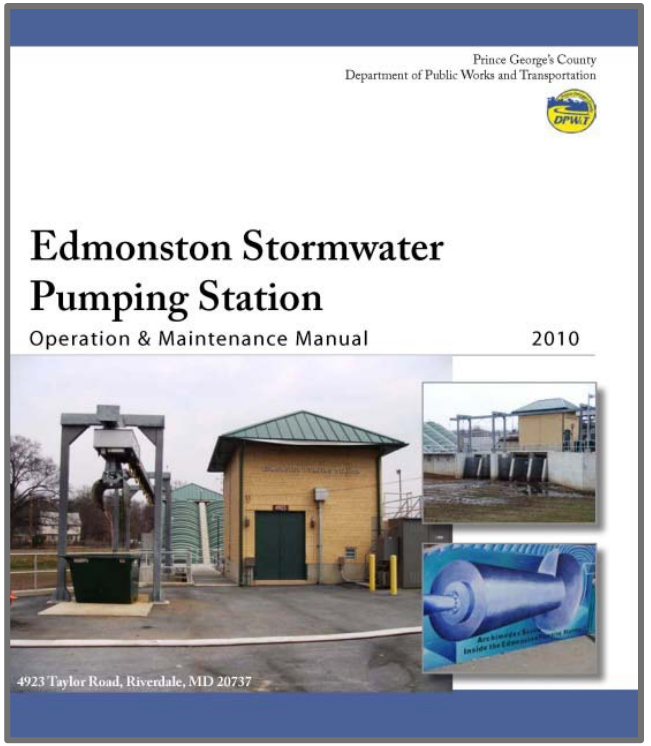

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EMERGENCY ACTION PLAN (EAP)

BRENTWOOD LEVEE SYSTEM
Anacostia River

Brentwood Flood Control Pumping Station
4018 Banner Street
Prince George's County, Maryland

Reviewed and Updated:

_____ Date_____
Levee Sponsor
Director of Prince George's County Department of Public Works and Transportation

Copy ____ of ____

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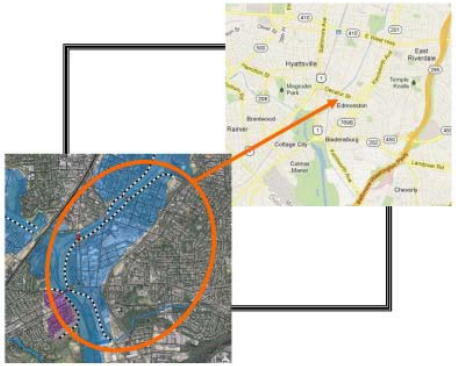
EMERGENCY ACTION PLAN (EAP)

EDMONSTON – BLADENSBURG LEVEE
Anacostia River Levee System

Bladensburg Flood Control Pumping Station
4601 Annapolis Road
Prince George's County, Maryland



Reviewed and Updated:

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Levee Sponsor
Director of Prince George's County Department of Public Works and Transportation

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EMERGENCY ACTION PLAN (EAP)

COLMAR MANOR LEVEE SYSTEM
Anacostia River

Colmar Manor Flood Control Pumping Station
4327 Monroe Street
Prince George's County, Maryland

Reviewed and Updated:

_____ Date_____
Levee Sponsor
Director of Prince George's County Department of Public Works and Transportation

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Checklists were developed:

- **Maintenance Personnel**
- **Electrical and Mechanical Contractor(s)**

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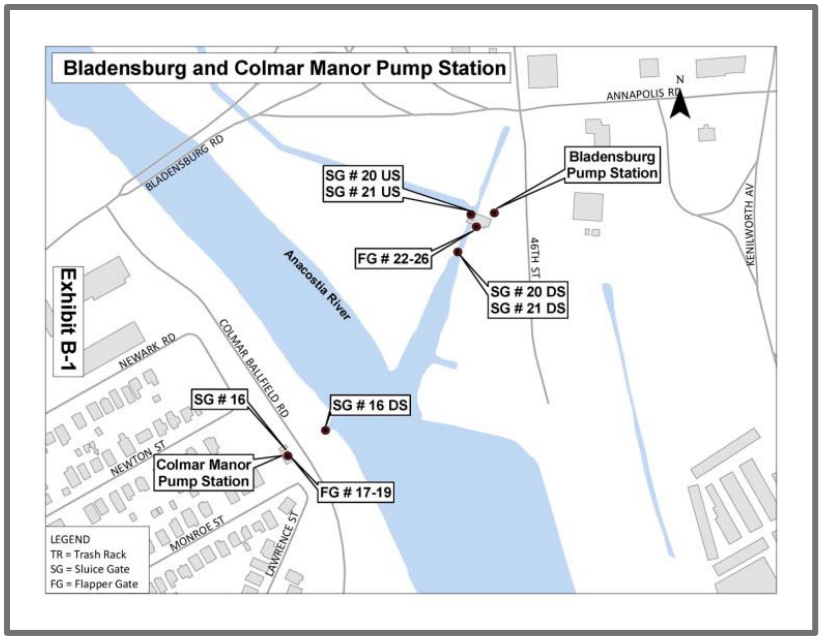

