

# ST. ELIZABETHS WATER TOWER CREATING A VISUAL LANDMARK CONSULTING PARTY MEETING #1



# Introduction

1. Project Team – Background – Project History
2. Why do we need a Water Tower?
3. Why does the Water Tower need to be on the St. Elizabeths Campus?
4. What are the concerns or issues?
5. Section 106 Process Overview
6. Schedule
7. Questions & Comments



# Project Background

- Water System Facilities Plan (Sept 2000)
  - Recommended the creation of a new service area and 2MG elevated storage facility located at St. Elizabeths Hospital
- DC WASA discussions with representatives from St. Elizabeths East Campus
- Carried out balloon and photographic documentation efforts for St. Elizabeths Site

# Project Background

- Identified additional key stakeholders and began discussions:
  - National Park Service
  - Commission of Fine Arts
  - DC Office of Planning
  - Historic Preservation
- Conducted public outreach program and campaign
  - ANC meetings from 2002 to 2006

# Project Background

- Discussions with DC Office of Planning
  - Advised DC WASA to submit proposal for review pursuant to Section 106 of the National Historic Preservation Act (transfer from federal to District)
  - St. Elizabeths Hospital is designated a National Historic Landmark (1990) and is listed on the national Register of Historic Places (1979) and the DC inventory of Historic Sites (2005). It is subject to the *Historic Landmarks and Protection Act of 1978* (DC Law 2-144 as amended).

# Project Challenge:

## Balancing Preservation With New Water System Improvements

- Research, analysis, and understanding significant historic fabric of St. Elizabeths facility
- Seeking integration of new elements
- Positioning the Water Tower as part of the St. Elizabeths East Campus Redevelopment



# ANALYSIS OF PREVIOUS STUDIES & REGULATORY PROCESSES

## Water Tower *for the* Proposed Anacostia Second High Pressure Zone

March 18, 2008



District of Columbia  
Water and Sewer Authority

*Serving the Public • Protecting the Environment*

## SAINT ELIZABETHS EAST



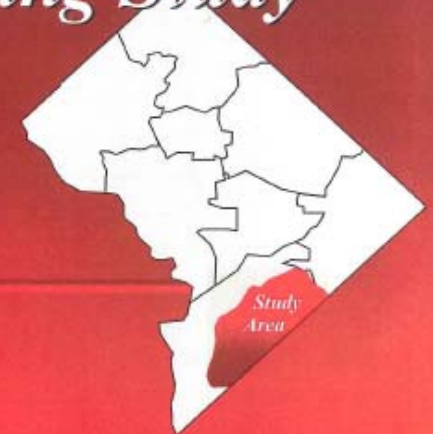
Redevelopment Framework Plan  
**DRAFT**  
September 2008



## *Water Tower Siting Study*

*for the*

Proposed Anacostia  
Second High  
Pressure Zone  
District *of* Columbia



*Phase I – Site Selection*



District of Columbia  
Water and Sewer Authority  
Washington, D.C.

*prepared by*

Hatch Mott MacDonald

*in association with*

Pillsbury Winthrop Shaw Pittman LLP

September 14, 2007




# Service Area Challenges

- Less than optimum pressure in southern portion of area (south of W Street, SE) and at the St. Elizabeths Campus.
- Under utilization of water storage at Ft. Stanton Reservoirs
- Old water transmission and distribution system
- Aging equipment and building at Anacostia Pumping Station, constructed in 1913

Water Tower *for the* Proposed Anacostia  
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# Solution:

- Address Existing Infrastructure Needs and Create New Service Area (pressure zone) to Increase Water Pressure by  $\approx 22.5$  psi south of W Street
  - Replacement of Anacostia Pumping Station **COMPLETE**
  - New Large Water Mains **UNDER CONSTRUCTION**
  - Replacement Small Water Mains **UNDER CONSTRUCTION**
  - New Water Tower
- Total Cost of Infrastructure Improvements: **\$85.5 Million**

