Work Session Discussion

North Castle Water District #1 Potential Distribution System Improvements

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Presentation Overview

- **Background/History**
- **District Description**
  - System Details
  - Distribution System Overview
  - System failures & concerns
- **Recent Improvements**
- **GHD Modeling Study of System**
  - Results of study
  - Various Recommendations
    - Phased approach –sections
    - Source upgrade/improvements
- **Proposed System Upgrades**
  - Areas of improvement
  - Estimated Cost
  - Funding/Grants
    - Cost per district property
  - How Improvements will be made
    - Explanation of different scenarios and comparisons
- **Next Steps**
  - RFP for consultant
    - Analysis and design
    - Bid documents
    - Grant applications
    - Regulatory approvals
    - Construction management
- **Questions/Discussion**

BACKGROUND/HISTORY I

Water District #1 Background

The WD #1 service area is located within the North White Plains section of town. It is bound on the north by the Kensico Dam and the Bronx River Parkway to the west. The distribution system was constructed between the late 1920s and late 1960s. Potable water is supplied to the system by one supply well (Valhalla well) and the Kensico Reservoir through a connection to the City of White Plains transmission main at the District's North Broadway booster pump station.

Reservoir water is conveyed to the Broadway pump via a 36-inch main and then to the Overlook Road water storage tank via a 6-inch PVC dedicated transmission main. Prior to being conveyed to the Overlook Tank, water undergoes disinfection by chlorination and is then treated with UV disinfection at the pump station.

