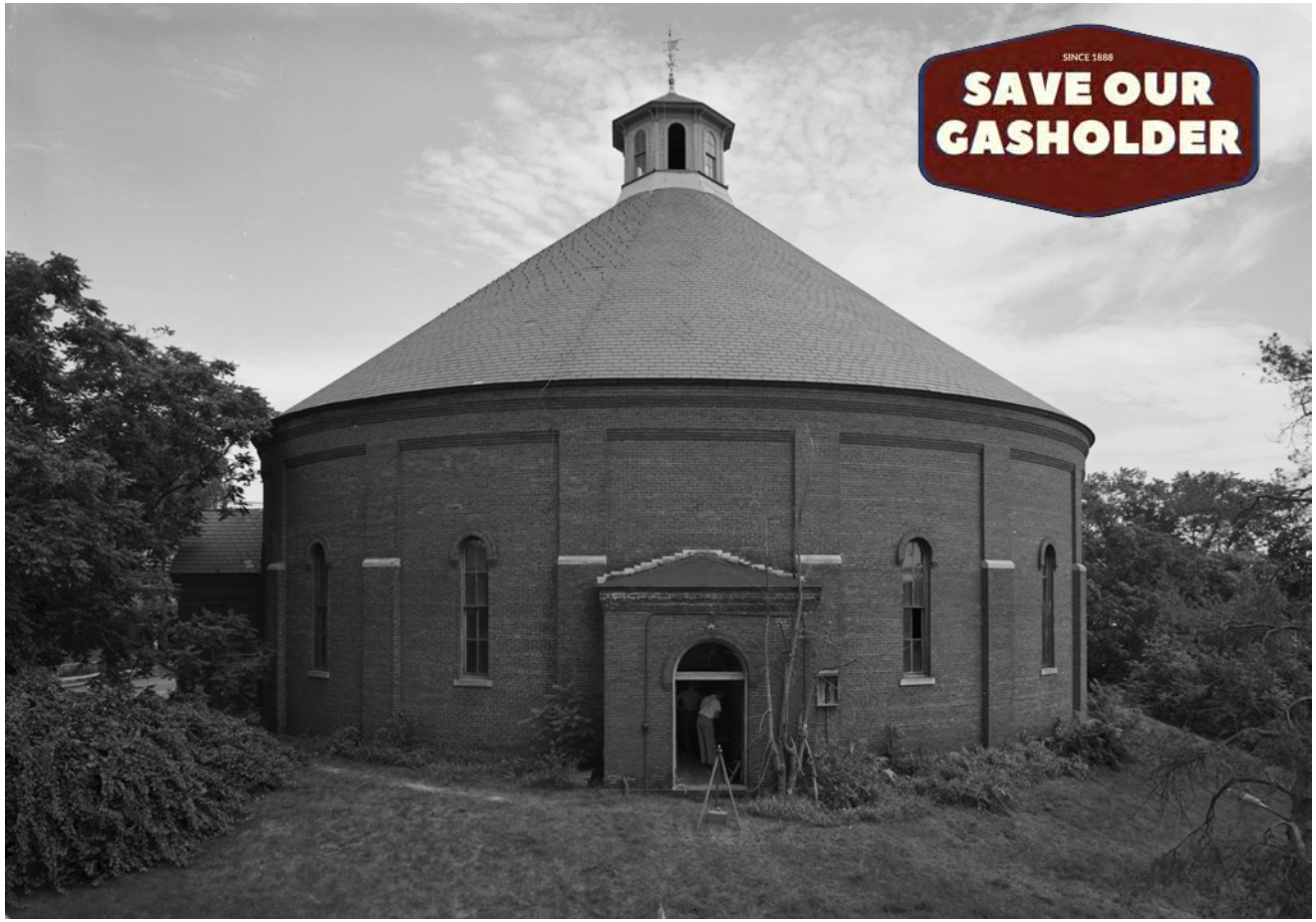
Known for excellence. Built on trust.

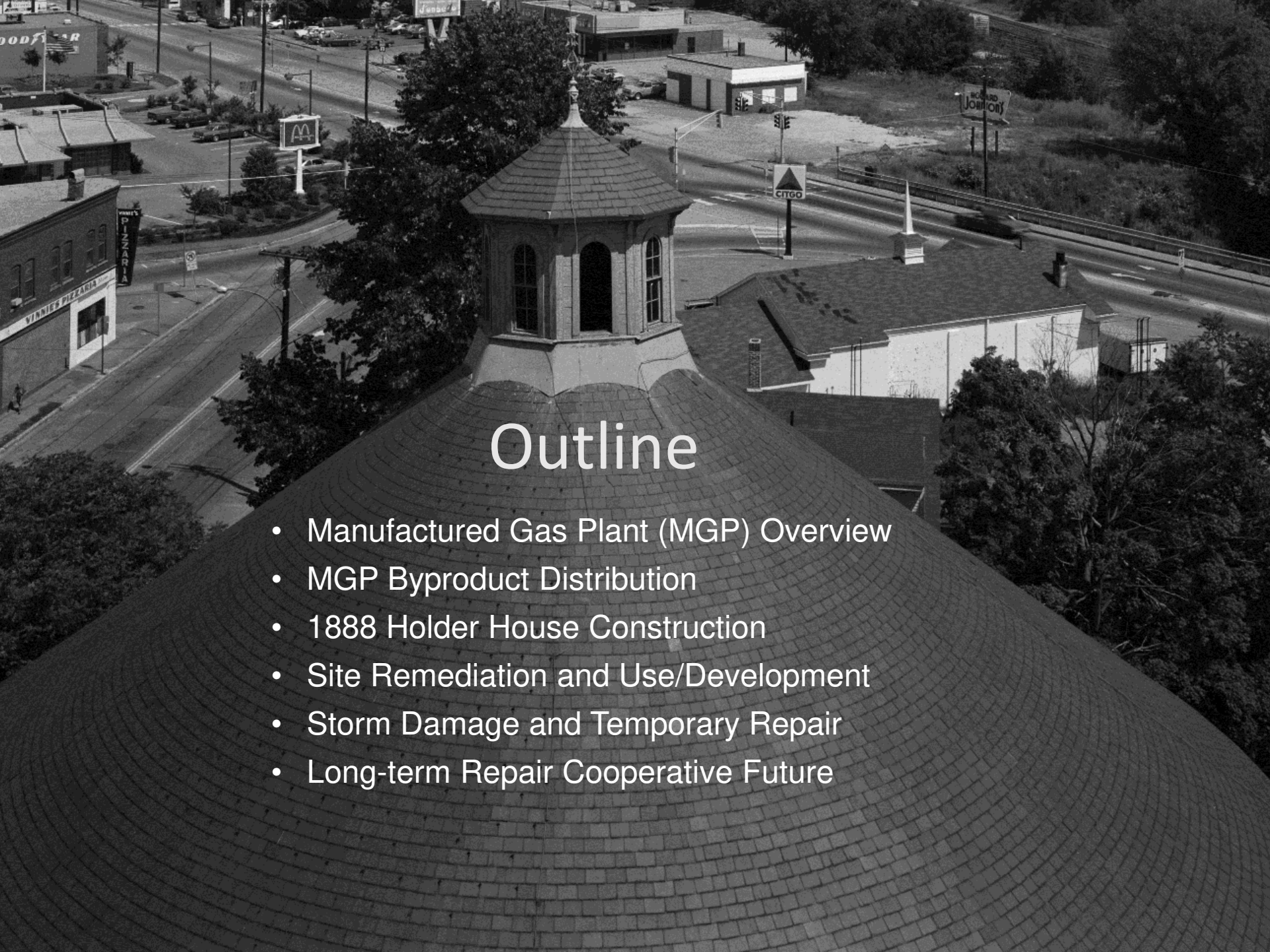
Concord 1888 Gasholder House
Structural Evaluation and Environmental Impact