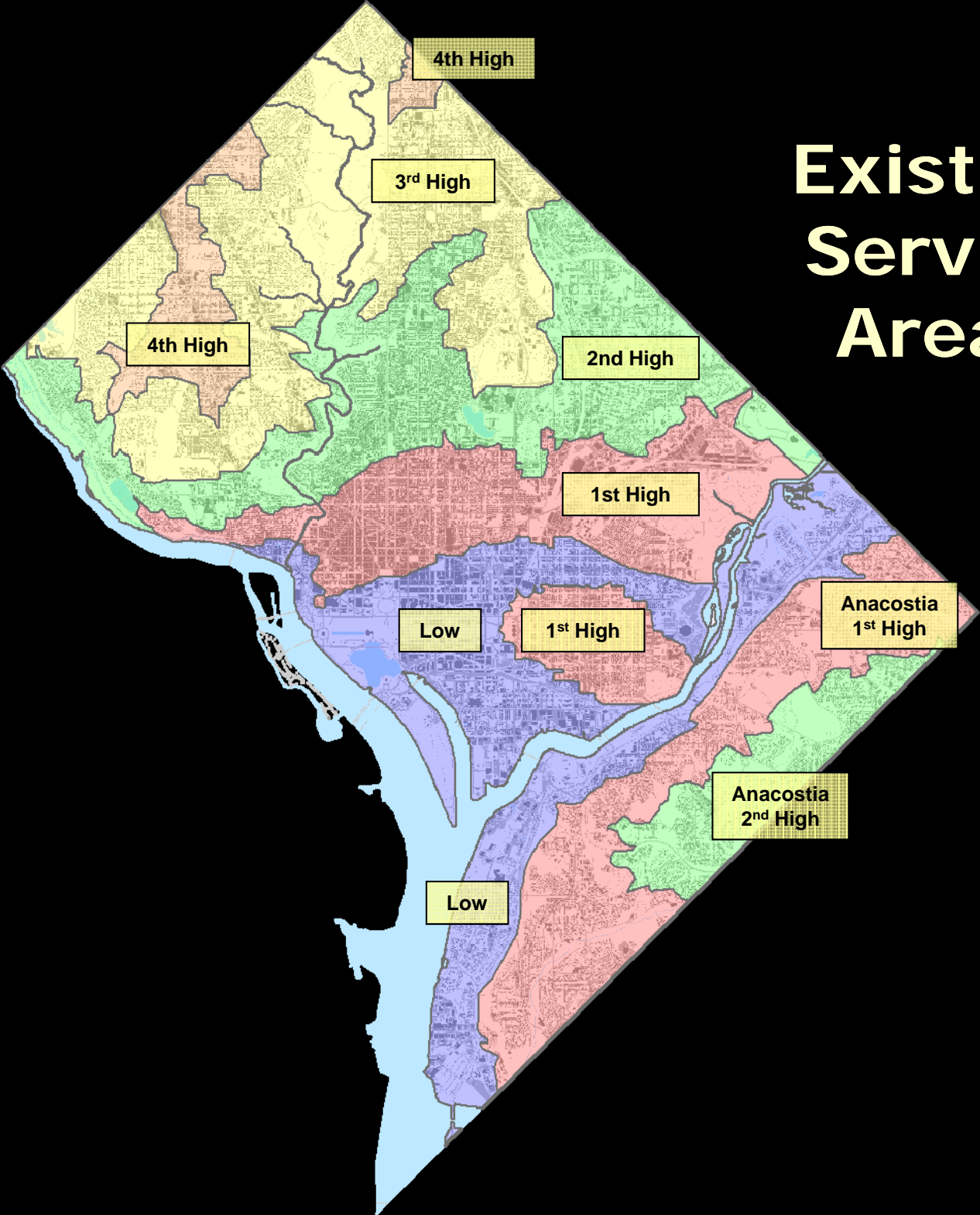


# Benefits from \$85.5 Million in DC WASA Improvements

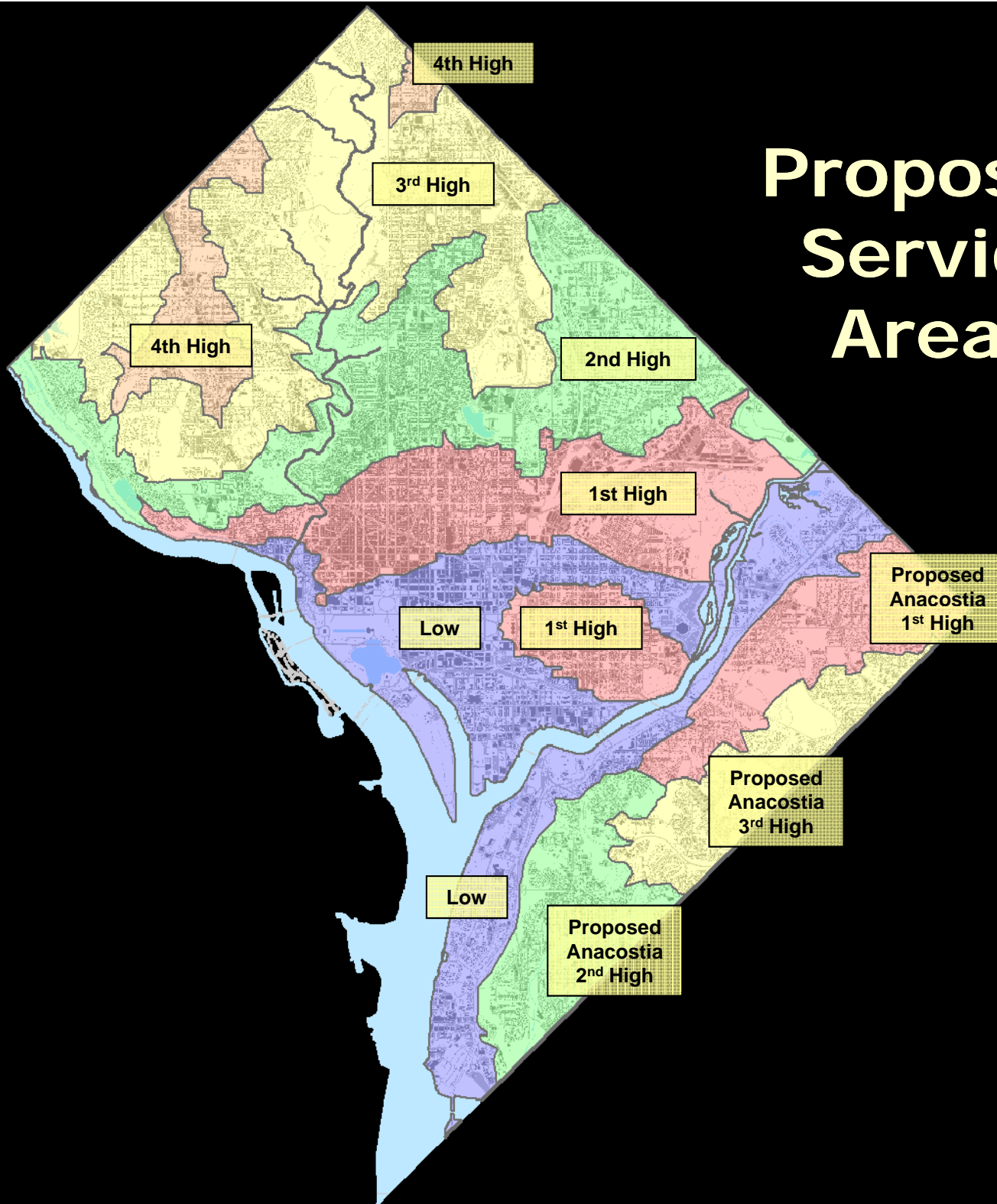
- Maintains water quality
- Improved fire protection
- Improved water pressure
- Enhanced reliability for the community
- Improves usability of storage at existing Ft. Stanton Reservoirs
- Addresses water, fire, and maintenance challenges at St. Elizabeths campus
- Supports reasonable future development



