Connecticut Department of Public Works
-- Rebecca Cutler –
Environmental Analyst

Beneficial Reuse of Demolition Debris at the Proposed Site for the Gateway Community College 2 & 20 Church Street, New Haven

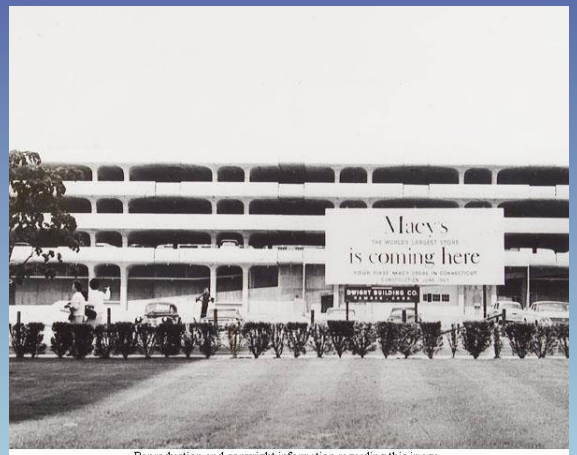
GROUNDBREAKING FOR GATEWAY COMMUNITY COLLEGE

- Groundbreaking January 26, 2010.
- Board of Trustees of CT Community College and CT Department of Public Works (DPW).
- $198 million project.
- LEED GOLD Certification (top-rated “green” building).

SITE LOCATION

- 2 & 20 Church St, New Haven.
- Former location of Malley's & Macy's Department Stores ("Southern Parcel" and "Northern Parcel", respectively).
- "GB" groundwater classification (groundwater not suitable for human consumption without treatment).
- Surrounded by commercial properties.
- Public water system throughout the area.

SITE HISTORY



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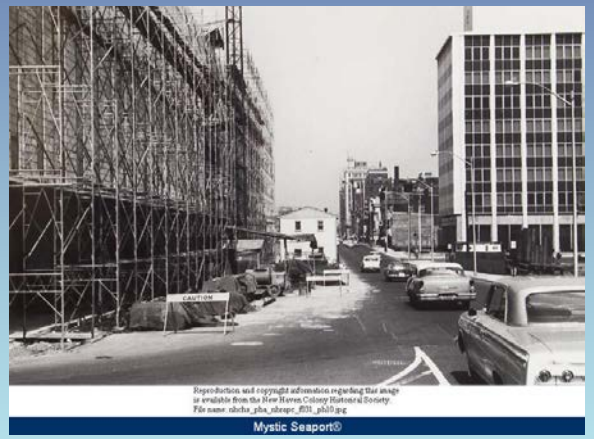
New Haven Museum and Historical Society



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New Haven Museum and Historical Society

- Malley's and Macy's Department Stores constructed in the 1960s.
- Malley's - concrete structure; Macy's – concrete & steel structure.
- City of New Haven took ownership after they were closed.

MALLEY'S DEMOLITION (Southern Parcel)

- 1997 – abatement and demolition of Malley's.
- Concrete ground up and left on site.
- 44,000 yd^3 of concrete fill material.

MACY'S DEMOLITION (Northern Parcel)

- 2007 – abatement and demolition of Macy's.
- Steel structure – removed and recycled;
- Concrete ground up and left on site.
- 15,000 yd^3 of concrete fill material.

ENVIRONMENTAL ASSESSMENT

Begin Property Transfer from City of New Haven to State of Connecticut

⇩

Assess Environmental Conditions – Conduct Phase I Investigations (2006 & 2009)

