

TABLES

**Table 1
Alternative I: Track 1 Remedial Cost Estimate**

**473 President Street
Brooklyn, NY
NYSDEC BCP Site No. 224220
Langan Project No.: 170361303**

Item No.	Item Description	Quantity	Unit	Unit Cost	Total Cost
Contractor Costs					
1	<u>Remediation Facilities, Mobilization, Demobilization, and Site Maintenance</u> - Remediation and decontamination facilities, site fencing, trailer, truck cleaning facilities, etc.			Lump Sum	\$ 100,000
2	<u>Abatement and Demolition</u> - Abatement of asbestos containing material (ACM) and hazardous materials (HAZMAT) and building demolition to prepare site for remediation.			Lump Sum	\$ 300,000
3	<u>Management and Handling of Excavated Materials</u> - Excavation of material with concentrations above Part 375 Unrestricted Use Soil Cleanup Objects (site-wide to 10 feet below grade surface).	8,200	Cubic Yard	\$ 50	\$ 410,000
4	<u>Perimeter Support of Excavation</u> - Soldier piles, lagging, and tiebacks along President Street Perimeter.	2,200	Square Foot	\$ 200	\$ 440,000
5	<u>Perimeter Support of Excavation</u> - Underpinning along perimeters shared with adjoining buildings.	4,000	Square Foot	\$ 250	\$ 1,000,000
6	<u>Off-Site Transport and Disposal of Nonhazardous Historic Fill Material</u> - 85% of excavated material excluding tar hotspot.	10,200	Ton	\$ 50	\$ 510,000
7	<u>Off-Site Transport and Disposal of Hazardous Historic Fill Material</u> - 15% of excavated material excluding tar hotspot.	1,800	Ton	\$ 200	\$ 360,000
8	<u>Off-Site Transport and Disposal of Tar-Impacted and/or Petroleum-Impacted Historic Fill Material</u> - Two 20-foot by 20-foot areas.	400	Ton	\$ 75	\$ 30,000
9	<u>Underground Storage Tank (UST) Removal</u> - Includes registration, cleaning, removal and disposal of five USTs (three suspected, two as contingency).	5	Each	\$ 10,000	\$ 50,000
10	<u>Dewatering</u> - Permitting, equipment, maintenance and sampling.	2	Month	\$ 75,000	\$ 150,000
11	<u>Dust, Odor, and Vapor Control</u> - Odor suppressant, foam and/or water application during ground intrusive activities.	8	Month	\$ 10,000	\$ 80,000
12	<u>In-Situ Soil Vapor and Groundwater Treatment</u> - Installation, start-up, and short-term operation of an air sparge and soil vapor extraction (AS/SVE) system.			Lump Sum	\$ 500,000
13	<u>Backfill</u> - Import and placement of clean fill to bring site to development grade (2 feet below grade surface). An additional 30% of material is included to account for compaction.	8,700	Cubic Yard	\$ 80	\$ 696,000
Contractor Fee Subtotal					\$ 4,626,000
15% Contingency of Contractor Fee Subtotal					\$ 693,900
Engineering Fees					
14	<u>Remedial Design</u> - AS/SVE system pilot study and design documents for in-situ soil vapor and groundwater treatment.			Lump Sum	\$ 75,000
15	<u>Waste Characterization</u> - Sampling and reporting to obtain disposal facility approval for excavated materials.			Lump Sum	\$ 100,000
16	<u>Remedial Oversight</u> - Construction administration, bid support, environmental monitoring, Community Air Monitoring Plan implementation, and daily reporting.	6	Month	\$ 45,000	\$ 270,000
17	<u>Special Inspection</u> - Department of Buildings-required special inspections during support of excavation installation.	4	Month	\$ 35,000	\$ 140,000
18	<u>BCP Engineering Services</u> - Citizen Participation Plan, Final Engineering Report, monthly reporting, and agency coordination.			Lump Sum	\$ 110,000
19	<u>Soil Sampling</u> - Endpoint soil sampling to confirm achievement of remedial action objectives following excavation.	25	Sample	\$ 900	\$ 22,500
20	<u>Groundwater Sampling</u> - Quarterly groundwater sampling events to confirm achievement remedial action objectives following in-situ remediation.	8	Event	\$ 15,000	\$ 120,000
Engineering Fee Subtotal					\$ 837,500
15% Contingency of Engineering Fee Subtotal					\$ 125,700
Total Costs and Fees					\$ 6,283,100

Assumptions and Conditions:

- Based on the remedial investigation, site-wide excavation to about 11 feet below grade surface (bgs) is anticipated to achieve a Track 1 cleanup. Groundwater was encountered at depths ranging from 9 to 13 feet bgs.
- Implementation of remedial activities is estimated to take about eight months. Support of excavation installation is estimated to take about four months.
- Total costs are rounded up to the nearest thousand.
- Unit costs provided are estimates and are based on experience and previous vendor/contractor bids for similar projects.
- This cost estimate does not include new building construction, legal fees, insurance, and general consulting costs.
- This cost estimate does not include procurement and installation of a vapor barrier membrane. Although not required as a component of the Track 1 cleanup, a vapor barrier membrane will be installed to mitigate intrusion of soil vapor migrating from off-site.
- The density used for conversion from cubic yards to tons is 1.5 tons/CY.
- This cost estimate is not a stand-alone document and should be used in concert with the Remedial Action Work Plan.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30 to +50 percent of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