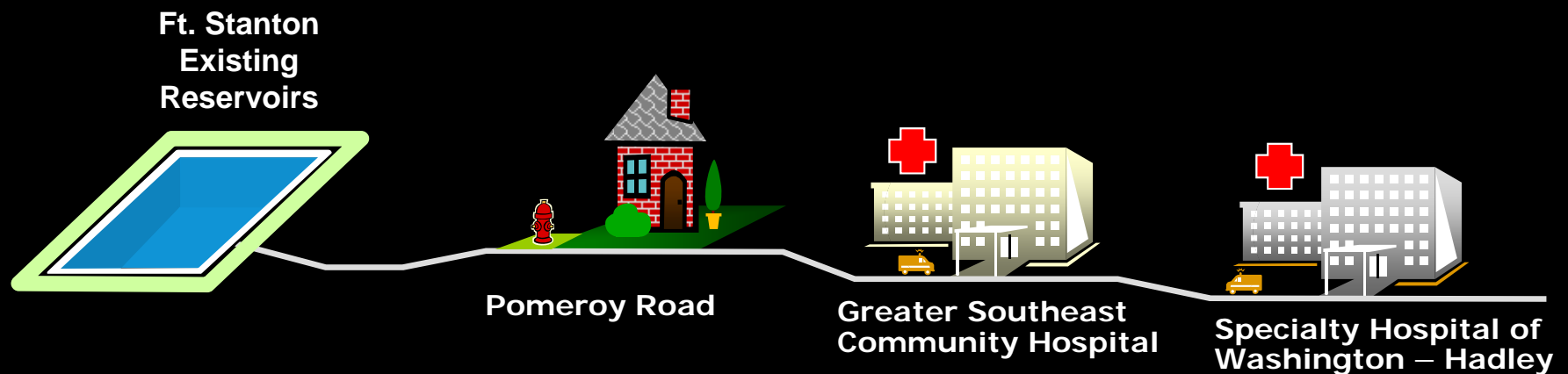
# Existing Service Areas



# Proposed Service Areas



# Existing Conditions

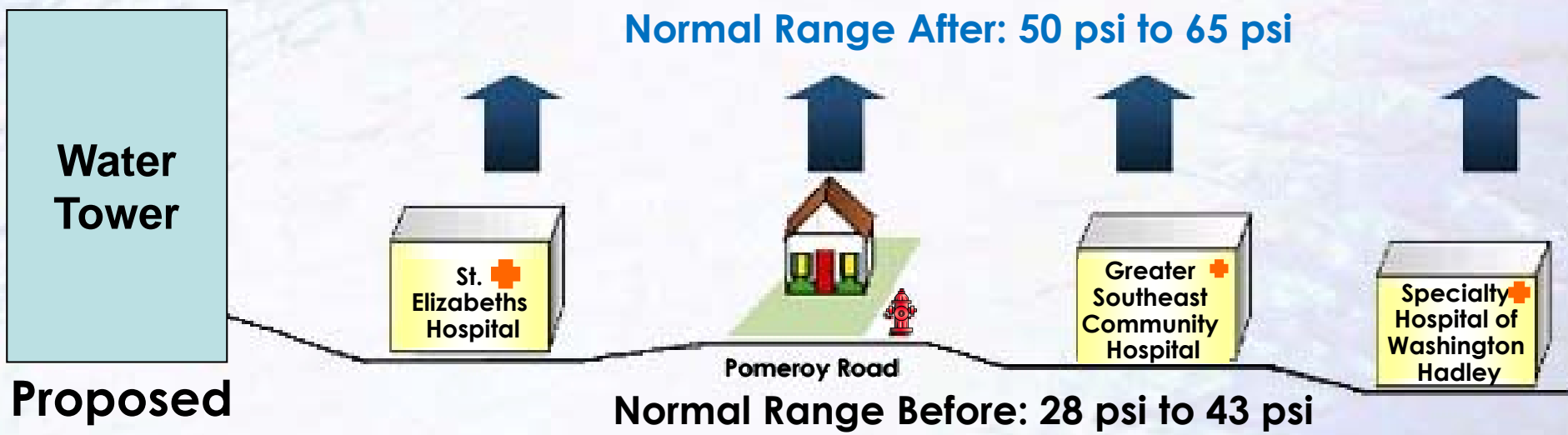


Current Pressure Range: 28 pounds per square inch (psi) to 43 psi

**35 psi – DC WASA low pressure acceptability guideline**

# Conditions Following Improvements

*After*



50–80 psi – optimum water pressure

# Why a Water Tower?

- Industry Standard – Open System with Gravity to Maintain Pressures
  - Minimal mechanical working parts involved and is less vulnerable to mechanical breakdowns
  - Less vulnerable to power failure
  - Emergency reserve for system outages
  - Does not make noise or emit fumes
  - Significantly more reliable
  - Less costly to operate and maintain
  - Lifespan is 50+ years
  - More energy efficient
  - Gravity storage minimizes surges (water hammering), while pumped systems exacerbate surges.

# Why a Water Tower?

- Common Industry Practice – Gravity System to Maintain Pressures

DC WASA has mostly gravity storage. Some are reservoirs that have sufficient elevation without erecting towers because ground elevations are high enough. WASA has three existing towers and four reservoirs. This service area is not at a sufficient ground elevation to be served by a reservoir and will require a water tower.



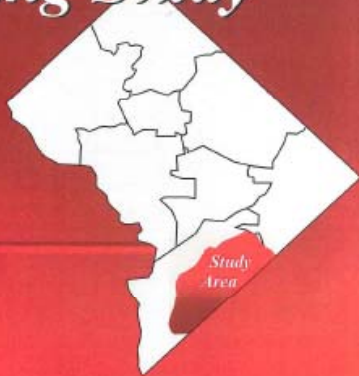
# Are There Other Options?


- Pumping Systems – However, there are at least 7 major disadvantages
  1. System relies on pumps to maintain pressure and provide fire flows, increased potential for failure
  2. Requires complex multiple pump operations –more wear and tear
  3. Requires a more comprehensive back-up source of power (generator)
  4. Complicated controls
  5. Potential for “water-hammer” that break pipes
  6. Additional noise
  7. Significantly higher maintenance attention requiring additional resources and costs

# OK, I understand why we need a Water Tower, but where should it go?

*Water Tower Siting Study*  
*for the*  
Proposed Anacostia  
Second High  
Pressure Zone  
District of Columbia

*Phase I – Site Selection*



 District of Columbia  
Water and Sewer Authority  
Washington, D.C.