NH Hazardous Waste & Contaminated Sites Webinar Series



Liberty

GZA

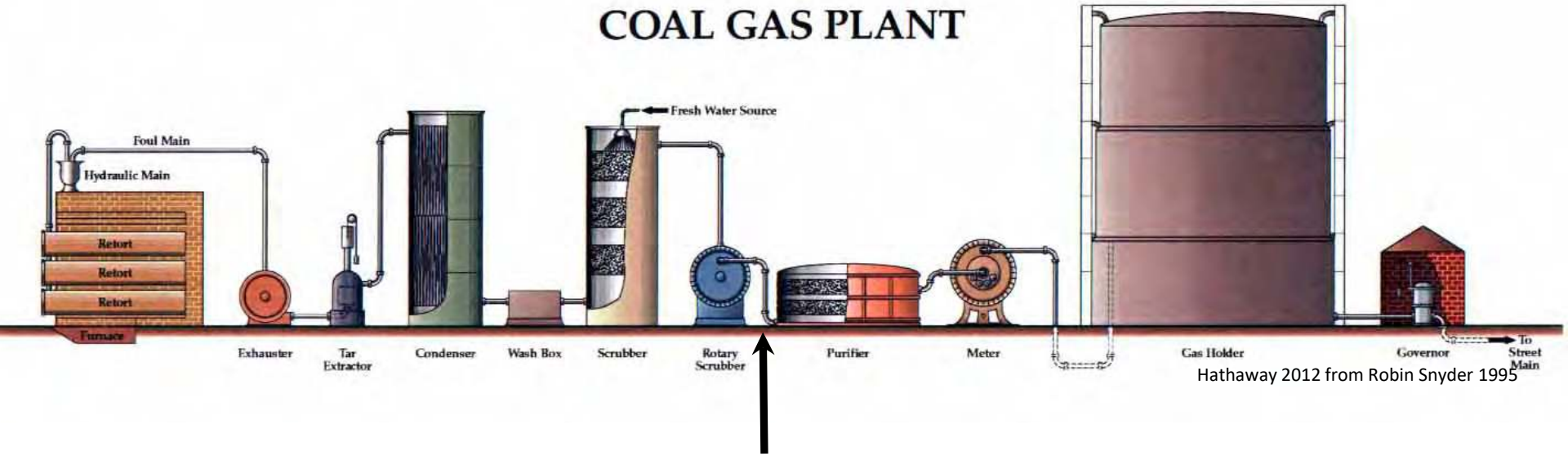


Outline

- Manufactured Gas Plant (MGP) Overview
- MGP Byproduct Distribution
- 1888 Holder House Construction
- Site Remediation and Use/Development
- Storm Damage and Temporary Repair
- Long-term Repair Cooperative Future

MGP Overview

Gas Generation → Clarification (tar and oil removal) → Purification (H_2S removal) → Storage → Distribution