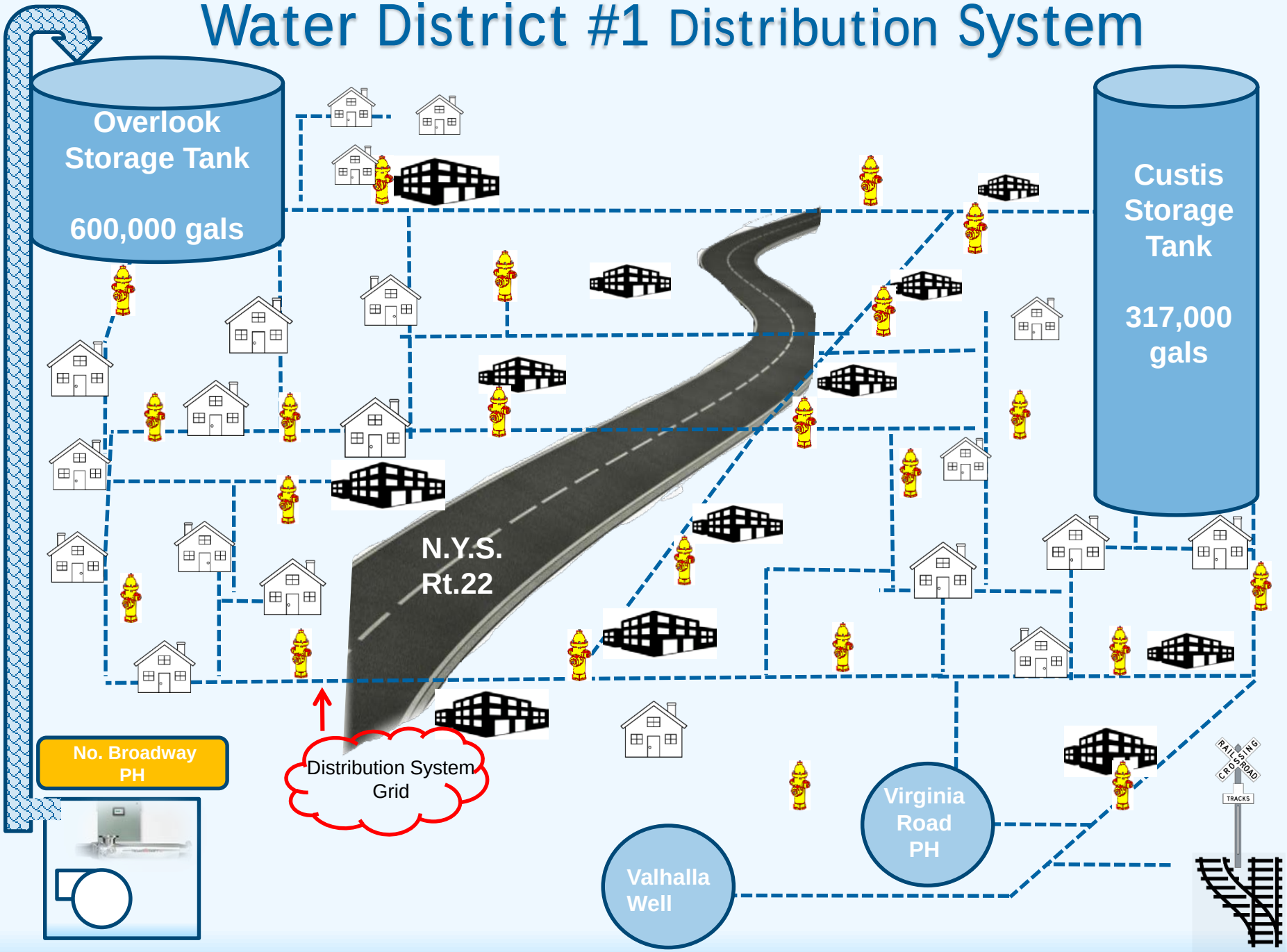
DISTRICT DESCRIPTION II

WD1 Existing System