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# Scope of Siting Study

1. Document that other sites were evaluated
2. Establish the most appropriate location
3. Provide broad range of considerations for evaluated sites
4. Rank and summarize characteristics of the following 4 sites:
  - Bald Eagle Recreation Center
  - Camp Simms
  - M. C. Terrell Elementary School
  - **St. Elizabeths Hospital East Campus**
5. Conduct additional photographic documentation efforts for all sites

# Evaluation Criteria

- DC WASA evaluated the sites based on:
  - Topography and elevation
  - Hydraulic considerations
  - Site availability and land ownership
  - Constructability
  - Surrounding environment
  - Historical, natural, cultural, and archaeological resources impacts
  - Visibility impacts
  - Airspace impacts
  - Cost

# Why was the St. Elizabeths site chosen?

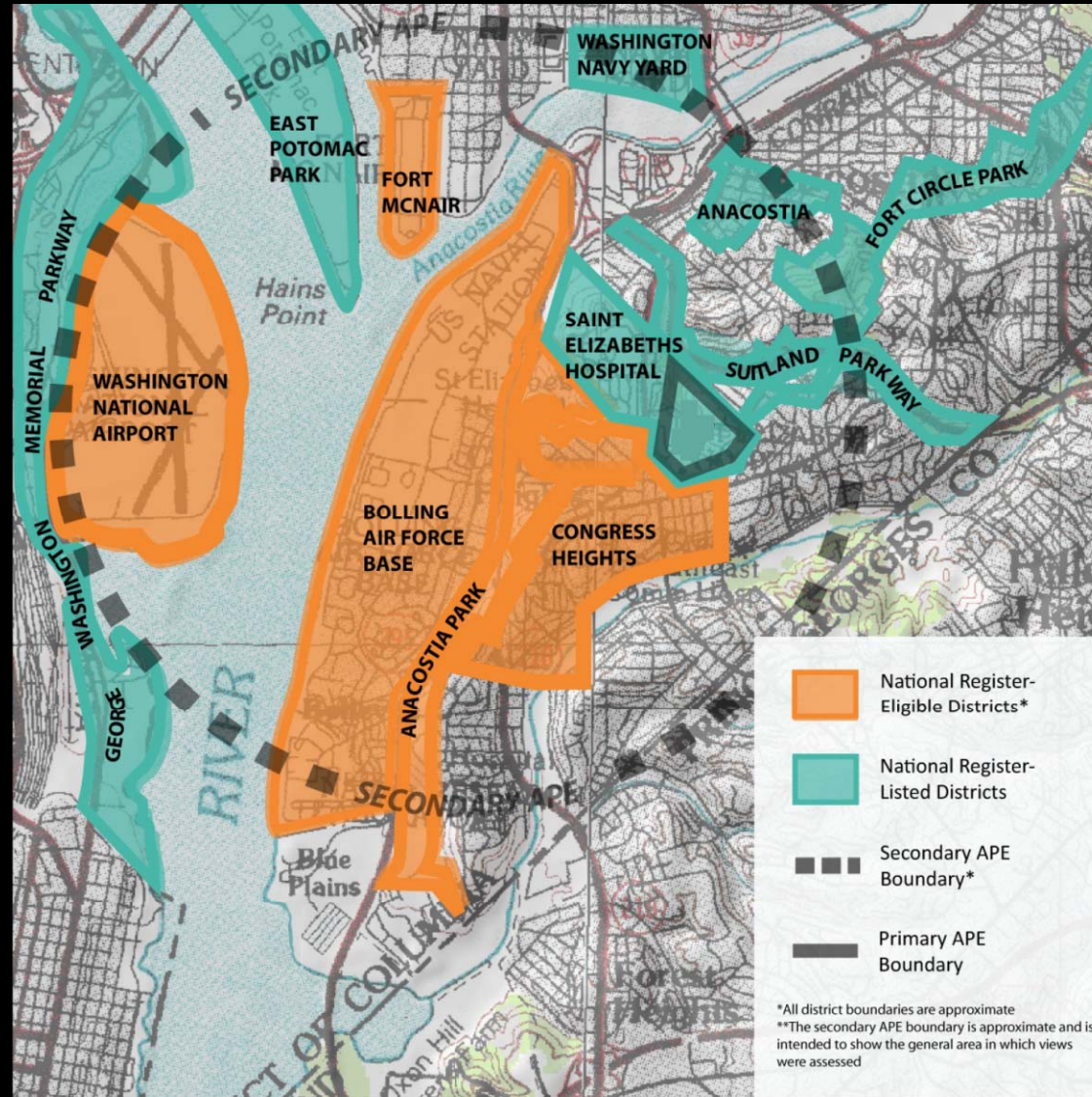
- Optimal ground elevation
- Centrally located in relation to problem areas
- Close to existing transmission pipes
- Location will support current and increased development at St Elizabeths
- Location will support future development East of the Anacostia River
- Minimal impact on existing residential community