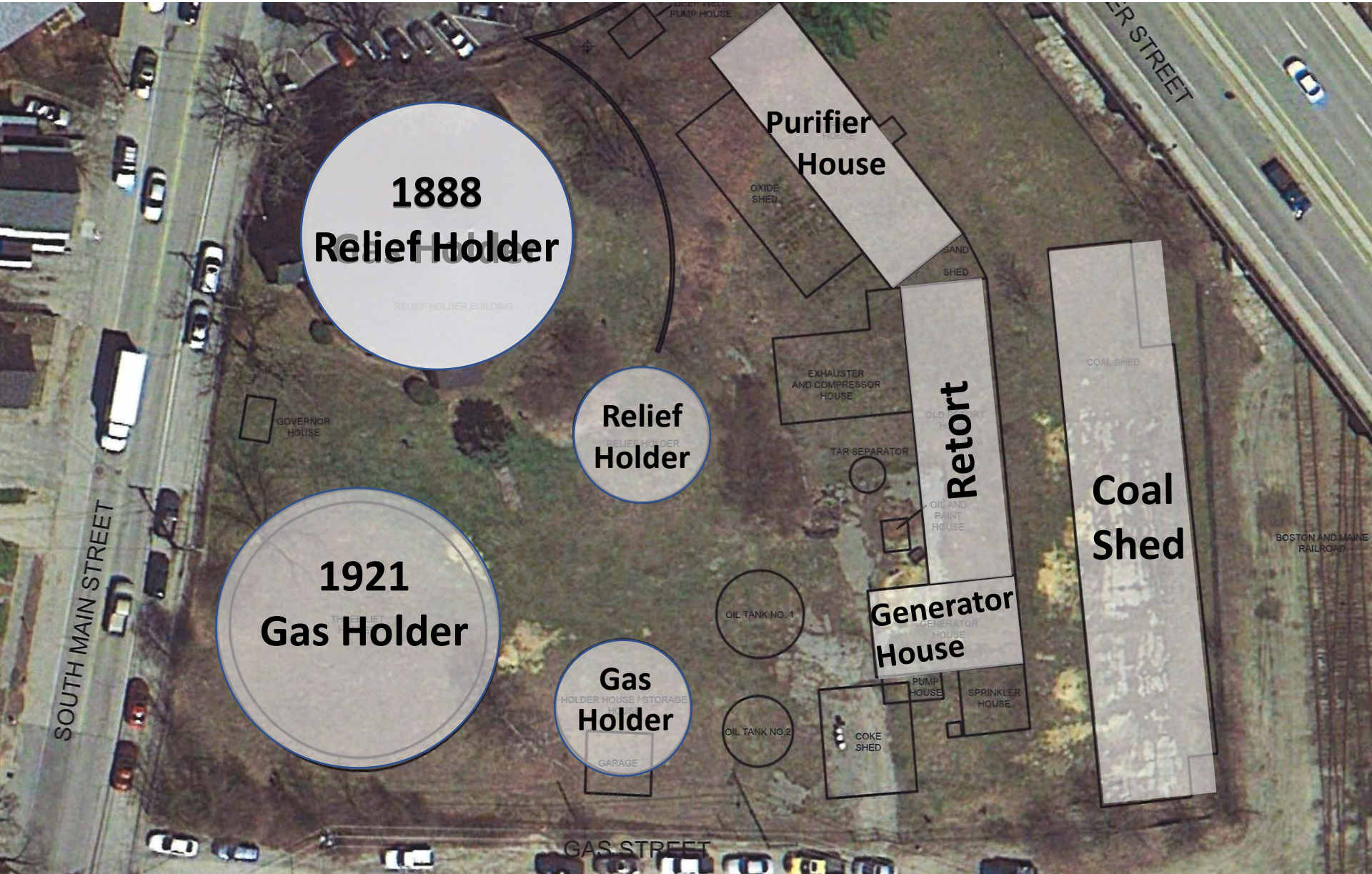
Hathaway 2012 from Robin Snyder 1995

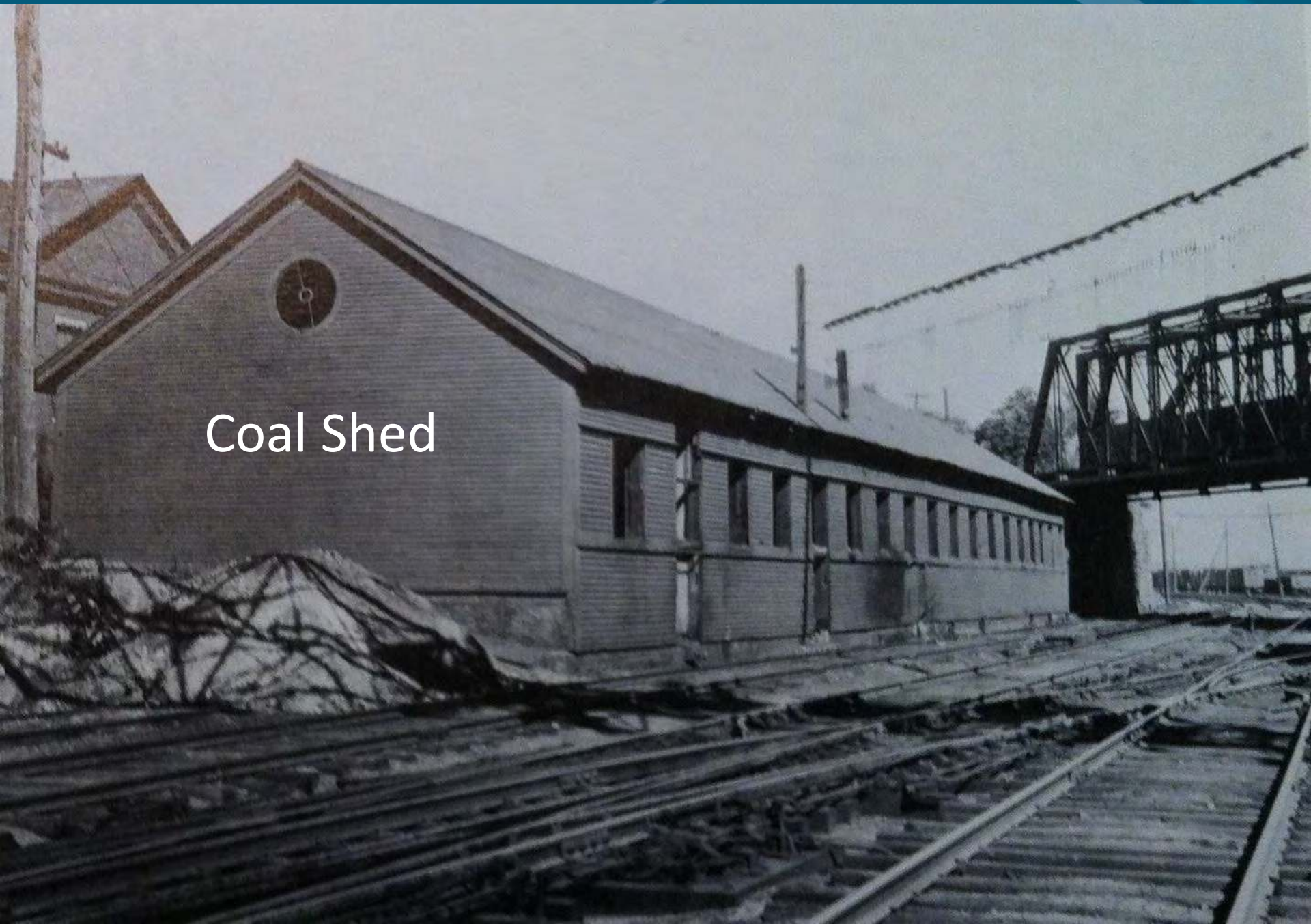
Relief Holder

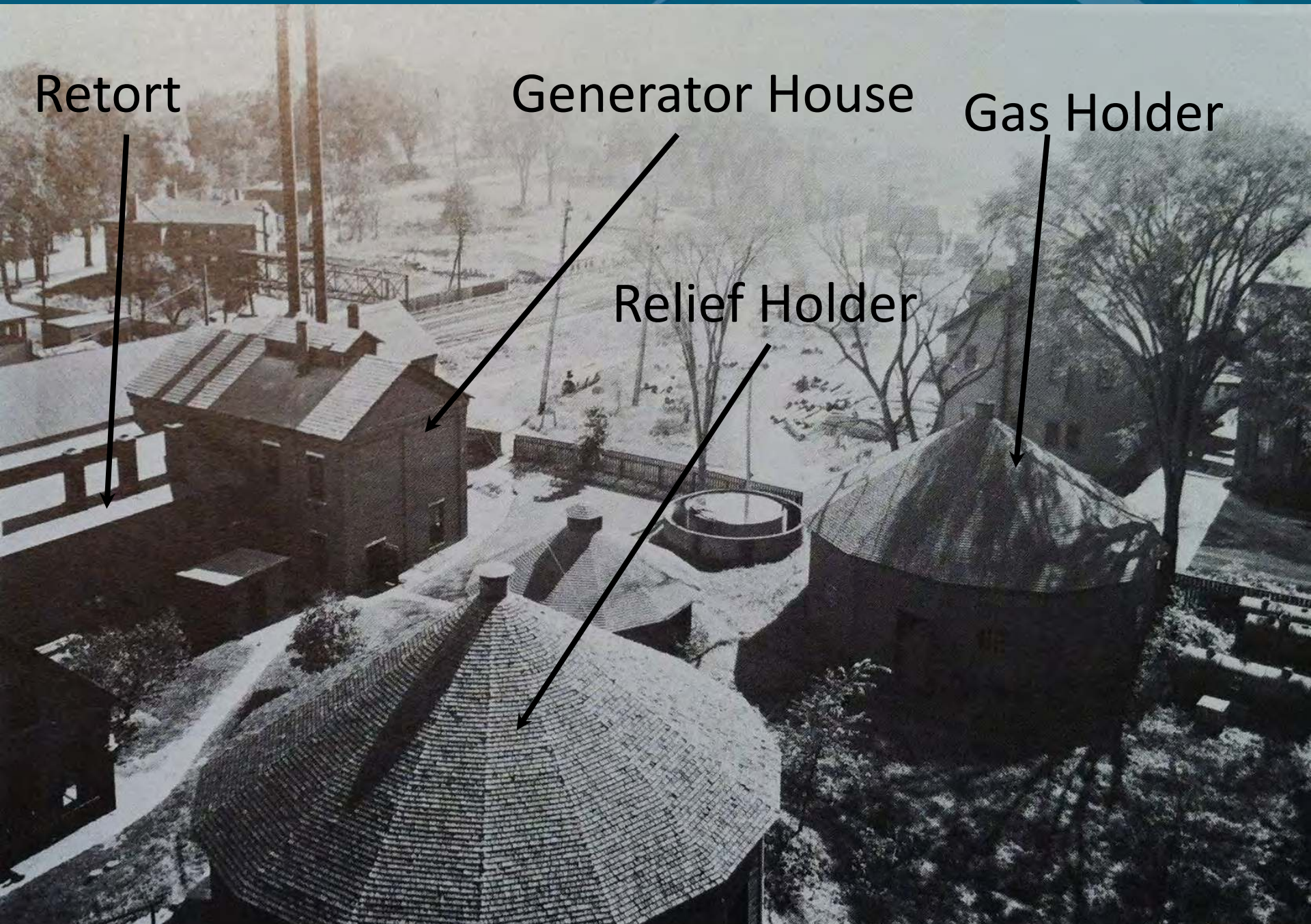
MGP-byproducts – Tars, oils, purifier wastes, retort/generator wastes

