

DRAFT Analysis of Brownfields Cleanup Alternatives - Beacon Bluff Parcel 3-North

Introduction and Background

The Beacon Bluff redevelopment project is located in the area around Forest Street and East 7th Street on the east side of St. Paul, Ramsey County, Minnesota in a mixed residential and industrial neighborhood. The Beacon Bluff redevelopment project was formerly occupied by 3M Company and was used for manufacture of tape and abrasives. The Beacon Bluff project area was initially divided into 9 parcels by the Port Authority for redevelopment purposes. Parcel 3 has since been divided into 4 sub-parcels (North, Central, Southeast and Southwest). This analysis addresses Parcel 3-North (hereinafter the Site) on the Beacon Bluff redevelopment project.

In the early 1900s, 3M began operations in the area with the construction of the original abrasives plant in Building #1 located on the Site. Over the next several decades 3M expanded, redeveloping properties that were formerly occupied by residences, lumber yards, fuel, coal and ice companies, a foundry and ironworks, automotive businesses, a dry cleaner, an electrical substation other commercial businesses and banks. Most of 3M's factories, labs and offices were built in the 1950s and 1960s. The original 3M Company headquarters building is located at 900 Bush Avenue on Parcel 3-Central.

The Site, including its existing buildings (Buildings #1, 3, 4, 14, and 20), is currently unoccupied. The land is presently zoned industrial. Since acquisition of the 3M property, the St. Paul Port Authority has completed select remediation and redevelopment activity on Parcels 1 through 6.

Phase I and II Environmental Site Assessments (ESAs) were completed for the Site. The primary Phase I and II ESA reports are:

- Phase I Environmental Site Assessment, Forest and East 7th St. Site – “Parcels 1 through 9”, St. Paul, Minnesota, by American Engineering Testing, Inc., AET Project No. 03-03262, October 16, 2008
- Phase II Investigation Report, Forest and East 7th Street Site, St. Paul, Minnesota by American Engineering Testing, Inc., AET Project No. 03-03262, February 17, 2009
- Phase II Investigation - Parcels 3 & 6, Forest and East 7th St. Site, St. Paul, Minnesota, prepared by American Engineering Testing, Inc., AET Project No. 03-03262.02, December 4, 2009.

The results of the collective Phase I and II Investigations are summarized below for Parcel 3-North.

Soil data indicate the Site has areas of contamination likely the result of historic operations and/or importation of contaminated fill. The primary soil contaminants identified include polynuclear aromatic hydrocarbons (PAHs) and diesel range organics (DRO). PAHs in soils are impacted above the MPCA Residential Soil Reference Values at the northwest corner of the Site. It is anticipated that some 'Hot Spots' of PAH contaminated soil above the Industrial Soil Reference Value will be encountered during redevelopment. The PAHs are likely from an old building which burned after an explosion in the 1950s and/or imported fill brought onto the site. An existing 20,000 gallon fuel oil underground storage tank is located at the northeast corner of the Site. Residual petroleum contamination is present at depth in soils around this tank from a historical leak from an older UST located in the same area. In addition, residual petroleum contamination is present around historical USTs that were located north of building #20.

Groundwater is impacted with arsenic slightly above the EPA Maximum Contaminant Level (MCL) of 10 µg/L for public drinking water systems. The source of the arsenic is most likely natural background; groundwater in glacial sediments throughout Minnesota has been found to be impacted with arsenic above the MCL. Groundwater on Parcel 2, immediately east-adjacent to Parcel 3-North, is also impacted with VOCs above MDH drinking water standard. 3M is in the process of remediating the groundwater through soil vapor extraction activities on Parcel 2.

Soil vapor data indicate that VOC vapors are present throughout the Site in excess of the MPCA Intrusion Screening Value (ISV) for industrial uses.

Geologic maps and water well logs in the Site vicinity indicate that the surficial soils are comprised of 100 to 200 feet of glacial melt water stream sediment consisting of medium- to coarse-grained sand with gravel. The uppermost bedrock underlying the Site is limestone of the Platteville Formation or St. Peter Sandstone. Monitoring wells and previous soil borings drilled in the area indicate fill and glacial coarse alluvial soils to 50 feet below ground surface (bgs). Depth to groundwater ranges about 40 to 70 feet bgs on the Site. The regional surficial groundwater gradient under the Site slopes downward west-southwest towards the Mississippi River.