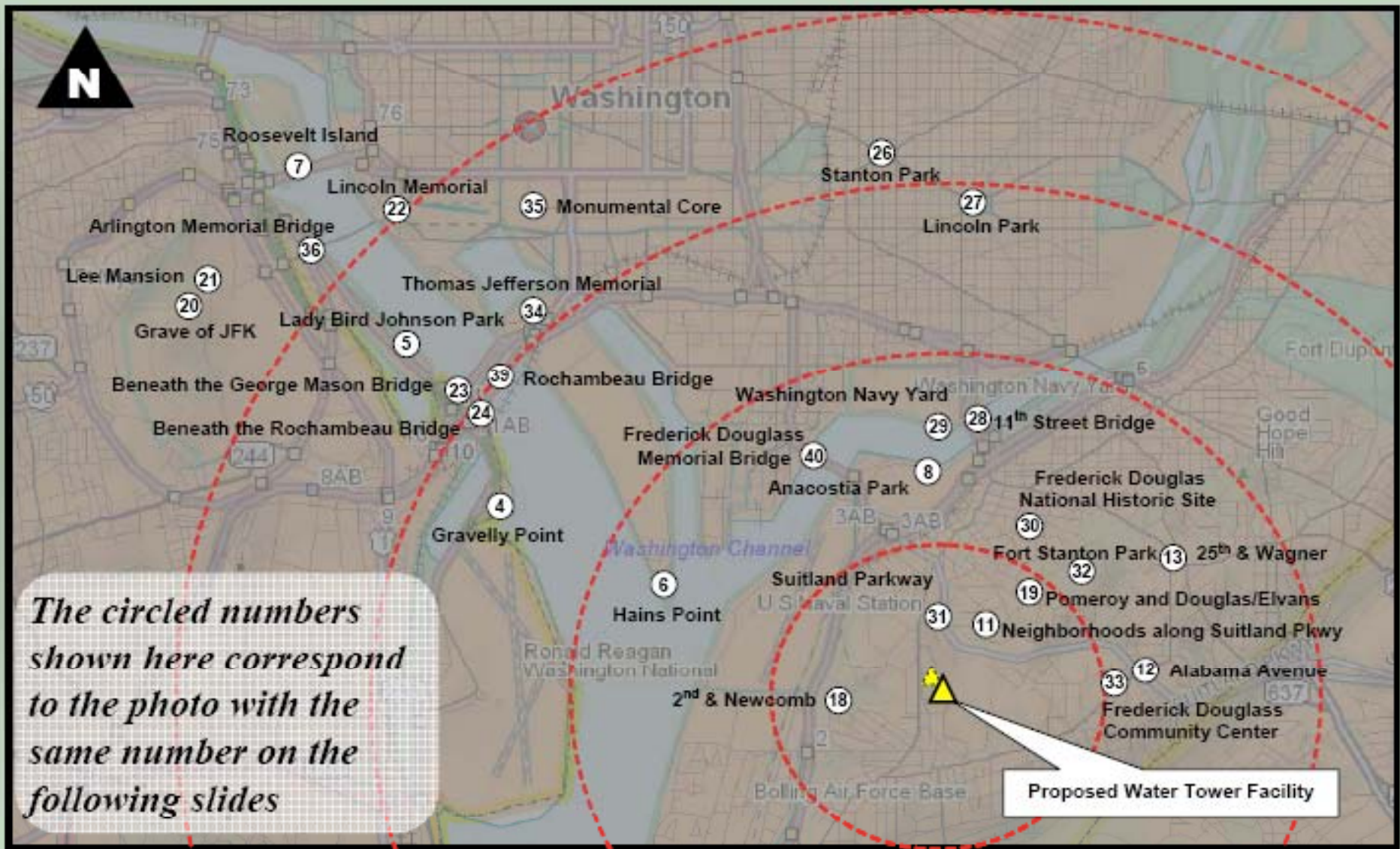


*Entrance to St. Elizabeths Hospital Campus  
with view of existing water tower*

# *What are the concerns and issues?*

# Area of Potential Effect (APE) Analysis

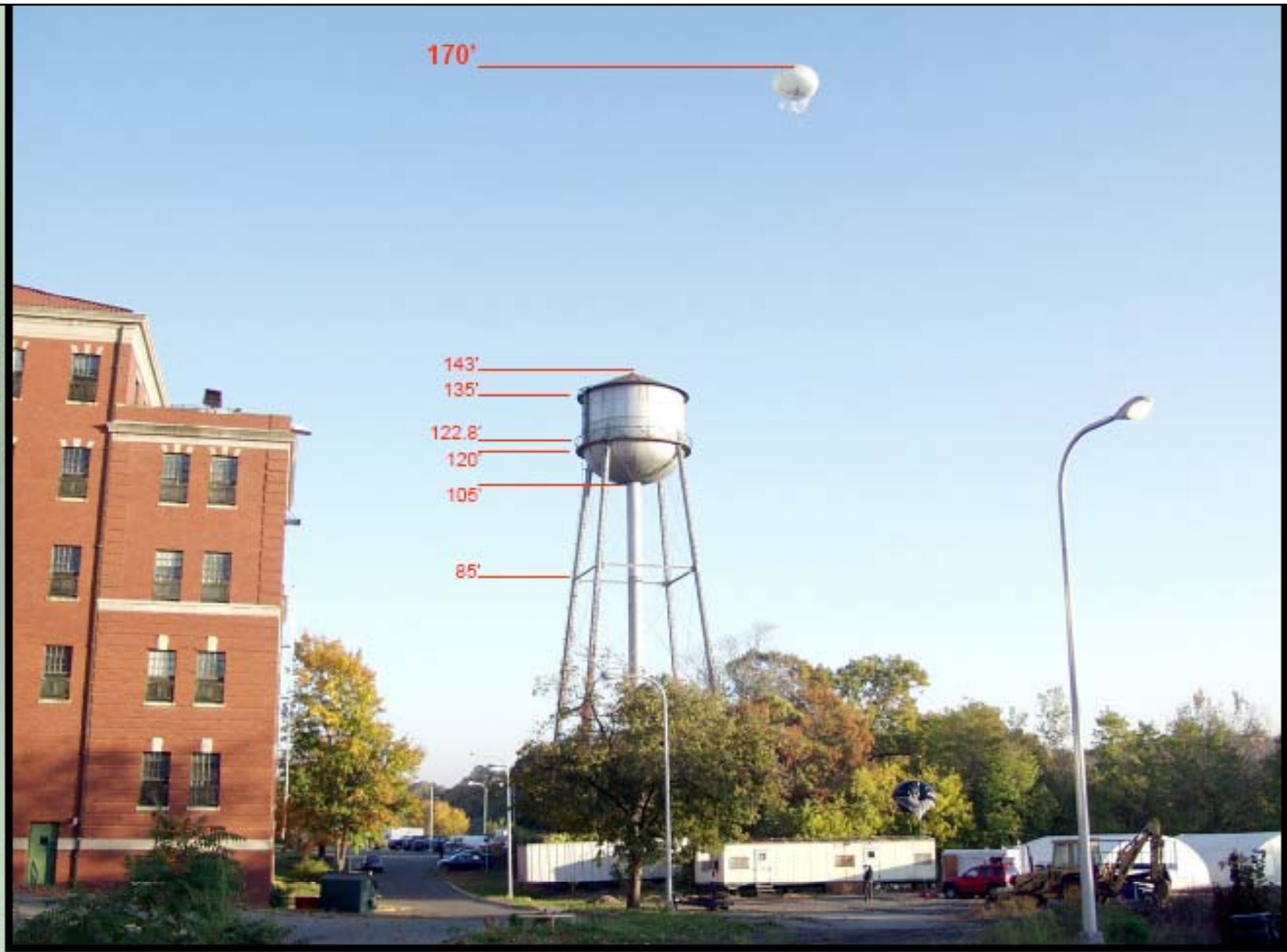




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# View of Existing Water Tower

slide  
25



*Tower is visible from  
this angle year round*



Pedestrian view indicates, with yellow circle, the balloon test @170'.





