UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
5 POST OFFICE SQUARE – SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

MEMORANDUM

DATE: November 18, 2024

SUBJ: Request for a Removal Action at the Fossa Ave. VI Site, Nashua, Hillsborough County, New Hampshire - **Action Memorandum**

FROM: Abdine Ouedraogo, On-Scene Coordinator
for Emergency Response and Removal Section II
WILLIAM LOVELY Digitally signed by WILLIAM LOVELY Date: 2024.11.18 12:06:12 -05'00'

THRU: William Lovely, Chief
Emergency Response and Removal Section II
WILLIAM LOVELY Digitally signed by WILLIAM LOVELY Date: 2024.11.18 12:06:46 -05'00'

Michael Ottariano, Acting Chief
Emergency Planning and Response Branch
MICHAEL OTTARIANO Digitally signed by MICHAEL OTTARIANO Date: 2024.11.20 13:46:20 -05'00'

TO: Bryan Olson, Director
Superfund and Emergency Management Division

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed removal action at the Fossa Avenue. VI Site (the Site), which is located at 9-11 Fossa Avenue in Nashua, Hillsborough County, New Hampshire. Hazardous substances present in soil at the Site, if not addressed by implementing the response actions selected in this Action Memorandum, will continue to pose a threat to human health and the environment. There are no nationally significant or precedent-setting issues associated with this Site, and there has been no use of the On-Scene Coordinator's (OSC's) $200,000 warrant authority.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID#: NHN000153885
SITE ID#: 01RX
CATEGORY: Time-Critical

A. Site Description

1. Removal site evaluation

On April 18, 2023, the New Hampshire Department of Environmental Services (NHDES) referred the Site to the Environmental Protection Agency (EPA) for evaluation of the potential of Vapor Intrusion suspected to impact two residential buildings.

During an assessment of a Main Street property by Terracon in 2012, chlorinated volatile organic compounds (CVOCs) were detected in the groundwater at concentrations exceeding their respective NHDES groundwater quality standards. The CVOCs detected were typically associated with dry cleaning solvents and their breakdown products. Terracon concluded that the source of the CVOCs was from an off-site source, namely the former laundry business located on the property.

On December 27, 2016, an ASTM Phase I Environmental Site Assessment (ESA) of the Site was performed by Exeter Environmental Associates (EEA), with a site walkover, a limited metal detector survey, research into the site history, a review of available local and state records, and preparation of a report. EEA identified two recognized environmental conditions associated with the Site. Specifically, the property formerly contained an underground gasoline storage tank, and it was historically used for laundry cleaning with the potential for on-site dry cleaning. No documentation regarding the tank closure or whether there was a release of gasoline from the underground tank was available.

On April 19, 2017, an ASTM Phase II ESA of the Site was performed by EnviroBusiness Inc. (EBI) Consulting, with six (6) 20-foot (or to refusal) soil borings completed as 1-inch-diameter polyvinyl chloride (PVC) monitoring wells installed in the three borings that encountered groundwater. Of the six soil borings, four did not have any volatile organic compound (VOC) concentrations detected above laboratory detection limits; one had low concentrations of trichloroethene (TCE) and tetrachloroethene (PCE); and another had petroleum-related VOCs. All were below NHDES S-1 Soil Standards. The groundwater analysis detected concentrations of PCE at 430 micrograms/Liter (µg/L), TCE at 400 µg/L, and vinyl chloride at 34 µg/L. EBI Consulting conducted additional investigations and prepared a Focused Site Investigation Report, on July 26, 2017, to further evaluate environmental conditions. Permanent monitoring wells were constructed (10-feet of 20-slot schedule 40 PVC well screen across the water table). Three sub-slab vapor samples were collected from the boiler rooms of both 9 and 11 Fossa Avenue and the walkway in front of unit 9D Fossa Avenue. No elevated VOC field screening results were detected in any of the soil samples collected. Additionally, the analytical results for the soil samples also indicated no concentrations of VOCs above laboratory detection limits.

Groundwater samples indicated detections of PCE and its breakdown products in all three of the permanent wells. All three wells showed detected concentrations of CVOCs (PCE, TCE, Vinyl

Chloride) in at least one monitoring well at elevated concentrations when compared to NH-GW-2 standard. Cis-1,2- Dichloroethylene was also detected in all three wells. The soil vapor analysis results indicated concentrations of chloroform, PCE, and TCE greater than the EPA Vapor Intrusion Screening Levels (VISL) for residential properties in at least two of the three samples collected. From these results, the report concluded that the central portion of the Site was impacted with VOCs at concentrations above the NHDES GW-2 standards, likely from former dry-cleaning operations conducted at the property. The soil vapor below the boiler rooms and sidewalk in front of unit 9D was also impacted with VOCs above the VISLs.

A crawlspace was noted below 9 Fossa Avenue that could circumvent the potential for vapor intrusion into the building. The other building, 11 Fossa Avenue, does not have this crawlspace. Vapor intrusion mitigation activities were performed from October 2017 to November 2017 by Nashua Housing and Redevelopment Authority (NHRA) personnel, sealing cracks or openings in the concrete slab and foundation walls within the crawlspace beneath the 9 Fossa Avenue building. The March 2019 sampling indicated TCE concentrations in the indoor air of the exterior crawlspace slightly above the NHDES Residential Indoor Air Screening Levels.