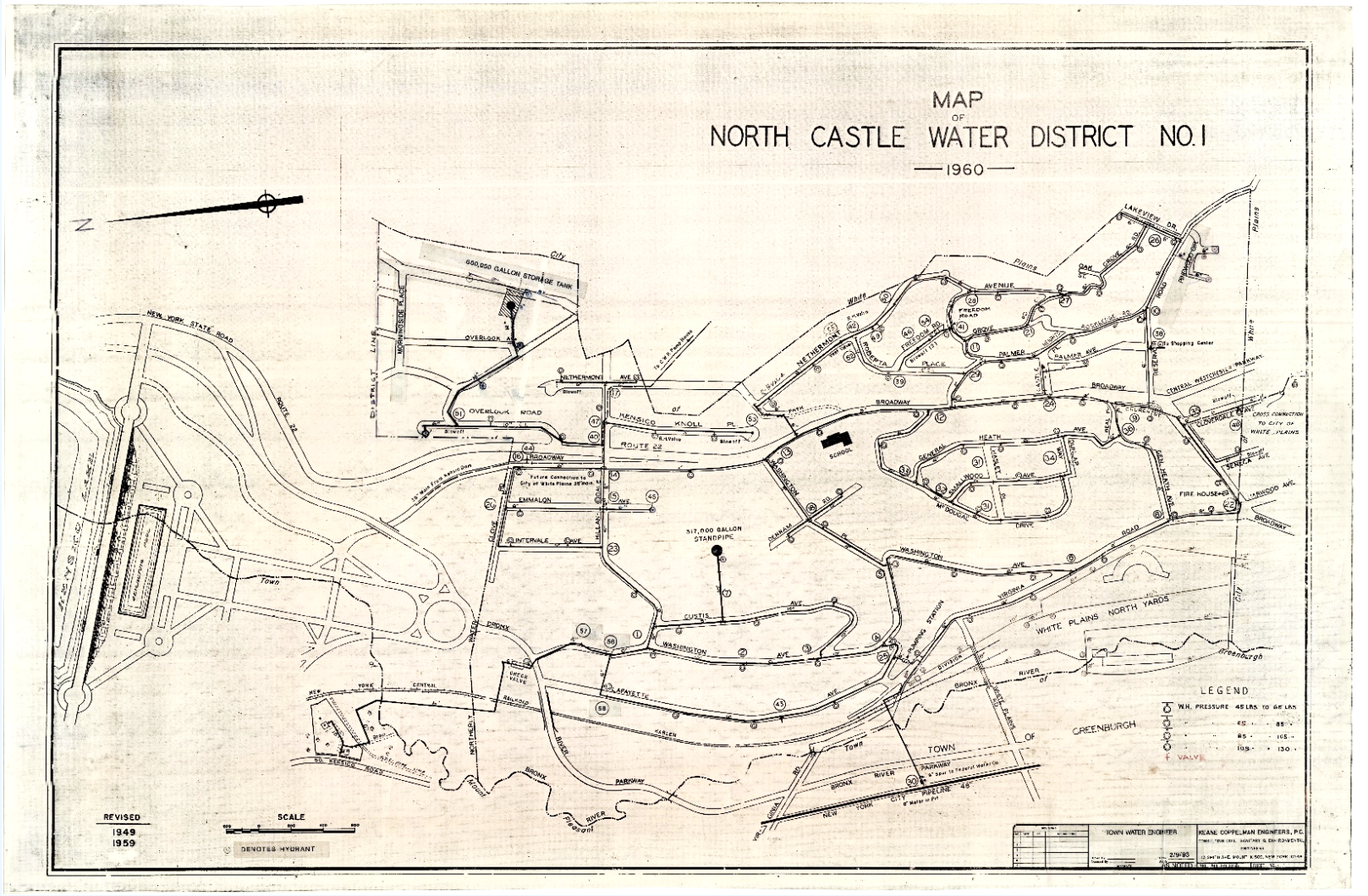
Water District No. 1 – General Statistics