***Tower is visible from  
this angle year round***

**Pedestrian view indicates, with yellow circle, the balloon test @170'.**



Distance to Site:  
0.60 miles

*Tower is visible  
from this angle*



Pedestrian view indicates, with yellow circle, the balloon test @170'.

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Map

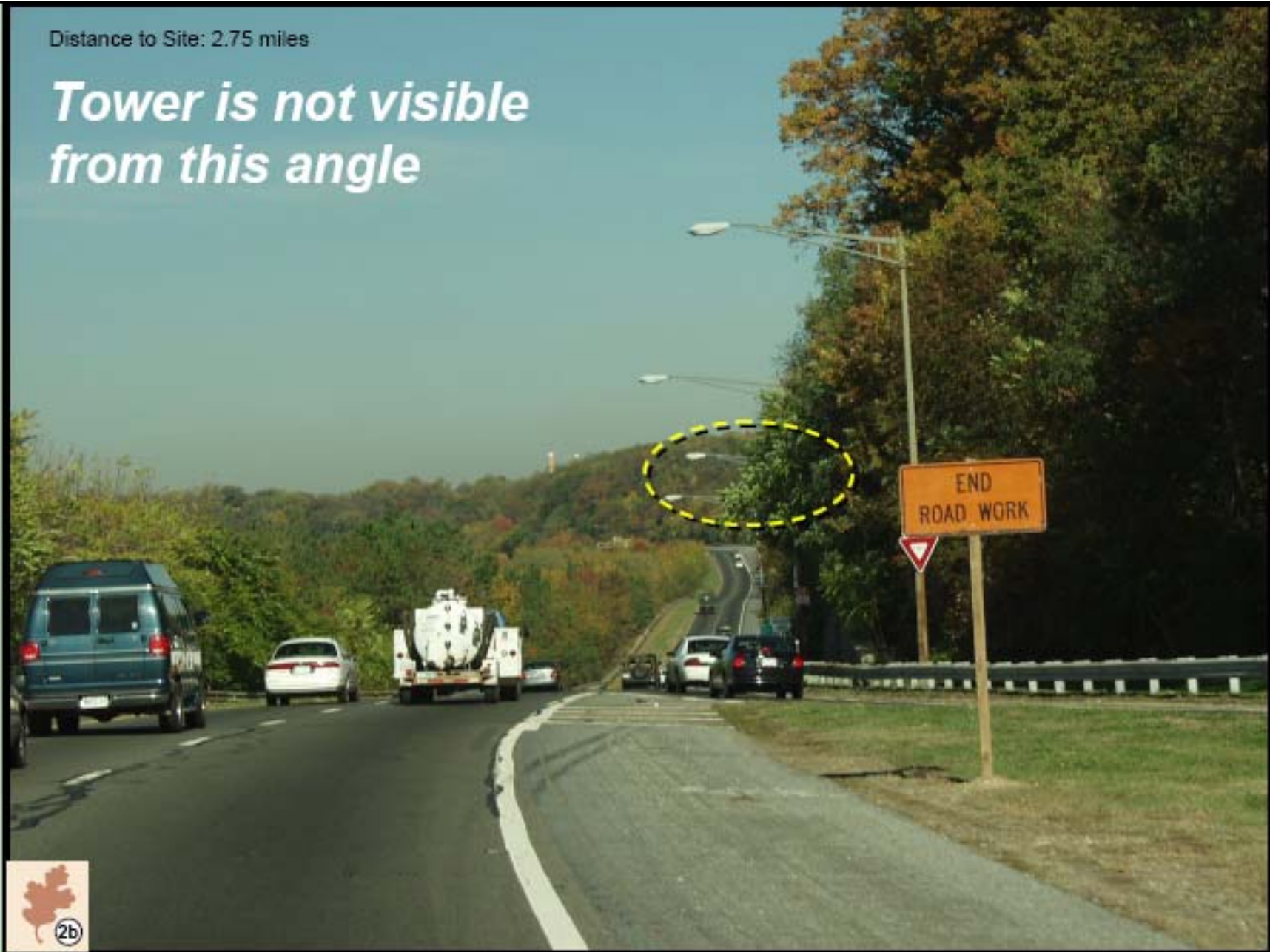
View from Congress Heights Metro looking northwest

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28



Distance to Site: 2.75 miles

*Tower is not visible  
from this angle*



Motorist view indicates the balloon test @170'.

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Looking Northbound on I-295

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29



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Distance to Site: 0.50 miles

***Tower is visible  
from this angle  
year round***



**Pedestrian view indicates, with yellow circle, the balloon test @170'.**

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**View from Suitland Parkway**

slide  
30



Distance to Site: 1.70 miles

***View from Hains Point  
looking south east to  
the U.S. Naval Station.***

***Tower is visible from  
this angle***



Pedestrian view indicates, with yellow circle, the balloon test @170'.

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Map

View from Hains Point

slide  
31



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Distance to Site: 4.20 miles

*View from Memorial Bridge  
looking south east across  
the Potomac River.*

*Tower is partially visible  
from this angle*



Pedestrian view indicates, with yellow circle, the proposed site.