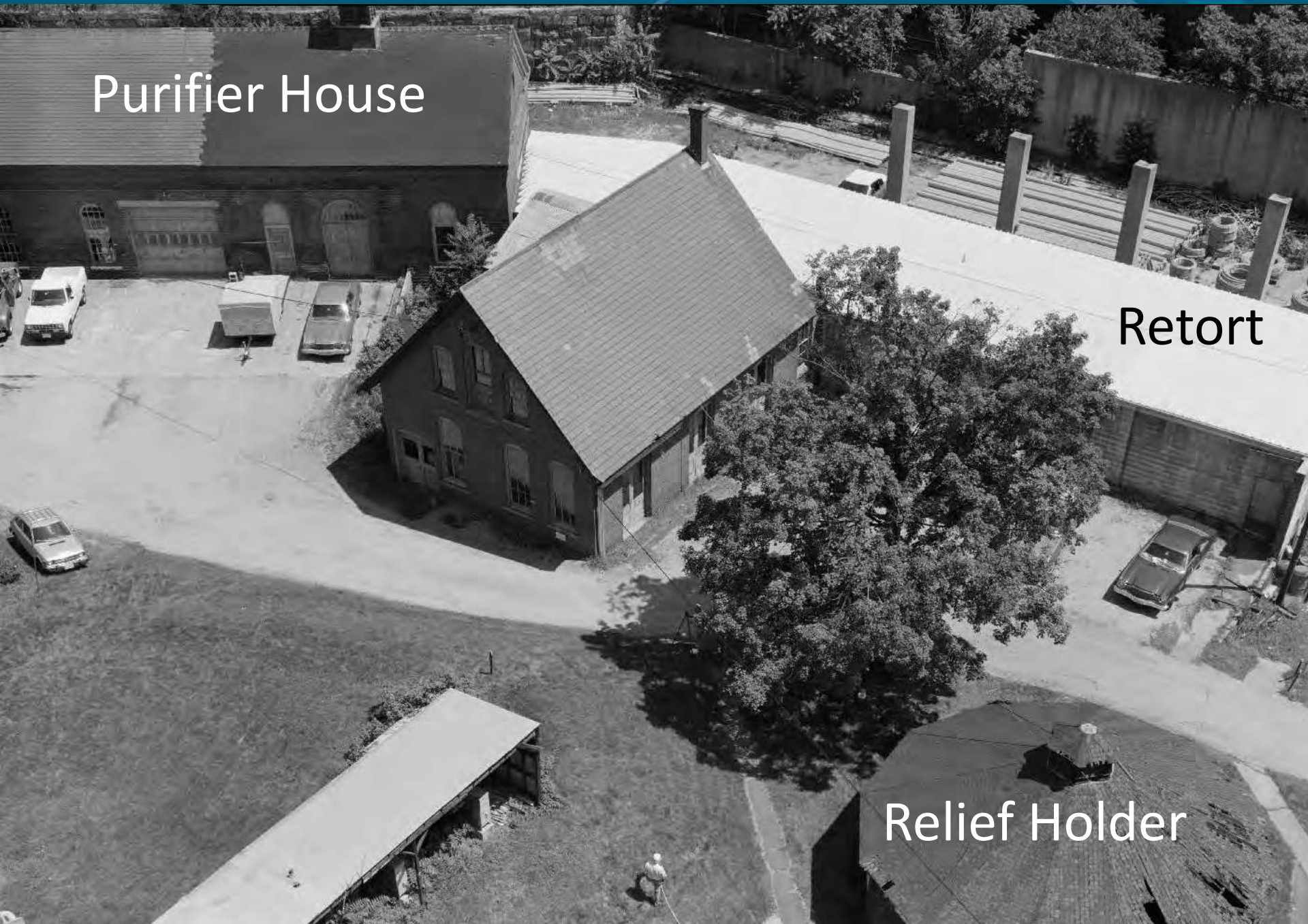
Contaminants – volatile organic compounds (VOCs; naphthalene, BETX, and styrene), Semi-VOCs (polynuclear aromatic hydrocarbons [PAHs], cyanide, metals (arsenic)