MONTHLY INSPECTION REPORT

Pumping Station: Date: Company: Signature:

Item	Applicable Station	Condition	Recommended Repair
A. Grounds, Building , & Small Equipment			
1. Approach & Outlet Channels			
a. Outlet Structure	All Stations	☐ Acceptable ☐ Unacceptable	
b. Levee or Riprap	All Stations	☐ Acceptable ☐ Unacceptable	
2. Check Pond Area	AL BR BL CM ED PB ☑ ☐ ☐ ☐ ☑ ☐	☐ Acceptable ☐ Unacceptable	
3. Station & Grounds Cleanliness			
a. General inspection	All Stations	☐ Acceptable ☐ Unacceptable	
b. Vermin	All Stations	☐ Acceptable ☐ Unacceptable	
4. Outside Steps, Gratings	All Stations	☐ Acceptable ☐ Unacceptable	
5. Buildings & Appurtenant Structures (settlement, cracks, and similar items.)	All Stations	☐ Acceptable ☐ Unacceptable	
6. Exposed Metal & Wood Paint	All Stations	☐ Acceptable ☐ Unacceptable	
7. Discharge Chambers	All Stations	☐ Acceptable ☐ Unacceptable	
a. General inspection	All Stations	☐ Acceptable ☐ Unacceptable	
b. Flapper Gates	All Stations	☐ Acceptable ☐ Unacceptable	
c. Vent Pipe			
8. Guard Chains and			
9. Roof Ventilators			
10. Louvers, motor op			
11. Key interlocks (M			
12. Lubricants on Han			
13. Operation & Main			
14. Forms available fo			
15. Drains, general co			

EXHIBIT-G

ELECTRICAL AND MECHANICAL MAINTENANCE OF FLOOD CONTROL ANNUAL TESTING REQUIREMENTS

Pumping Station:_____ Date:_____ Company:_____ Signature:_____

7	Interior Electrical System						
7.1	Float Switch & Water Level Indicator Assemblies	1					
7.1.1	Float	1					
7.1.2	Perform Dial Calibration	1					
7.2	Lighting Fixtures (interior and floodlights) - lamps, ballasts, lenses, and similar items. Check for Proper Operation.	1					
7.3	Emergency lighting units and exit lighting fixtures - lamps, battery condition, test circuit, indicators. Check for Proper Operation.	1					
7.4	Dehumidifier Motor & Circuit and drain line	1					
7.5	Heater Circuit and Breaker and operation of Thermostat	1					
7.6	Roof Ventilators, Louvers, Dampers and associated circuits; check operation and interlocking	1					
7.7	Wall Switches, Receptacles, and Covers	1					
7.8	Calibrate Float Switch	1					

ELECTRICAL AND MECHANICAL MAINTENANCE OF FLOOD CONTROL ANNUAL TESTING REQUIREMENTS

Pumping Station:_____ Date:_____ Company:_____ Signature:_____

1	Testing Preparation		
		Date Completed and Name	Remarks:
1.1	Have the latest pumping station one-line power diagram		
1.2	Review the latest control drawings for this pumping station with the control for the main pumps, sluice gates, sump pumps, and Trash cleaning Systems.		
1.3	Have all testing equipment calibrated and labeled in the last 12 months		
1.4	Person to provide the testing shall be NETA certified		
1.5	Coordinate with Prince George County any required shutdown of the pumping station		
1.6	Perform the testing with the equipment de-energized as possible. For operational tests use the appropriate Personal Protective Equipment (PPE) if required.		
1.7	Perform all the procedures for tagging and lock-out		
1.8	Check rotation of the motors before and after the testing.		
1.9	All the testing shall be performed as per the manufacturer (s) recommendations. If any of the below testing contradict the manufacturer recommendations, the testing person should advise the PG county before perform the test.		
1.10	Communicate to PG county personnel any additional testing that should be performed and it is not included in these forms.		
1.11	At the end of the testing update the drawings if necessary and add any missing information.		
1.12	Many routine maintenance requirements are dependent on running times, operating conditions, etc. These notes should be reviewed from time to time in the light of operating experience		
1.13	The gearboxes are fitted with oil level pluds. When checking the oil level, the level and filler plugs should be removed and oil added until it just starts to run from the level plus hole. Do not overfill or seals could be damages. The hoist unit is accessible by removing the side panel on the trolley. A small-bore tube is required to direct the oil into the filler on the hoist gearbox.		
1.14	Always clean grease nipples before applying grease.		