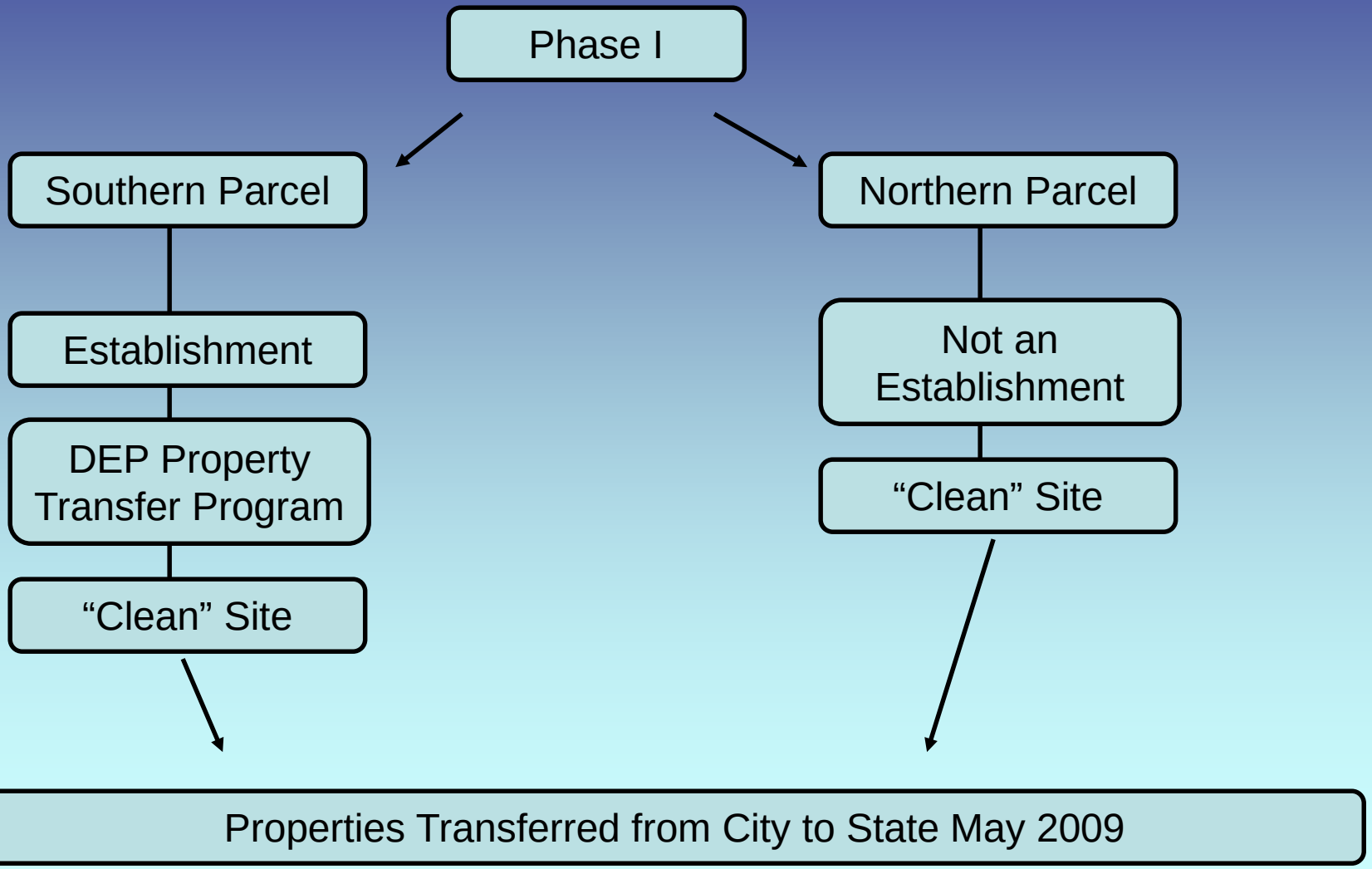
⇩

No Suspected Spills or Releases Identified at Either Property

⇩

Does either parcel meet the definition of an “Establishment”?

PROPERTY TRANSFER



CMR'S ENVIRONMENTAL INVESTIGATION

- DPW contracted with the CMR in May 2009.
- LEED Gold certification - reuse excess fill material on site or send it to a recycling facility.
- DPW provided the CMR with all available Environmental & Abatement Reports documenting that there was no reason to suspect a spill or release had occurred at either parcel.