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Map

View from Arlington Memorial Bridge

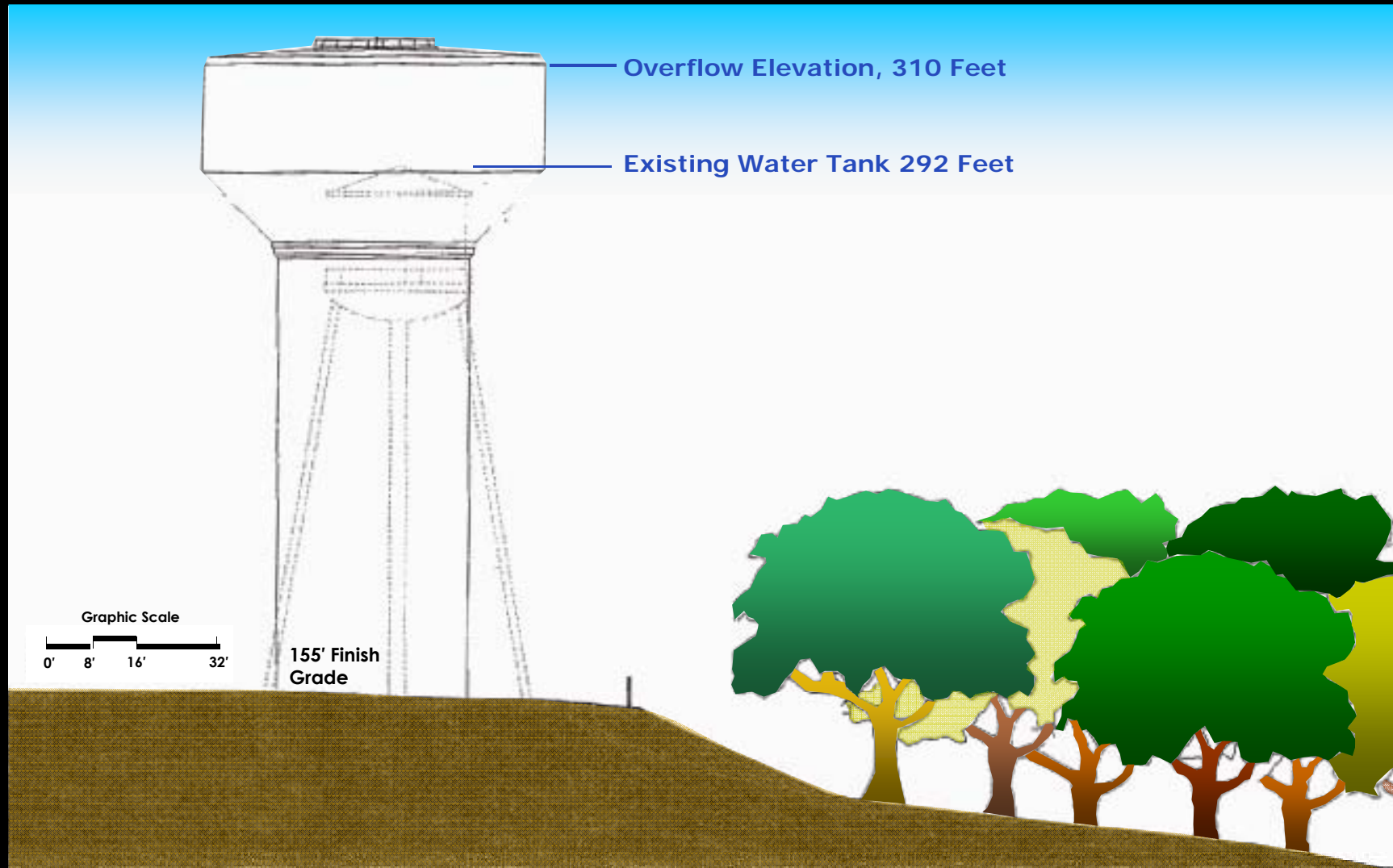
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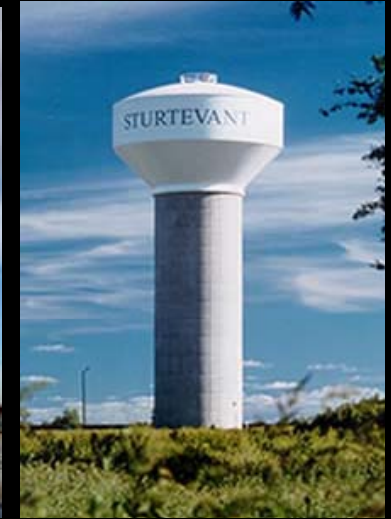


# St. Elizabeths Elevated Storage Water Tower



# How can modern infrastructure respond to a historic campus?

- Understanding the new demands
- Understanding the historic context
- Develop positive solutions that integrate new and old.



## Potential Sites at St. Elizabeths

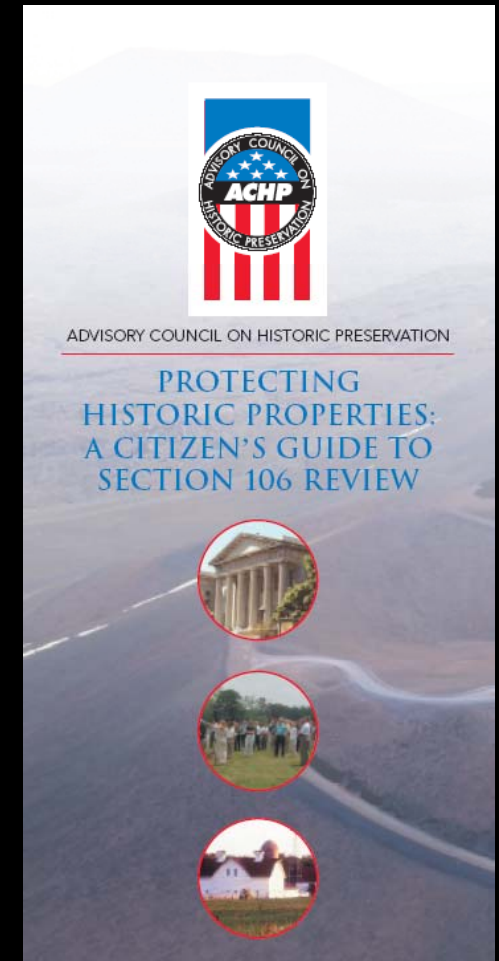
1. Mitigate **Adjacency** to Historic Resources
2. Mitigate the obstruction of **Views** of Historic Resources from within and outside the St. Elizabeths East Campus.



# What is the Section 106 Process?

## *Federal Requirement:*

Section 106 requires agencies to consider the effects of their actions on historic properties and provide the Advisory Council on Historic Preservation (ACHP) and other consulting parties an opportunity to comment on projects prior to implementation.