**Table 2
Alternative II: Track 4 Remedial Cost Estimate**

**473 President Street
Brooklyn, NY
NYSDEC BCP Site No. 224220
Langan Project No.: 170361303**

Item No.	Item Description	Quantity	Unit	Unit Cost	Total Cost
Contractor Costs					
1	<u>Remediation Facilities, Mobilization, Demobilization, and Site Maintenance</u> - Remediation and decontamination facilities, site fencing, trailer, truck cleaning facilities, etc.			Lump Sum	\$ 100,000
2	<u>Abatement and Demolition</u> - Abatement of asbestos containing material (ACM) and hazardous materials (HAZMAT) and building demolition to prepare site for remediation.			Lump Sum	\$ 300,000
3	<u>Management and Handling of Excavated Materials</u> - Excavation of contaminated historical fill material as required to demolish former subsurface structures and install engineering controls (site-wide to two feet below grade surface).	1,500	Cubic Yard	\$ 50	\$ 75,000
4	<u>Off-Site Transport and Disposal of Nonhazardous Historic Fill Material</u> - 85% of excavated material excluding tar hotspot.	1,600	Ton	\$ 50	\$ 80,000
5	<u>Off-Site Transport and Disposal of Hazardous Historic Fill Material</u> - 15% of excavated material excluding hotspots.	300	Ton	\$ 200	\$ 60,000
6	<u>Off-Site Transport and Disposal of Tar-Impacted and/or Petroleum-Impacted Historic Fill Material</u> - Two 20-foot by 20-foot areas.	400	Ton	\$ 75	\$ 30,000
7	<u>Underground Storage Tank (UST) Removal</u> - Includes registration, cleaning, removal and disposal of five USTs (three suspected, two as contingency).	5	Each	\$ 10,000	\$ 50,000
8	<u>Dust, Odor, and Vapor Control</u> - Odor suppressant, foam and/or water application during ground intrusive activities.	3	Month	\$ 10,000	\$ 30,000
9	<u>In-Situ Soil Vapor and Groundwater Treatment</u> - Installation, start-up, and short-term operation of an air sparge and soil vapor extraction (AS/SVE) system.			Lump Sum	\$ 500,000
10	<u>Soil Vapor Intrusion Mitigation System</u> - Installation, start-up, and operation of a sub-membrane depressurization (SMD) system.			Lump Sum	\$ 150,000
11	<u>Vapor Barrier Membrane</u> - Procurement and installation as required by the SMD system design.	20,000	Square Foot	\$ 15	\$ 300,000
12	<u>Hotspot Backfill</u> - Import and placement of clean fill to bring site to development grade (two feet below grade surface). An additional 30% of material is included to account for compaction.	300	Cubic Yard	\$ 80	\$ 24,000
13	<u>Composite Cover System</u> - Import and placement of a site-wide two-foot-thick clean fill cover. An additional 30% of material is included to account for compaction.	2,000	Cubic Yard	\$ 80	\$ 160,000
Contractor Fee Subtotal					\$ 1,859,000
15% Contingency of Contractor Fee Subtotal					\$ 278,900
Engineering Fees					
14	<u>Remedial Design</u> - AS/SVE and SMD system pilot studies and design documents for in-situ soil vapor and groundwater treatment.			Lump Sum	\$ 75,000
15	<u>Waste Characterization</u> - Sampling and reporting to obtain disposal facility approval for excavated materials.			Lump Sum	\$ 25,000
16	<u>Remedial Oversight</u> - Construction administration, bid support, environmental monitoring, Community Air Monitoring Plan implementation, and daily reporting.	3	Month	\$ 45,000	\$ 135,000
17	<u>BCP Engineering Services</u> - Citizen Participation Plan, Final Engineering Report, Site Management Plan, monthly reporting, and agency coordination.			Lump Sum	\$ 150,000
18	<u>Soil Sampling</u> - Endpoint soil sampling to document soil quality following excavation.	25	Sample	\$ 900	\$ 22,500
19	<u>Groundwater Sampling</u> - Quarterly groundwater sampling events to confirm achievement remedial action objectives following in-situ remediation.	12	Event	\$ 15,000	\$ 180,000
Engineering Fee Subtotal					\$ 587,500
15% Contingency of Engineering Fee Subtotal					\$ 88,200
Total Costs and Fees					\$ 2,813,600

Assumptions and Conditions:

- Excavation to two feet below grade surface will be required to demolish subsurface structures and install engineering controls (SMD system and composite cover system). Groundwater was encountered at depths ranging from 9 to 13 feet bgs.
- Implementation of remedial activities is estimated to take about three months.
- Total costs are rounded up to the nearest thousand.
- Unit costs provided are estimates and are based on experience and previous vendor/contractor bids for similar projects.
- This cost estimate does not include new building construction, legal fees, insurance, and general consulting costs.
- The density used for conversion from cubic yards to tons is 1.5 tons/CY.
- This cost estimate is not a stand-alone document and should be used in concert with the Remedial Action Work Plan.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30 to +50 percent of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.