Exhibit C

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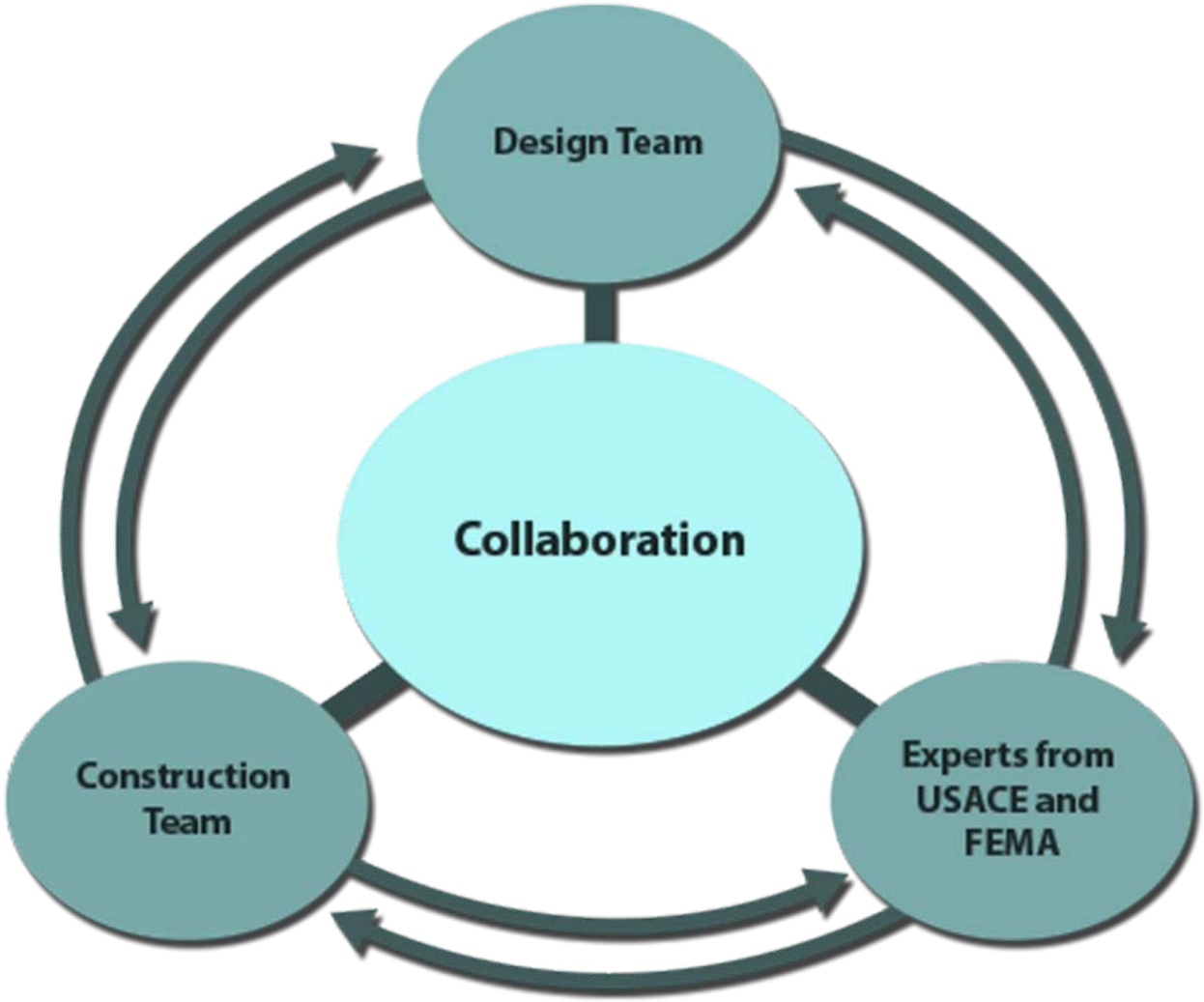

6 LOOKING FORWARD

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Water Resources Reform and Development Act of 2014

- Nationwide Inventory
- Hazard Classification based on Risk
- Levee Safety
- Public Awareness
- Grant Funds

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Levee Safety Initiative Implementation involves the Levee Sponsor and all of us….

US Army Corps of Engineers®

ASSOCIATION of STATE DAM SAFETY OFFICIALS ★ 1984 ★

ASCE American Society of Civil Engineers

Association of State Floodplain Managers ASFPM

SAME

USSD

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Questions?

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