# Section 106: Key Steps

## Step 1: **Invitation** to the Consulting Parties

- Deputy Mayor's Office for Planning and Economic Development (DMPED)
- DCOP
- DC-HPRB
- CFA / NCPC
- GSA / DHS
- National Park Service (NPS)
- ANC's, local residents
- Historic Preservation Groups (DCPL, et al.)
- other concerned parties

## Step 2: **Consultation**

## Step 3: **Memorandum of Agreement (MOA)**

# Section 106:

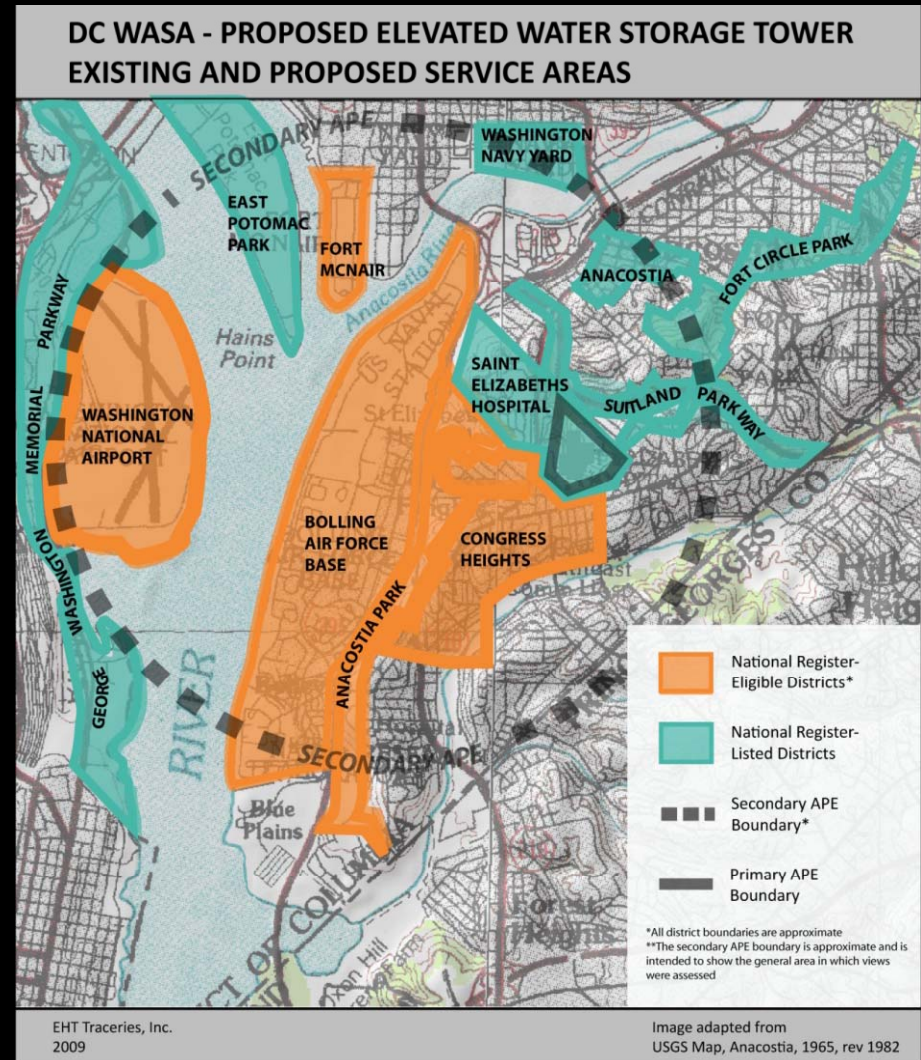
## Regulatory & Community Approval Issues

Does the proposed structure have an **Adverse Effect** on the existing Historic Resource - St. Elizabeths East Campus, a National Historic Landmark?



# Section 106: Area of Potential Effect (APE)

1. Adjacency to Historic Resources
2. Visual Impact



# Area of Potential Effect (APE): Adjacency to Historic Resources

- Existing tower is:
  - located ~50' to the east of the Dix center building (Maple Quad)
  - ~45' square at its base
  - ~35' diameter at its top
  - ~130' tall
- Proposed tower is:
  - ~60' diameter at its base
  - ~90' diameter at its top
  - ~175' tall
- How can the potentially adverse impact of this new, large scale element placed in close proximity to the existing historic buildings be mitigated or minimized?
- Evaluation of alternate sites within the St. Elizabeths Campus that would reduce the proximity of the new tower to the existing historic buildings.

# Area of Potential Effect (APE):

## Visual Impact

- How does the proposed tower affect the existing view sheds within the campus?
- How does the proposed tower affect the existing view sheds of the campus from outside its boundaries?
- How is the proposed tower visible on the “rim of the topographic bowl”, overlooking the DC monumental core?
- How can this potential effect be evaluated and studied?
  - Balloon tests
  - Computer visualizations / modeling



# Summary:

## Section 106 Schedule

1. Invitation to Consulting Parties (6/25/2009)
2. Meeting 1 (7/21/2009)
3. Meeting 2 (August 2009)
4. Meeting 3 (September 2009)
5. Concurrent Activities: (4/2009-12/2009)
  - On-going coordination within DCWASA + Design Team to vet various options
  - On-going coordination with Key governmental Stakeholders: DCOP, DMPED, DC-HPRB, CFA, NCPC, GSA/DHS, NPS
  - Negotiation of Terms of MOA

# Section 106 Schedule: Review Conclusion

6. File for Concept Approval with HPRB (9/2009)
7. Present to HPRB: (10/2009)
  - a. If Concept approved and found consistent with the “Act” (HPRB Law), then concept and terms of MOA referred to HPO Staff for coordination with ACHP and execution  
or...
  - b. If Concept not approved and found inconsistent with the “Act”, then case referred to Mayor’s Agent for approval based on Special Merit  
*(If necessary, previously scheduled by HPO for 11/2009).*
8. Submission of MOA to ACHP (11/2009)
9. Final MOA signed (12/2009)
10. Final design/engineering & construction of Water Tower (2010-2013)

# Consulting Party Questions and Comments

Thank you for your participation!