Applicable Regulations and Cleanup Standards

The St. Paul Port Authority's overall objectives for the entire Beacon Bluff redevelopment project are to prepare the land for commercial/industrial use and remediate environmental impacts in accordance with MPCA guidance to minimize risks to human health and the environment. For the Parcel 3-North and Parcel 3-Central parcels, the Port Authority is currently working with the community to refine the final re-use scenario. Regardless of the final reuse plan, the St. Paul Port Authority plans to seek the following formal assurances from the MPCA:

- A Certificate of Completion of response actions for soils and groundwater at the Forest and East 7th Street Site pursuant to Minn. Stat. 115B.175.
- A No Association Determination for redevelopment activities.

- Approval of the implemented voluntary response actions under the MPCA Petroleum Brownfields Program (PBP)

A Master Response Action Plan (RAP) and Construction Contingency Plan (CCP) has been prepared for the entire Beacon Bluff redevelopment project by the St. Paul Port Authority and approved by the MPCA. The Master RAP includes the Cleanup Goals for the Site based on a commercial/ industrial reuse. The Cleanup Goals are based on: MPCA Industrial Soil Reference Values (SRVs) and Tier 1 Soil Leaching Values (SLVs) for soil, Minnesota Department of Health Health Risk Limits (HRLs) and Maximum Contaminant Levels (MCLs) for groundwater, and MPCA Industrial Intrusion Screening Values (ISVs) for soil vapor. In addition, a DRO/GRO Cleanup Goal of 500 mg/kg applies to the Site. The CCP, which is included in the Master RAP, provides a plan for characterizing and remediating unanticipated contamination that is discovered during planned remediation activities or while excavation for redevelopment is occurring (i.e., stormwater ponds, utilities, building site geotech correction and site grading).

Imported clean fill not originating from the Site will conform to the MPCA's guidance document concerning Best Management Practices for Off-Site Reuse of Excess Fill Material from Developed Sites and will meet the following criteria:

- Tier 1 Soil Reference Values (SRVs)
- Tier 1 Soil Leaching Values (SLVs)
- less than 1 ppm organic vapors by PID
- free of debris.

MPCA will be responsible for cleanup oversight through the Voluntary Investigation and Cleanup and Petroleum Brownfields Programs. In addition, American Engineering Testing, Inc. will monitor cleanup activities on a daily basis as specified in the Master RAP/CCP. AET's professional staff of Professional Engineers, Professional Geologists, Certified Asbestos Inspectors, Certified Hazardous Materials Managers, and HAZWOPER trained environmental technicians will collect samples, evaluate data, observe contractor operations, and report progress to the St. Paul Port Authority and MPCA as appropriate.

The laws and regulations that are applicable to the cleanup include: federal and state laws relating to cleanup of hazardous substances including the Comprehensive Environmental Response, Compensation, and Liability Act; hazardous waste laws and regulations of the United States, State of Minnesota, and Ramsey County; and asbestos, lead-based paint and hazardous materials regulations of the State of Minnesota and Ramsey County related to building demolition

Evaluation of Cleanup Alternatives

Currently, the Port Authority and the community are focused on two reuse scenarios for Parcel 3-North. Scenario 1 retains Buildings 14 and 20 for commercial purposes; the remaining Parcel 3-North structures are demolished. Scenario 2 involves the demolition of all buildings, with construction of a new commercial/light industrial building (65,000 square feet).

Proposed cleanup plan

The scenarios share some elements in common: both will require asbestos (ACM), lead-based paint (LBP) and hazardous materials abatement in the existing buildings, and both will require the implementation of a soil management Construction Contingency Plan (CCP). The CCP is a component of the approved Master RAP which provides a plan for characterizing and remediating unanticipated contamination that is discovered during planned remediation activities or while excavation for redevelopment is occurring (i.e., stormwater basins, utilities, building site geotechnical correction, and site grading.)

The alternatives developed for each scenario are based on varying levels of remediation and environmental risk. Increased environmental remediation results in reduced risk and less reliance on institutional controls however costs are generally higher. Three alternatives were evaluated for each scenario. Alternative # 1 is based on removal and/or management of contamination to achieve compliance with regulatory guidance and criteria applicable to the proposed property use, e.g., removal and off-site disposal of contaminated soil in excess of Industrial Soil Reference Values, etc. Alternative #2 is based on a plan that leaves contamination in place where feasible and relies on Institutional Controls to limit human exposure to contamination, e.g., covering the areas of contaminated soil with uncontaminated soil and restricting future excavations/activity in the areas of contaminated soil. Alternative #3 is based on 'No Action' which is generally the minimum environmental remediation required by law to implement the scenario, e.g., removal of asbestos containing materials prior to building demolition.