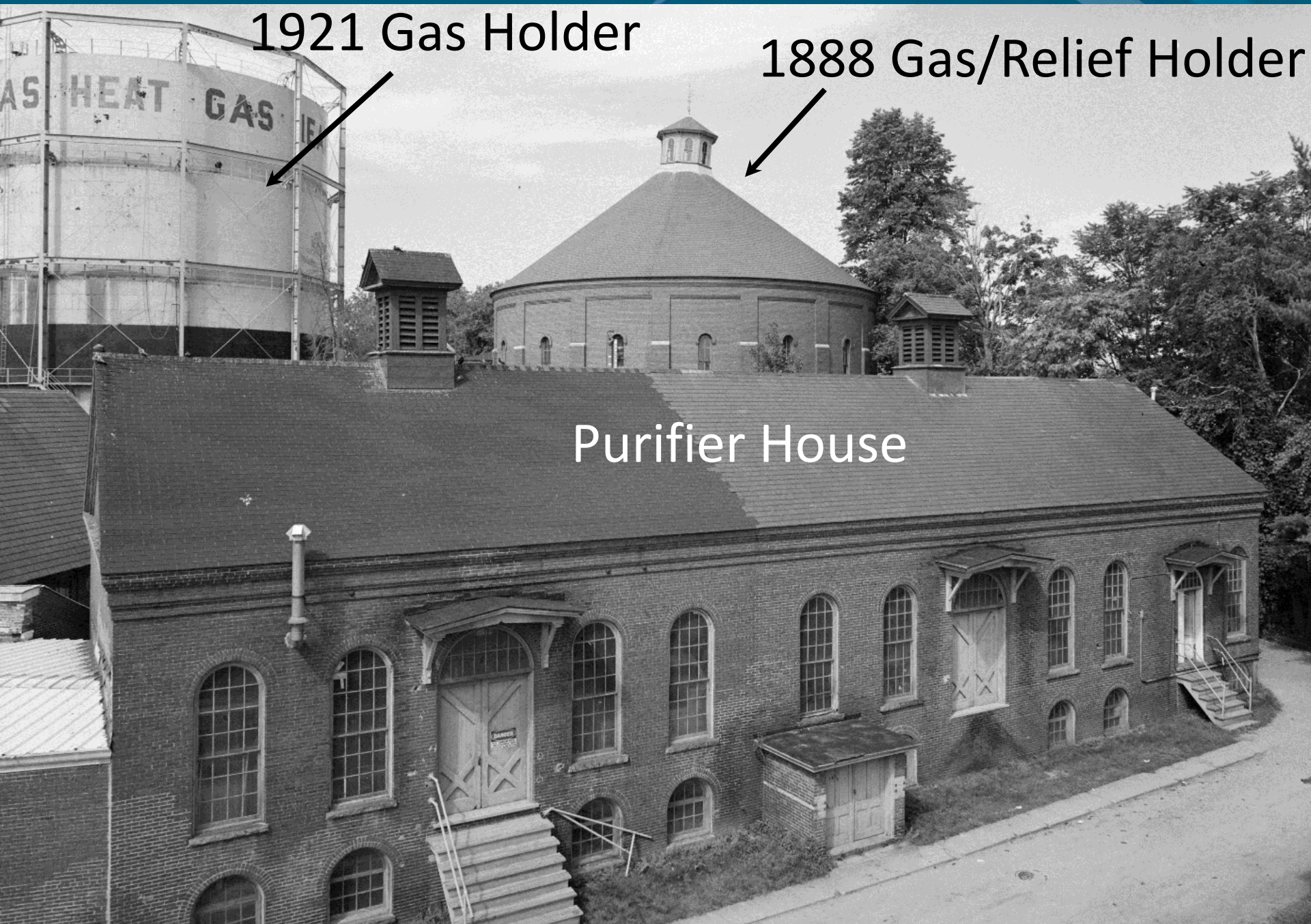
Concord Gas Street MGP Layout

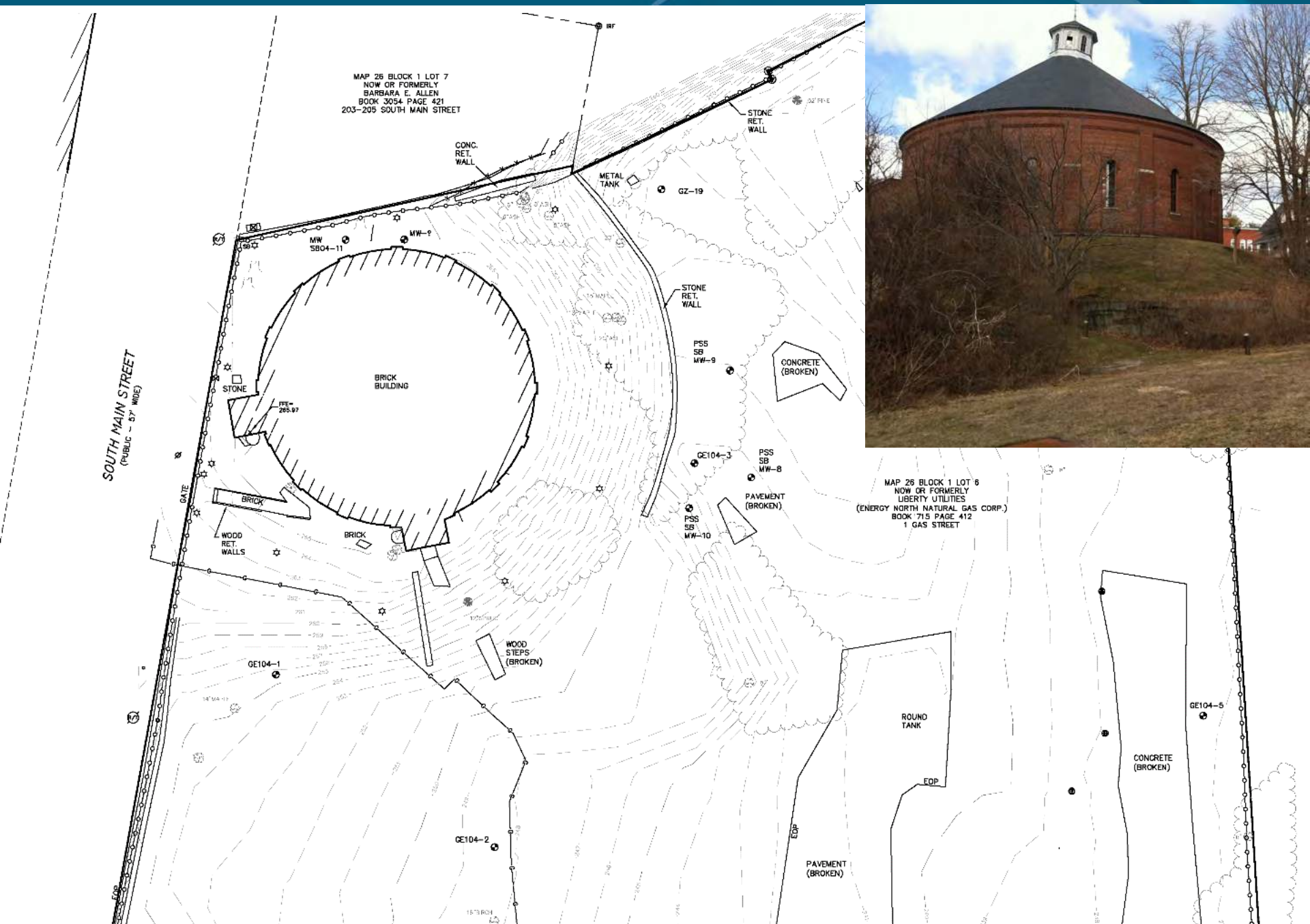



Coal Shed


Retort
Generator House
Gas Holder
Relief Holder

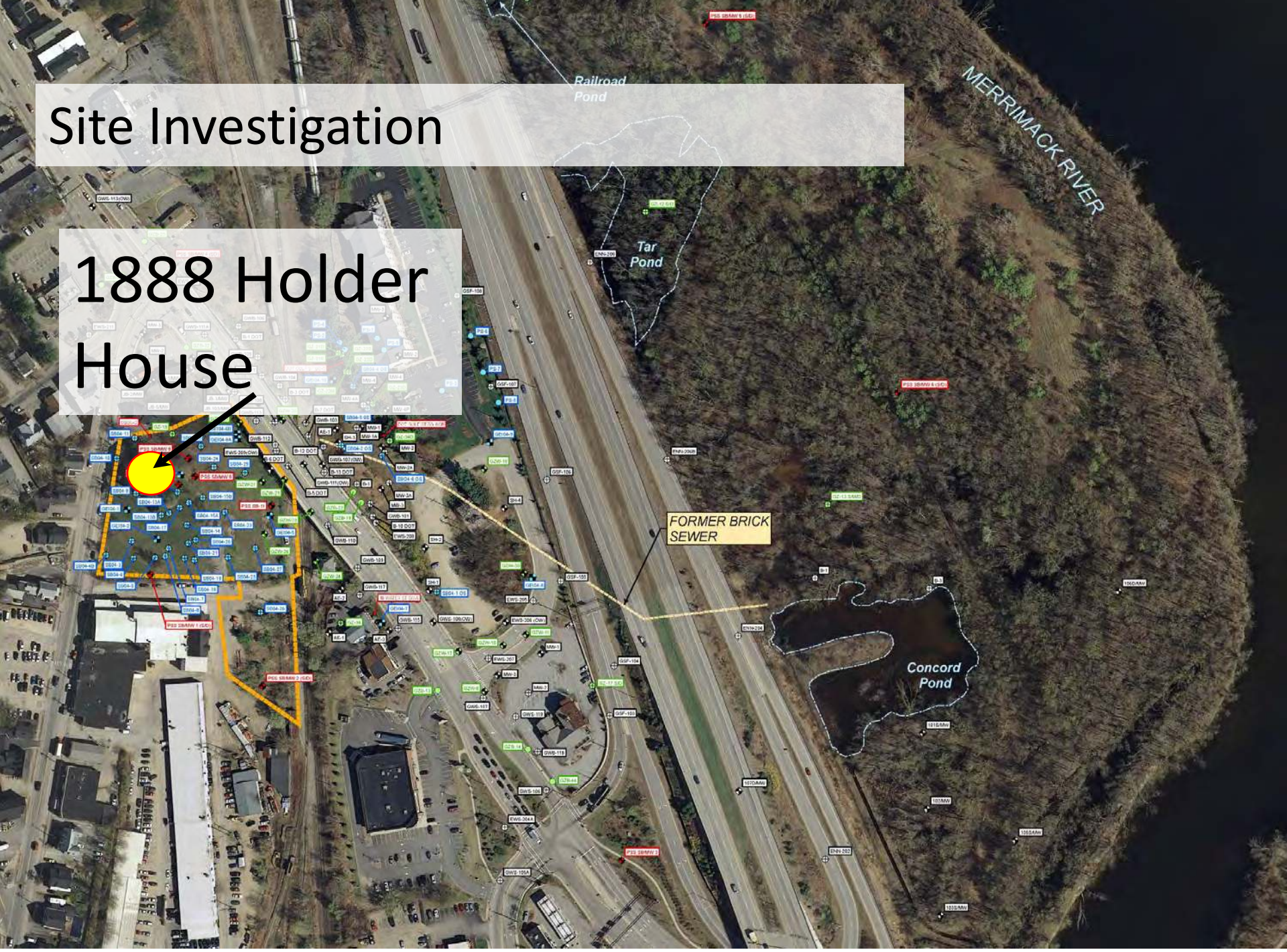

Purifier House
Retort
Relief Holder


1921 Gas Holder
1888 Gas/Relief Holder
Purifier House

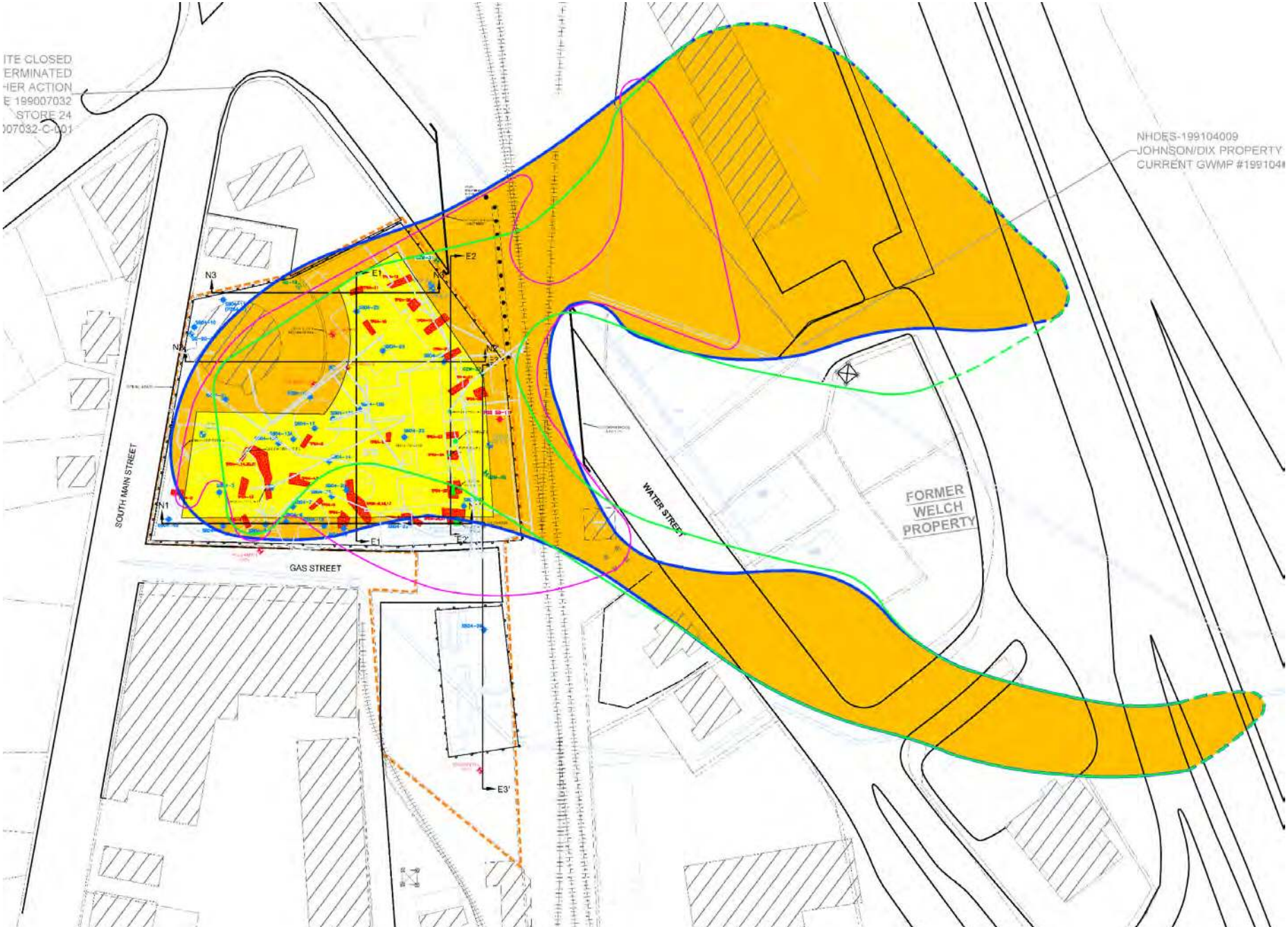

MAP 26 BLOCK 1 LOT 7
NOW OR FORMERLY
BARBARA E. ALLEN
BOOK 3054 PAGE 421
203-205 SOUTH MAIN STREET
SOUTH MAIN STREET
(PUBLIC - 57' WIDE)
CONC. RET. WALL
STONE RET. WALL
METAL TANK
GZ-19
MW SB04-11
MW-9
STONE RET. WALL
PSS SB MW-9
CONCRETE (BROKEN)
BRICK BUILDING
STONE
FFE=285.97
GE104-3
PSS SB MW-8
PAVEMENT (BROKEN)
PSS SB MW-10
MAP 26 BLOCK 1 LOT 6
NOW OR FORMERLY
LIBERTY UTILITIES
(ENERGY NORTH NATURAL GAS CORP.)
BOOK 715 PAGE 412
1 GAS STREET
GATE
BRICK
WOOD RET. WALLS
BRICK
WOOD STEPS (BROKEN)
GE104-1
ROUND TANK
GE104-5
CONCRETE (BROKEN)
EOP
EOP
GE104-2
PAVEMENT (BROKEN)