CMR'S ENVIRONMENTAL INVESTIGATION

SOUTHERN PARCEL

NORTHERN PARCEL

- CMR collected five samples in July 2009 (two from Northern Parcel and three from Southern Parcel).
- Semi-volatile organic compounds (SVOCs) – above DEP Remediation Standard Regulation (RSR) criteria at both sites.
- Petroleum hydrocarbons and PCBs (<1ppm) below DEP RSR criteria at both sites.
- SVOCs – specifically polycyclic aromatic hydrocarbons (PAHs).
- RSRs -- guidance and standards to evaluate potential soil or groundwater for contamination and possible remediation strategies.

CMR'S INVESTIGATION RESULTS

August 2009 - CMR stated concrete fill is contaminated & must be treated as CT Regulated Waste:

- approx. 88,000 tons of concrete fill
- approx. 2,400 dump trucks to a Subtitle D landfill*.
- approx. $8 million in transportation & disposal costs, sampling & analysis, consultant fees, additional CMR fees, and delay claims.

CHANGE ORDER

*Subtitle D Landfill manages non-hazardous solid waste

CONCRETE FILL MATERIAL – CHEMICAL COMPOSITION

Concrete Fill
PAHs
TPH
PCBs
(<1ppm)

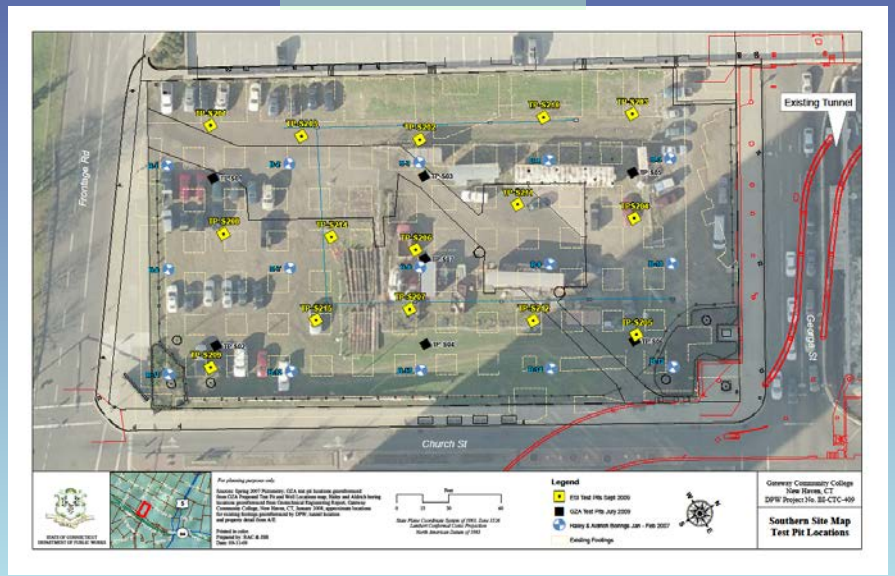
Northern Parcel

Southern Parcel

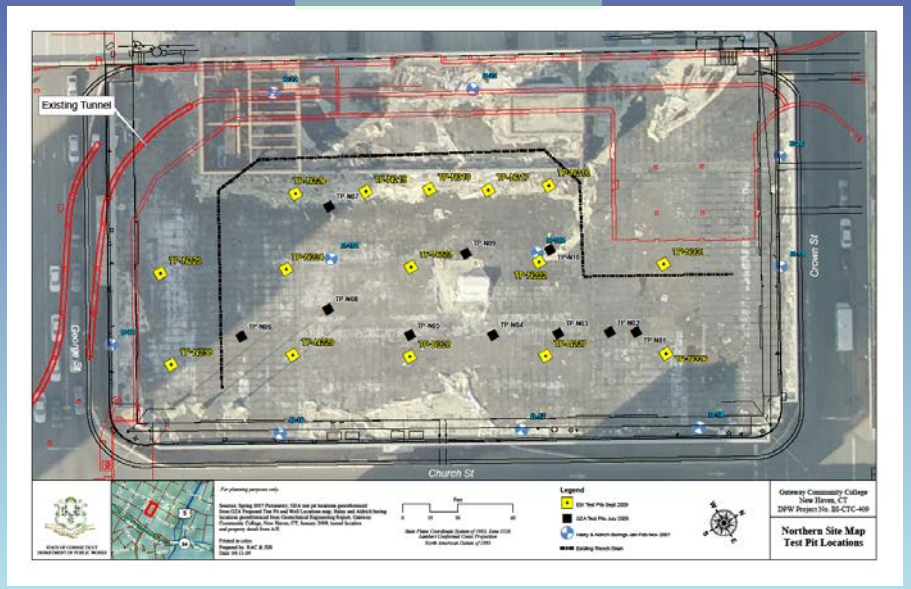
(Same compounds and concentrations in fill material throughout both parcels)