- Supplies domestic water and fire protection to North White Plains
- 700 Service **connections**
- **591 Residential --- 109 Commercial**
- Two Water Storage Tanks– Overlook: 600,000 gals. Custis: 317,000
- Approximately 90,000,000 gallons sold annually
- 93 Fire Hydrants
- Approximately 8.5 miles of water mains
- Most common pipe diameter 6” –approx. 70% of the system
- Oldest Water Mains approximately 90 years old
- Metered Sales: 230,000 gpd
- Average Daily Production: 325,000 GPD *(past 5 years)*
- Estimated Non-revenue water is 25%

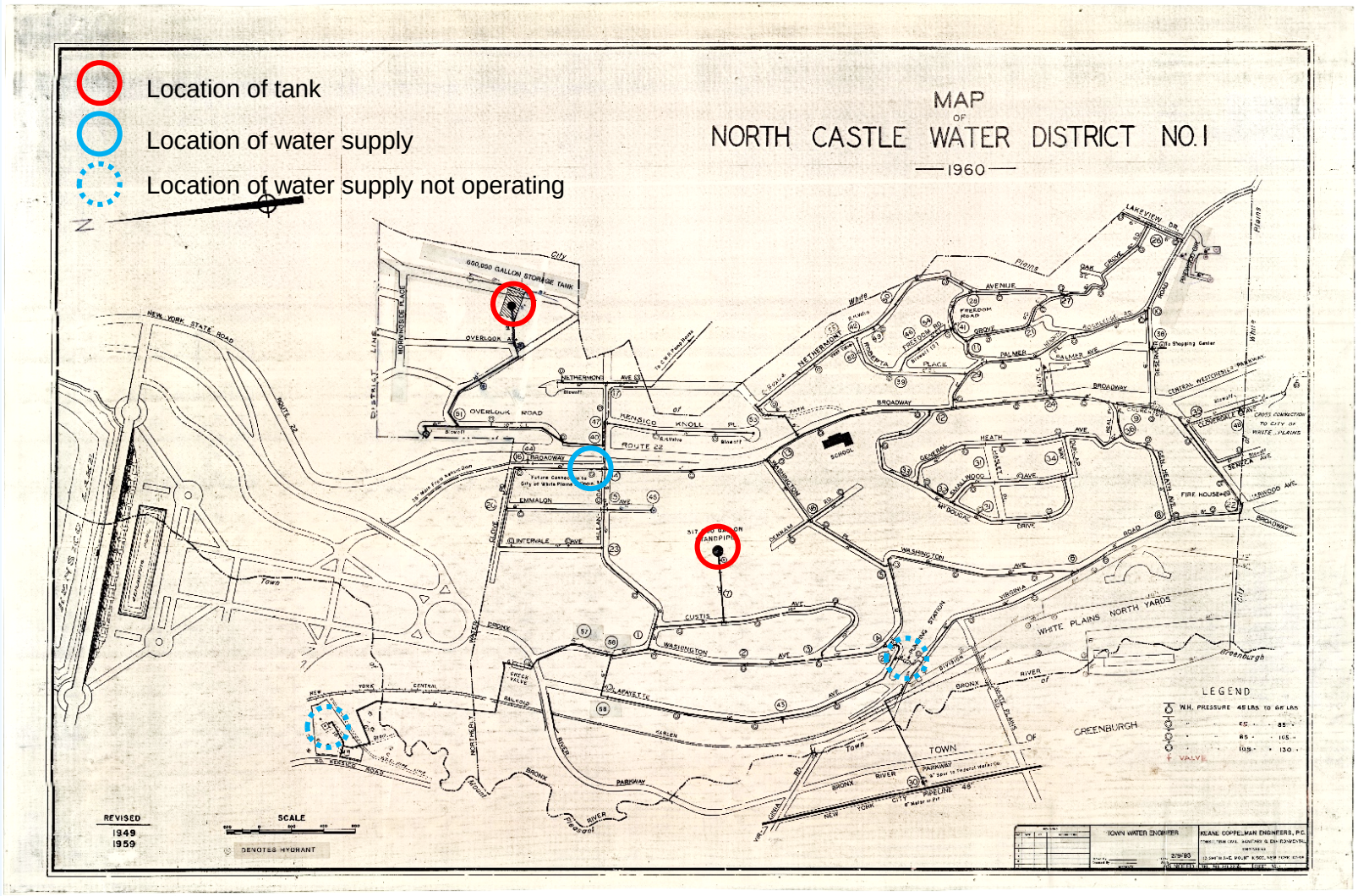
Water District #1 Distribution System



Water District #1 Map



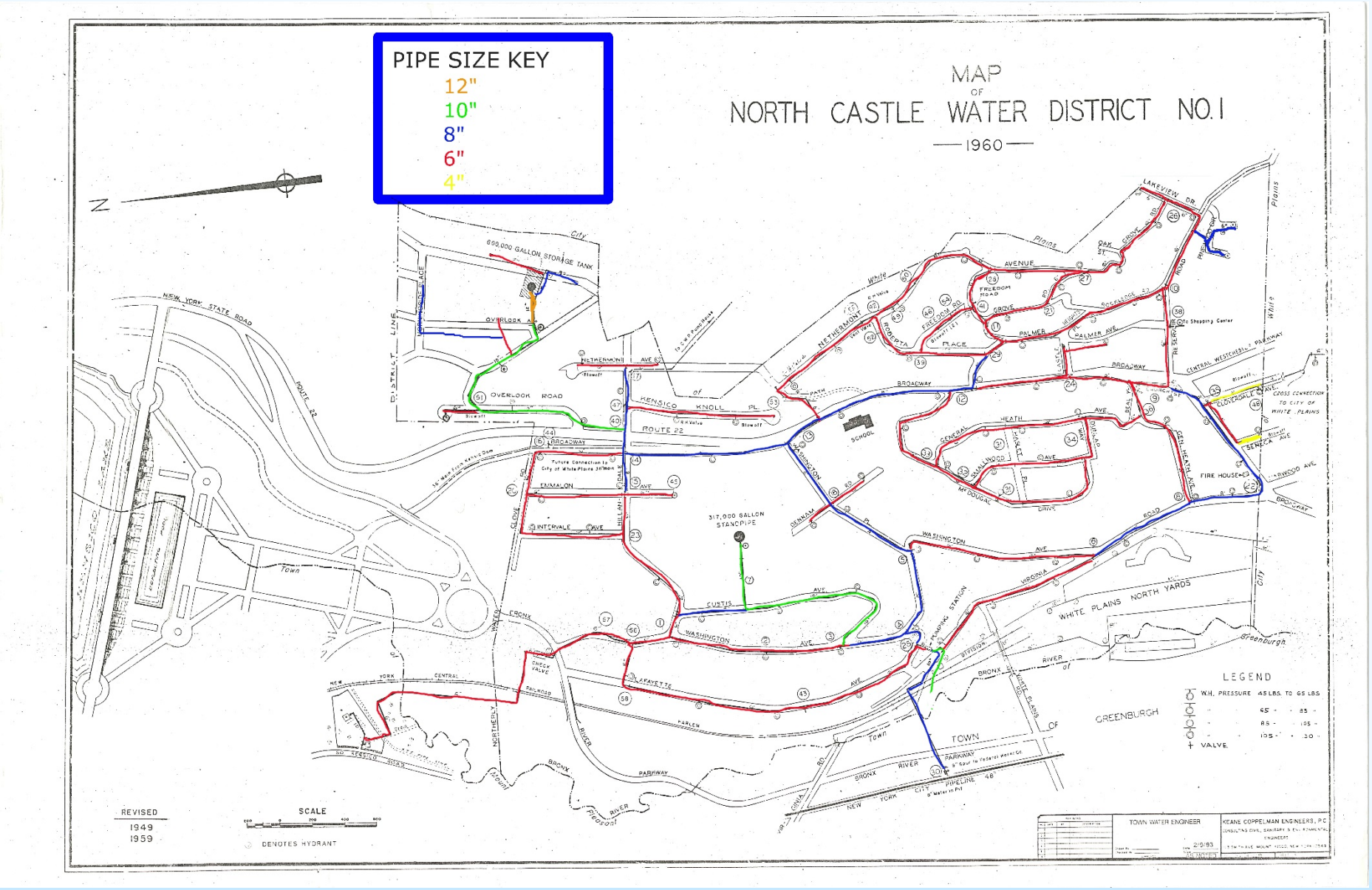
Water District #1 Tanks & Sources of Supply



Water District #1 Distribution System

Water Main Data		
Diameter (In.)	Length (Ft.)	% of Total
4”	615	1.4%
6”	31,193	69.0%
8”	9,489	21.0%
10”	3,672	8.1%
12”	212	0.5%
FEET	45,181	
MILES	8.56	