Site Investigation

1888 Holder House



Subsurface Exploration



Site Remedial Alternatives/RAP

Investigation and remediation of subsurface structures

Excavation and disposal of surficial soil displaying MGP-impacts

Capping and filling of components of the site stormwater system

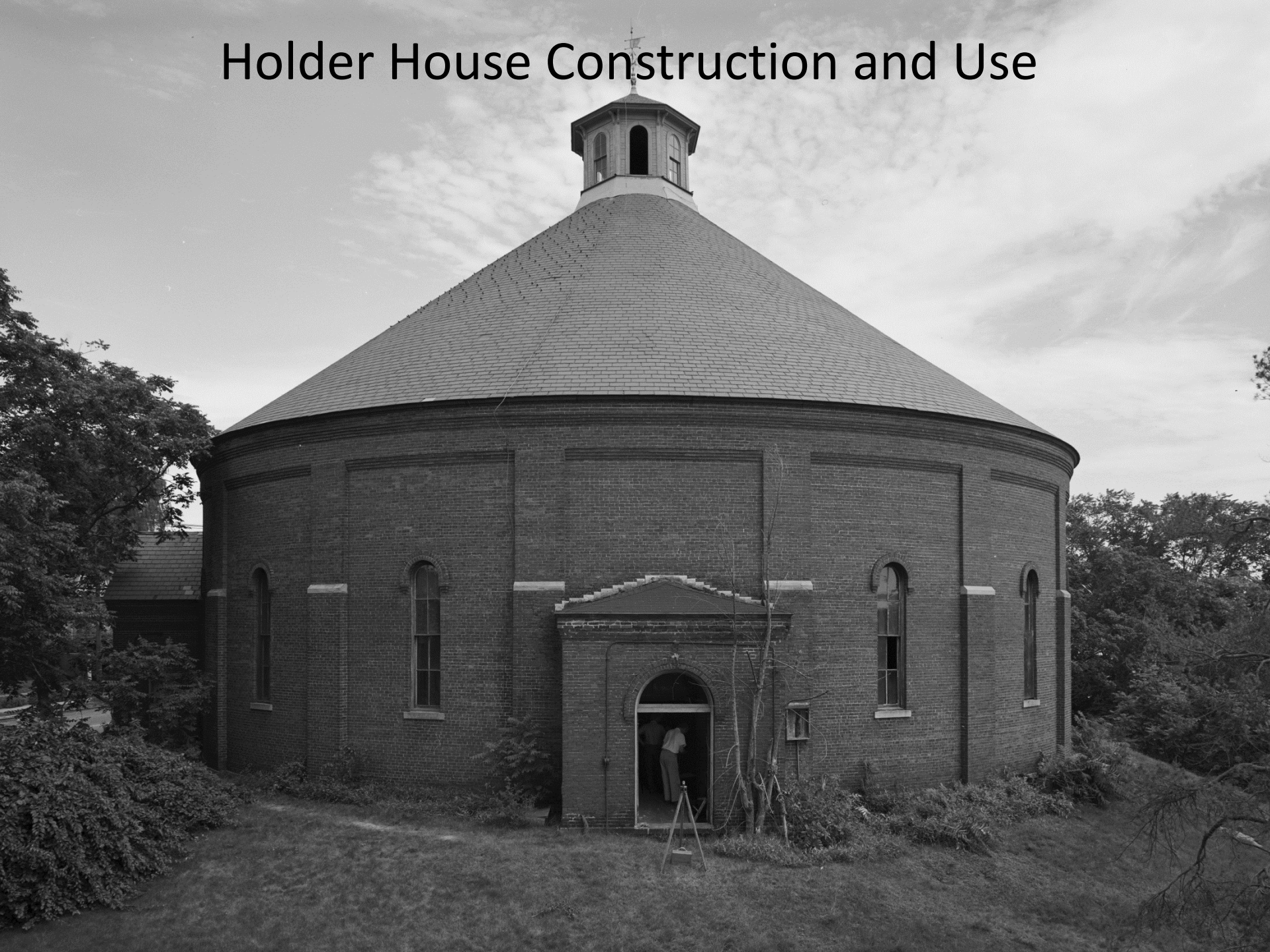
Recovery of DNAPL via recovery wells

Administrative Controls

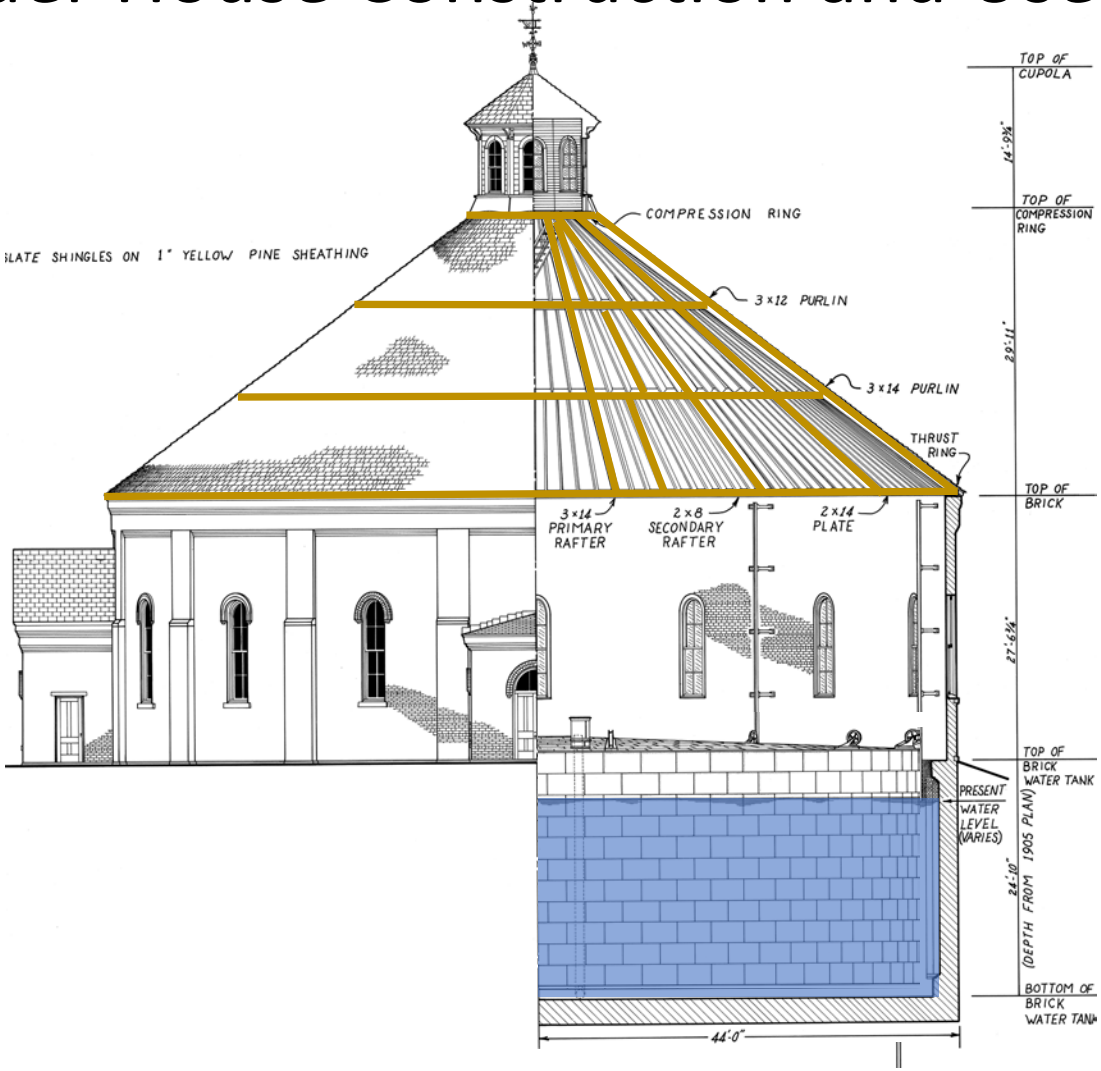
Construction of an engineered cap (***tailored to site development***)

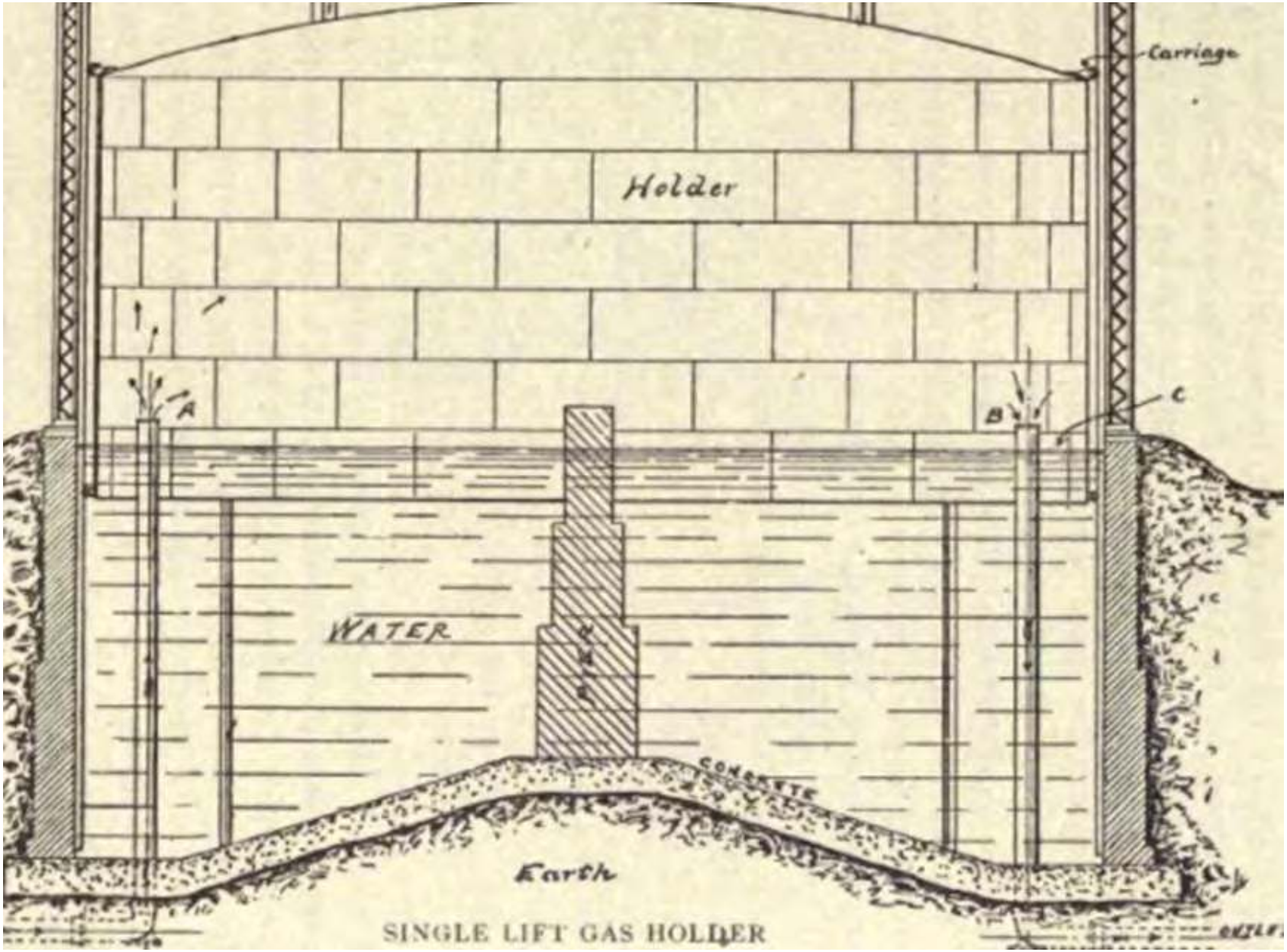
1888 Holder House provides a physical barrier to prevent infiltration of precipitation into the foundation of the structure and deeper subsurface soils