DPW'S ENVIRONMENTAL INVESTIGATION

SOUTHERN PARCEL



NORTHERN PARCEL



- August and September 2009 – dug 30 test pits across both parcels and collected 51 samples.

DPW'S ENVIRONMENTAL INVESTIGATION

- Samples of actual concrete chips as well as concrete fill.
- Analyzed for volatile organic compounds, SVOCs including PAHs, PCBs, extractable total petroleum hydrocarbons (ETPH), RCRA 8 metals, reactivity, flashpoint, and pH.

DPW'S ENVIRONMENTAL INVESTIGATION

- Synthetic Precipitation Leaching Procedure ("SPLP") SVOCs, PCBs, ETPH, and RCRA 8 metals.
- SPLP procedure helps determine leachability of contaminant from soil into groundwater under normal weathering conditions.

CONCRETE COMPOSITION

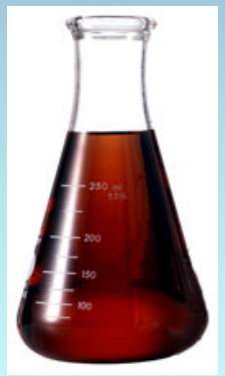
Cement + Admixtures = Improved workability, setting time, strength, and/or durability of concrete

CONCRETE COMPOSITION

Examples of Concrete Admixtures

Plasticizers
(improve workability)

Pozzolanic Ash
(improve strength)



Coal Tar
(contains PAHs and hydrocarbons)

PCBs
(historically)

Fly Ash
(contains PAHs and hydrocarbons)

LAB SAMPLE RESULTS

Concrete Fill
PAHs, ETPH (hydrocarbons), PCBs (<1ppm)

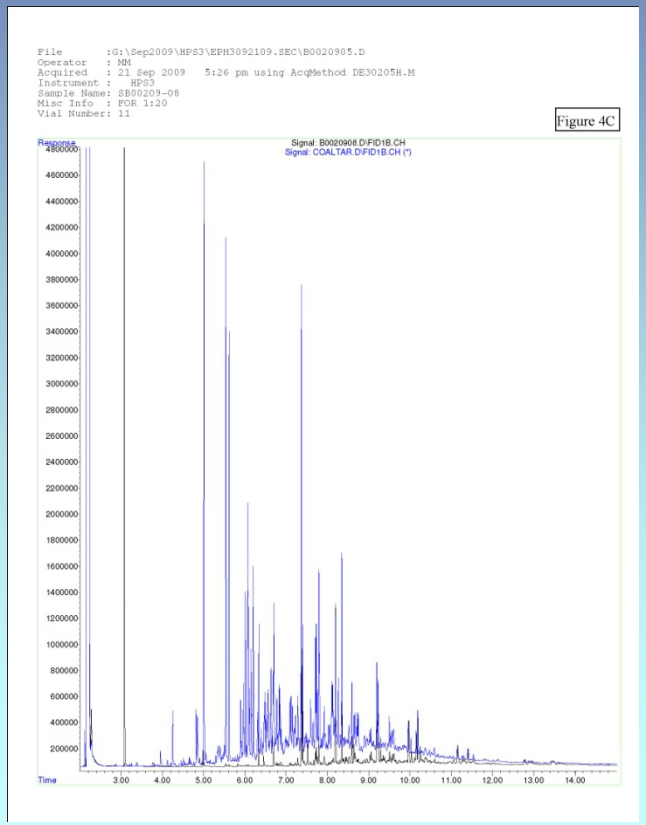
Concrete Chips
PAHs, ETPH (hydrocarbons), PCBs (<1ppm)