Institutional Controls are administrative or legal measures that limit human exposure to contamination by restricting activity, use, and access to properties with residual contamination. Typical Institutional Controls included affidavits, restrictive covenants, and deed restrictions. Institutional Controls are often recorded with the deed for the property.

The following tables summarize the alternatives analysis for each scenario.

Remediation Components – Parcel 3 North Scenario 1 (Commercial Reuse)

	CLEANUP ALTERNATIVES and ESTIMATED COSTS		
	ALTERNATIVE #1	ALTERNATIVE #2	ALTERNATIVE #3
Remediation Summary	redevelop for proposed use without the use of institutional controls	redevelop for proposed use with reliance on institutional controls	no action (redevelop for proposed use with minimal remediation)
Contaminated Soil Management	remove contaminated soil identified during redevelopment to meet Industrial SRVs	leave contaminated soil identified during redevelopment in-place and rely on institutional controls	no action
Soil vapor mitigation	install sub-slab venting system	install sub-slab venting system	no action
ACM, LBP, and hazardous materials	remove and dispose of ACM, LBP, and hazardous materials	remove and dispose of ACM, LBP, and hazardous materials	remove and dispose of ACM, LBP, and hazardous materials
Contaminated Concrete floors	seal concrete floors	seal concrete floors	no action
Institutional Controls	not necessary	implement institutional controls (deed restriction)	implement institutional controls (deed restriction)
CCP Implementation	implement CCP during site activities	implement CCP during site activities	implement CCP during site activities
Building Demolition	demolition of Buildings 1, 3, and 4	demolition of Buildings 1, 3, and 4	demolition of Buildings 1, 3, and 4
Total Remediation Cost (excluding demolition)	\$1,798,000 - \$1,848,000	\$1,798,000	\$858,000

Remediation Components – Parcel 3 North Scenario 2 (Demolition of all Buildings, Commercial/Industrial Development)

	CLEANUP ALTERNATIVES and ESTIMATED COSTS		
	ALTERNATIVE #1	ALTERNATIVE #2	ALTERNATIVE #3
Remediation Summary	redevelop for proposed use without the use of institutional controls	redevelop for proposed use with reliance on institutional controls	no action (redevelop for proposed use with minimal remediation)
Contaminated Soil Management	remove contaminated soil identified during redevelopment to meet Industrial SRVs	leave contaminated soil identified during redevelopment in-place and rely on institutional controls	no action
Soil vapor mitigation	install liner and passive venting system	install liner and passive venting system	no action
ACM, LBP, and hazardous materials	remove and dispose of ACM, LBP, and hazardous materials	remove and dispose of ACM, LBP, and hazardous materials	remove and dispose of ACM, LBP, and hazardous materials
Contaminated Concrete floors	test and reuse 'clean' concrete; demo and dispose all other concrete	demo and dispose all concrete	demo and dispose all concrete
Institutional Controls	not necessary	implement institutional controls	implement institutional controls
CCP Implementation	implement CCP during site activities	implement CCP during site activities	implement CCP during site activities
Building Demolition	demolition of all buildings	demolition of all buildings	demolition of all buildings
Total Remediation Cost (excluding demolition)	\$963,000 - \$1,013,000	\$728,000	\$528,000

Evaluation of Effectiveness and Implementability

Parcel 3-North Scenario 1:

- Alternative #1 is an effective way to prevent receptors from coming into direct contact with contamination and minimizes the potential exposure to contaminants by future occupants. Alternative #1 can be implemented with readily available construction equipment and methods although costs are higher
- Alternative #2 effectively isolates contaminants to reduce occupant exposures based on reliance of engineering and institutional controls. Alternative #1 can be implemented with readily available construction equipment and methods.
- Alternative #3 does not protect future occupants or the public from potential contamination and will be eliminated on this basis. Note that Alternative #3 is easy to implement since only minimal actions will be conducted.

Parcel 3-North Scenario 2:

- Alternative #1 is an effective way to prevent receptors from coming into direct contact with contamination and minimizes the potential exposure to contaminants by future occupants. Alternative #1 can be implemented with readily available construction equipment and methods although costs are higher
- Alternative #2 effectively isolates contaminants to reduce occupant exposures based on reliance of engineering and institutional controls. Alternative #1 can be implemented with readily available construction equipment and methods.
- Alternative #3 does not protect future occupants or the public from potential contamination and will be eliminated on this basis. Note that Alternative #3 is easy to implement since only minimal actions will be conducted.