Water District #1 Distribution System



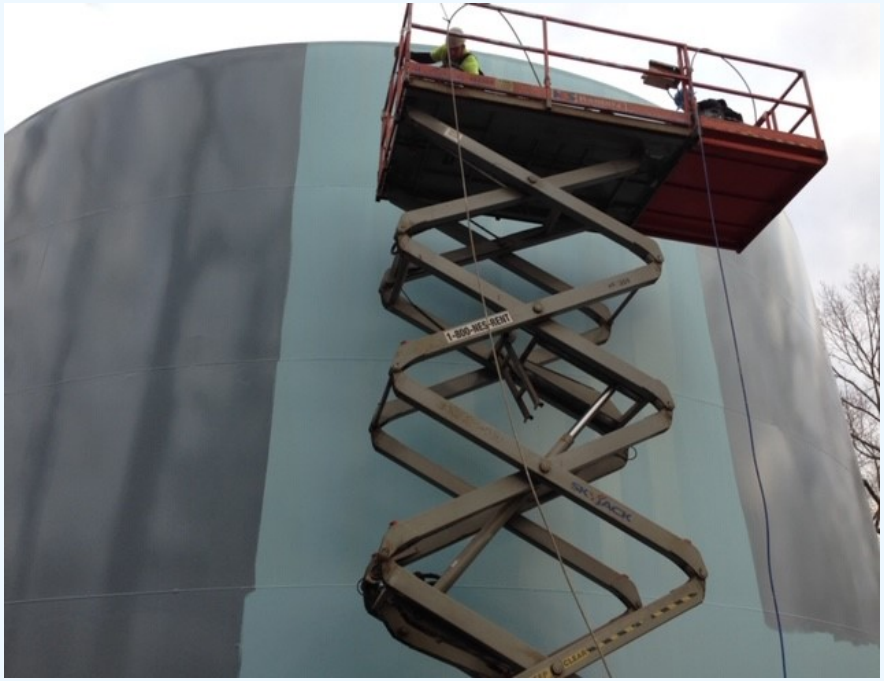
System Water Main Issues

1. Smallwood Avenue Break
2. MacDougal Break
3. Corroded Gate Valve on Emmalon Avenue
4. Gate Valve Repair on Emmalon Avenue

RECENT IMPROVEMENTS III

Recent Improvements

Both Water Storage Tanks were Rehabilitated



2013 -2016 Rehabilitation Cost
$1,371,820

North Broadway Source of Supply Modified to include Ultraviolet Disinfection