Northern Parcel

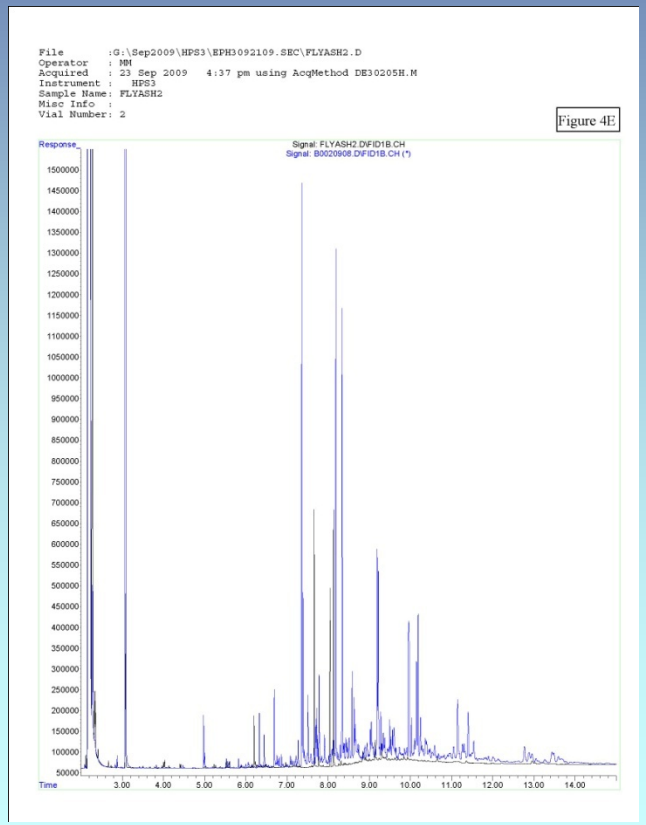
Southern Parcel

FORENSIC ANALYSIS

Coal Tar and Concrete Fill Chromatogram



Fly Ash and Concrete Fill Chromatogram



1960s CONCRETE BLEND

Concrete Fill
PAHs, ETPH (hydrocarbons), PCBs (<1ppm)

Plasticizers
(improve workability)

- Coal Tar
- PCBs (historical use)

Pozzolanic Ash
(improve strength)

- Fly Ash

Original 1960s Concrete Blend for Macy's and Malley's Stores

DETERMINE IF COMPOUNDS WERE THREAT TO GROUNDWATER

DETERMINE LEACHABILITY:
SPLP Analysis
For SVOCs, ETPH, & PCBs

DETERMINE THREAT TO GROUNDWATER:
Compare SPLP results to GA Pollutant Mobility Criteria

Compounds not leachable and below GA PMC or not detected

NO THREAT TO GROUNDWATER

CLEAN FILL DETERMINATION

COMPOUNDS IN CONCRETE:
From original concrete blend with admixtures

NO THREAT TO GROUNDWATER:
SPLP results non-detect or below GA PMC

CONCRETE FILL MET DEFINITION OF "CLEAN FILL"
(Sec. 22a-209-1 of the CT Solid Waste Regulations)

REUSE OR RECYCLE UNRESTRICTED:
Concrete fill could be reused on site or recycled off site with no restriction

CONCLUSION

NO CHANGE ORDER

POTENTIAL SAVINGS OF $8 MILLION

DPW SAVED THE DAY!

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