Holder House Construction and Use

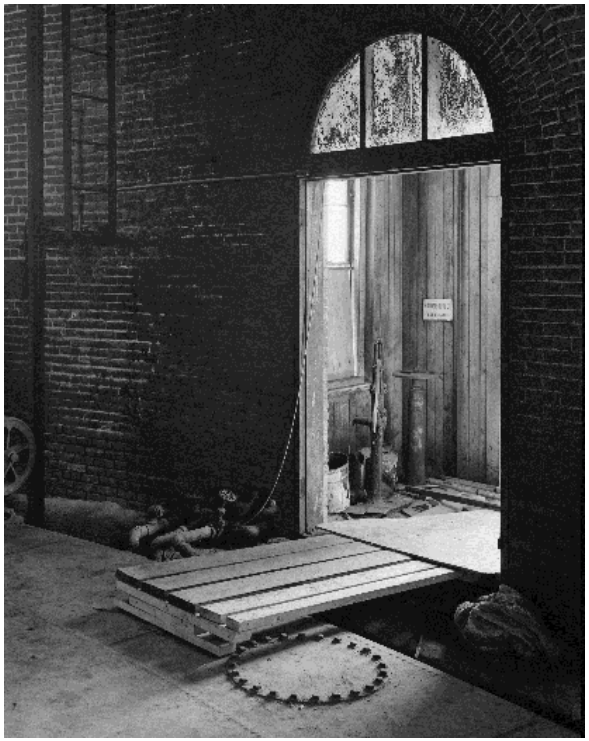


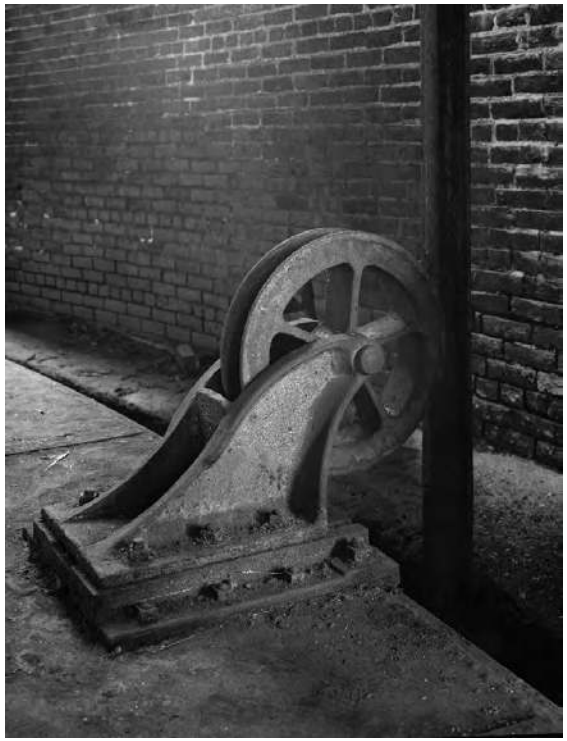
Holder House Construction and Use

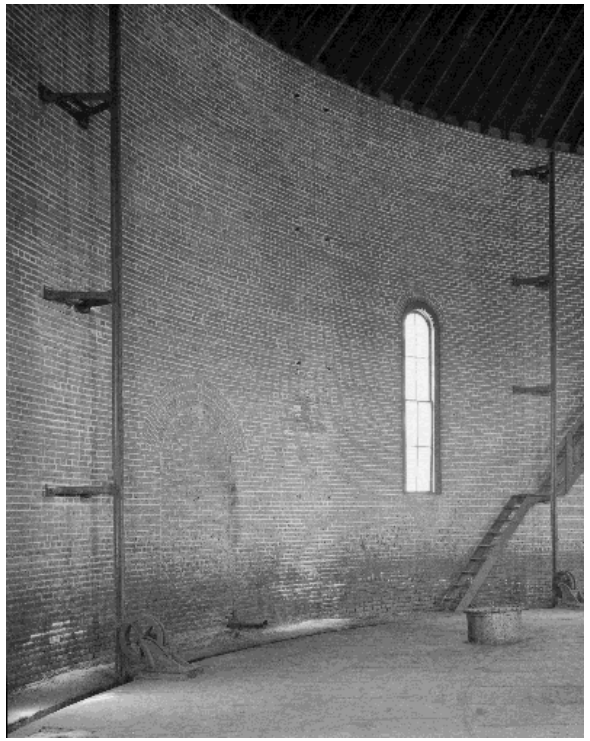




SINGLE LIFT GAS HOLDER







1888 Gas Holder/ Holder House Use/Milestones

1888 – Constructed by The Concord Gas Light Company

1888 – 1921 – used as finished gas holder

1921 – 1952 – used as relief holder (cupola tilt?)

1952 – abandoned

1994 – ≈700,000 gallons of liquid and sludge removed, cupola scaffolding added

2013 – Storm damage

2014 – Temporary roof repair and supplemental cupola support

2018 – National Register of Historic Places

June 17, 2013, Storm/Tree Damage

Penetratic

Damaged

Damage t

Brick ring

displaced

2013 – 2014

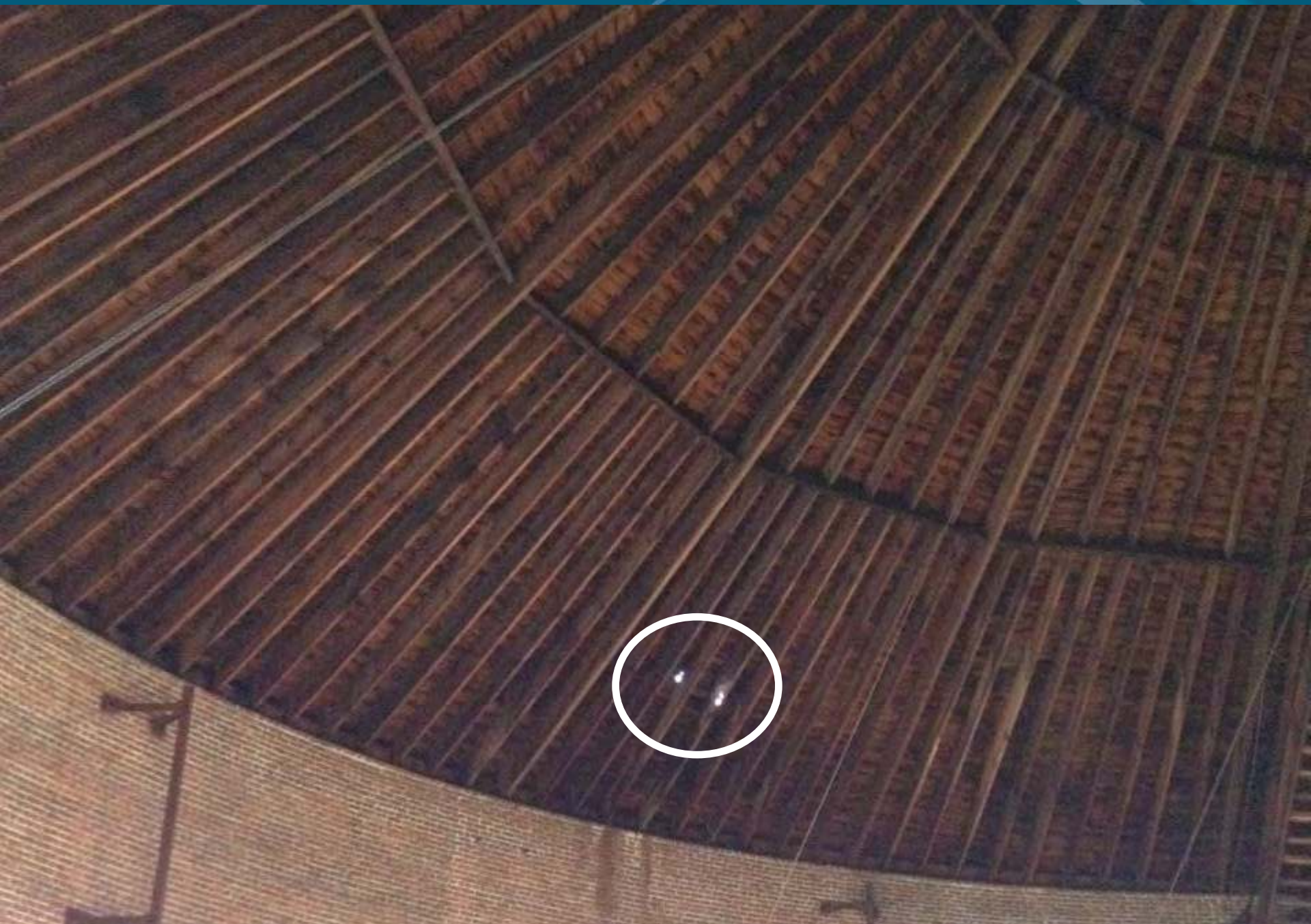
Structural assessment

Temporary repair completed

Full repair anticipated


Link-Belt


Baaz
Hair Studio
205



Long-Term Repair and Future?

2014 Preliminary Evaluation of Long-term Repair Options and Cost - >$1,000,000

2014 – 2020 - Developer Search

- Restaurant and distillery?

Early 2020 Options and Opinion of Cost Revaluation

- Monument - $1,500,000 - >$2,000,000
- Renovation (Public Use of Interior) - >$ - >>$

2020 Safety Concerns/Demolition Planning


SINCE 1888
SAVE OUR
GASHOLDER

Cooperative Future

- **Anonymous $500K Donor**
- **Phased repair**
  - Phase I – stabilization (fall/winter of 2021)
    - Reworking internal steel platforms
    - Construction of support towers
    - Installation of masonry restraints
    - Upgrade roof patch and repair
  - Phase II – full repair (pending fundraising)
- **Liberty Utilities' Contribution** - based on estimated cost to demolish, investigate, and remediate within the footprint of the Holder House

Liberty™

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

NEW HAMPSHIRE PRESERVATION ALLIANCE

CITY OF CONCORD NEW HAMPSHIRE

James M. Wieck, P.G.
Hydrogeologist/Associate Principal
GZA | 5 Commerce Park North | Bedford, NH 03110
o: 603.232.8732 | c: 603.493.2874 | james.wieck@gza.com | www.gza.com
Geotechnical | Environmental | Ecological | Water | Construction Management

Known for excellence. Built on trust.