Regulatory requirement 2016
Modification Cost $1,200,000
Due to Grant Award bonded debt was
$535,582

GHD MODELING STUDY IV

Model Calibration Effort

Hydraulic models require calibration before being used.

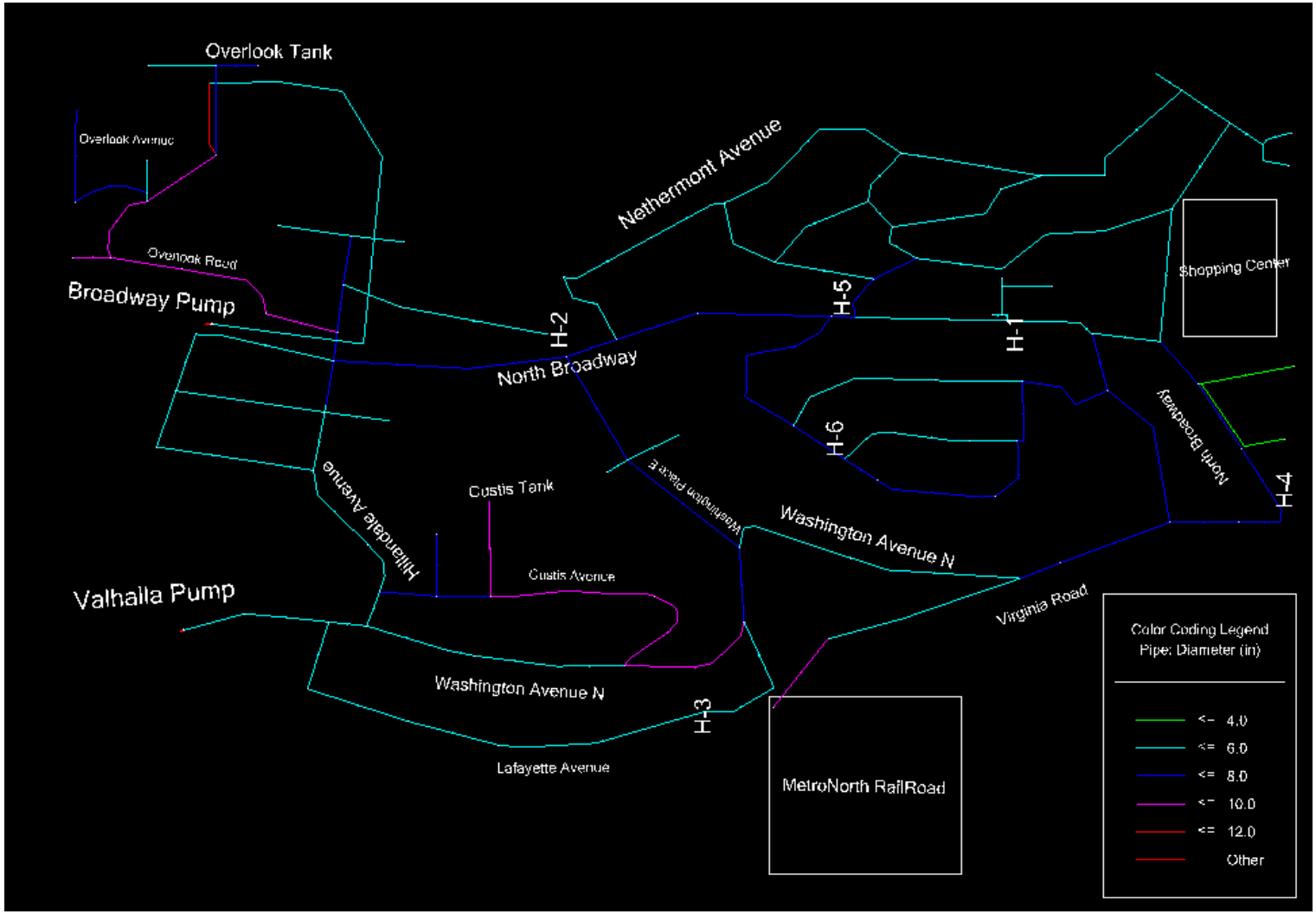
- Gather field data, in order to test inside the computer model.
- Additional information regarding water main length, size, material, static pressure at various elevations in the system, etc.

Water main conditions being fragile, prevented recent hydrant testing activity.

- Attempts at using past department and ISO data were unsuccessful: Model would not accurately calibrate.

    1. Potential for closed valves
    2. Age / accuracy of available flow data

Water District #1 Pipe Diameter Map



Recommended Improvements

GHD believes that the best option for improving the system is pipe size increase and added mains:

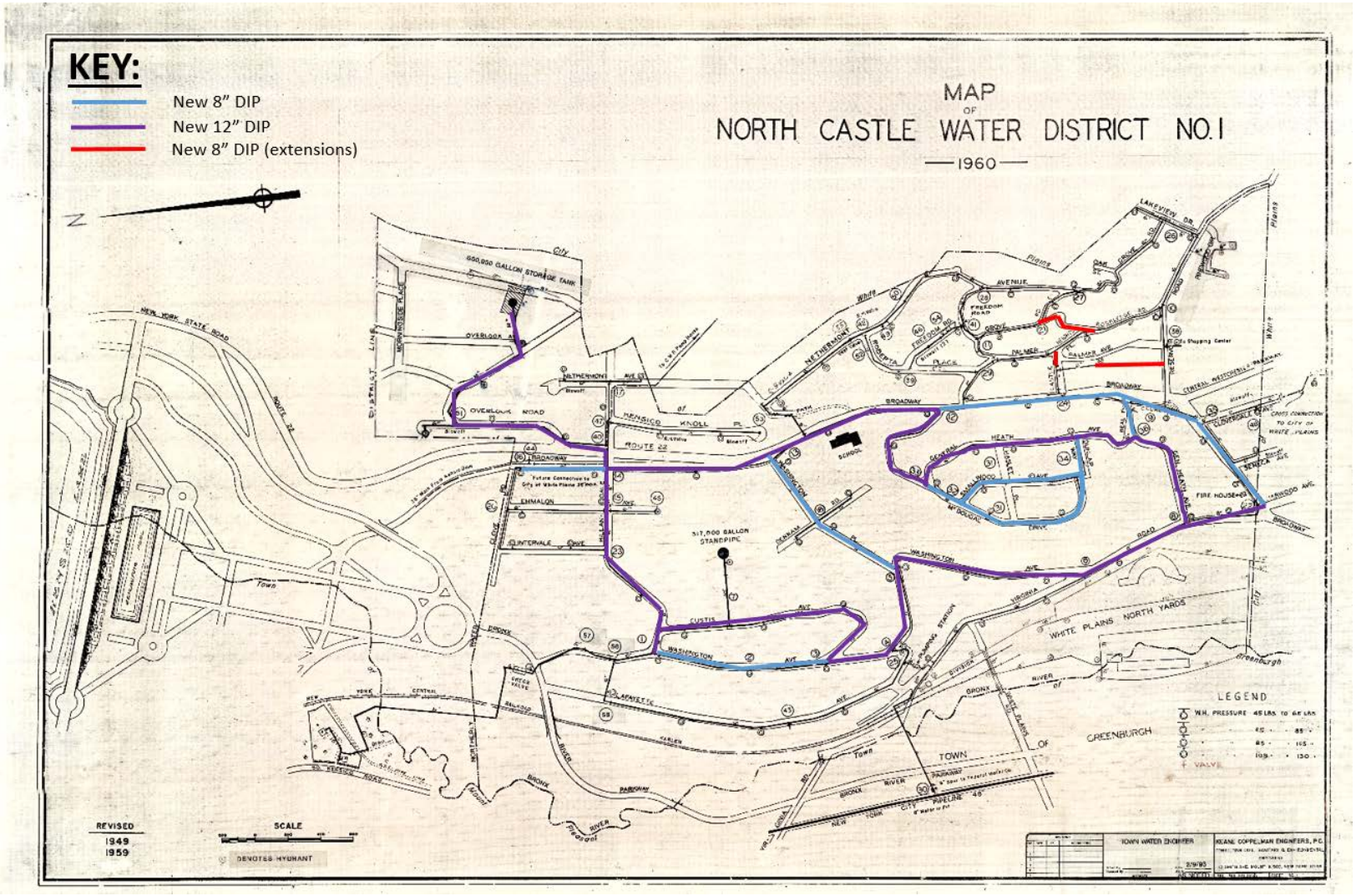
1. McDougal Drive, General Heath, Smallwood Place, Dunlop Way (from No. Broadway to Virginia Rd.) and Palmer Avenue areas (priority)
2. North Broadway, Hillandale Avenue, Virginia Road, and Washington Avenue (hydraulics and condition)

Water Source and Lower Pressure issues in the higher elevations

- Valhalla Well
- Virginia Road PS
- Low Pressures near Overlook Tank

PROPOSED SYSTEM UPGRADES V

Water District #1 Main Rehabilitation Recommendations



Recommended Improvements
Cost Opinions

1. **Priority Replacements--** McDougal Drive, General Heath, Smallwood Place, Dunlop Way (from No. Broadway to Virginia Rd.) and Palmer Avenue areas , 6,100 LF
   - Estimated Project Cost: **$1,940,000**
2. **Recommended Replacements**—North Broadway, Hillandale Avenue, Virginia Road, Washington Avenue, 10,900 LF
   - Estimated Project Cost: **$3,500,000**

FUNDING

Estimated Amount To Bond = $5,440,000

WD1 Assessed Value = $8,676,350

WD1 Avg. Home Assessment = $10,286

Current Interest Rate 2%

FUNDING

Bond Estimate = $5,440,000 @ 2%

Term	25 Years	35 Years	40 Years
Annual District Debt Service	$278,640	$217,612	$198,863
Average WD1 Home Annual Cost	$330.33	$257.98	$198.86

How Improvements will be made

- Conventional Water Main Construction
- Temporary water mains & services
- New mains installed in existing trenches

NEXT STEPS VI

Next Step = RFP for a Consultant

1. Analysis and Design
2. Regulatory Approvals
3. Grant Applications
4. Bid Documents
5. Construction Management

Questions?