In April 2023, EBI Consulting submitted a Vapor Intrusion System Design Plan to NHDES which was designed and prepared by OBAR Systems, Inc. (OBAR), and in May 2023 NHDES accepted the plan. On July 26, 2023, OBAR installed the sub-membrane depressurization system (SMD) system within the exterior crawl space and sealed any openings or cracks located beneath the 9 Fossa Avenue building. The SMD system was designed to depressurize the soil under the vapor barrier membrane by creating a vacuum beneath the liner, with the soil gases then drawn into the system piping, where the vapors would then be discharged to a safe location (above the roofline).

In February 2024, EBI Consulting submitted a Bi-Annual Vapor Intrusion Mitigation System Status Report to NHDES, which included a system inspection to confirm the effectiveness of the SMD system and bi-annual indoor air sampling on the first floor of all four units within the 9 Fossa Avenue building (Units 9A through 9D). TCE was not detected at a concentration above laboratory reporting limits in any of the samples collected and analyzed, and the reporting limits were all below the NHDES Residential Indoor Air Screening Levels. PCE was detected at concentrations above laboratory reporting limits in all six samples collected and analyzed, but all were well below the NHDES Residential Indoor Air Screening Level of 8 micrograms per cubic meter (µg/m3).

On January 17-19, 2024, and July 9-10, 2024, as part of its preliminary assessment and site investigation (PA/SI), EPA conducted sub-slab soil gas, soil gas, and groundwater sampling at the Site (specifically 9-11 Fossa Avenue, owned by the NHRA), and two privately owned properties on West Allds Street. Samples of the air in the soil were taken from under the buildings (sub-slab soil gas) and PCE was detected in two sampling locations at 11 Fossa

Avenue, with concentrations above the lower VISLs (i.e., 360 ug/m3), indicating a potential for vapor intrusion at levels that may present a hazard to human health.

Three soil gas samples were collected on the southwestern portion of the Site, directly south of 9 Fossa Avenue. EPA conducted four soil gas borings (including one duplicate) and collected soil gas samples from various depths. The results show that PCE was detected in the soil gas samples. Of the total three soil gas samples, VOC (PCE) was detected at a concentration of 12,000 ug/m3, 12,000 ug/m3, and 95,000 ug/m3, all above EPA's upper Residential Target Sub-Slab Soil Gas Concentration VISL of 4,170 ug/m3. Groundwater samples were collected in wells and results show that PCE was detected in groundwater at levels exceeding the upper VISL of 14.9 ug/l.

Based on the results of the PA/SI, EPA concluded that a time critical removal action is warranted and documented this conclusion in Closure Memorandum dated September 6, 2024.

2. Physical location

The Site is located on Fossa Avenue, Nashua, New Hampshire at 42° 45' 00.34" north latitude and 71° 27' 40.56" west longitude. The Site is in a mixed residential and commercial neighborhood. Residential properties surround the Site to the north and east, Fossa Avenue is to the south, and Salmon Brook is to the west.

3. Site characteristics

The Site was undeveloped prior to approximately 1912. During the 1940s to mid-1970s, the property was developed by G.F. Fossa Steam Laundry. An underground gasoline storage tank, associated with the Site, was located on the east-central portion of the Site between 1949 and 1974. The building was vacant sometime in the late 1970s, and the two existing townhouse buildings were constructed circa 1981. The Site is currently owned by the NHRA. The site is an approximately 0.7-acre parcel with two multi-unit residential townhouse buildings and two multi-unit storage sheds. The buildings contain four residential townhouses each, for a total of eight units. One of the two-story townhouse buildings (11 Fossa Ave.) is constructed on concrete slab-on-grade foundation with no basement, and the other building (9 Fossa Ave) features a crawlspace with approximately 3 feet of clearance. The townhouse buildings are serviced with natural gas and municipal water and sewer. An active gasoline station is located approximately 145 feet northeast of the Site. Approximately 5,500 people live within 1 square mile radius of the properties; 1,500 in a quarter square mile radius.

Based on information in EPA's EJSCREEN environmental justice screening tool, 2 out of 12 Environmental Justice Indexes for the area within a one-mile radius of the site exceed the 80th percentile on a national basis. Please see the attached EJSCREEN standard report for more information.

"Based on information in the Climate Mapping tool for Resilience and Adaptation (CMRA), the following Climate Hazards exceed a National Risk Index Rating of Relatively Moderate in Hillsborough County: extreme heat, and flooding . Please see the attached CMRA report for more information."

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The following hazardous substance as defined by Section 101(14) of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. 9601(14) has been detected at the Site at levels that may present a threat to human health or the environment:

Contaminant	Media	Lower EPA VISL	Upper EPA VISL	Range of Sampling Results
Perchloroethylene (PCE)	Sub-Slab Soil Gas (ug/m3)	360	4170	420-500
	Soil Gas (ug/m3)	360	4170	1,100-12,000
	Groundwater (ug/L)	14.9	173	3-63

According to previous environmental investigations, there was a dry-cleaning business on-site from the 1940s to mid-1970's. Previous findings, in addition to EPA's reports concluded that the central portion of the Site was impacted with PCE at a concentration above EPA's VISLs. Based on the elevated levels of PCE in the soil beneath the 11 Fossa Avenue building, there is a potential that vapor intrusion may occur inside the residential townhouses.

5. NPL status

The Site is not currently on the National Priorities List and has not received a Hazardous Ranking System rating.

6. Maps, pictures and other graphic representations

Image of 11 Fossa Avenue (property 2) where mitigation system(s) will be installed.

B. Other Actions to Date

1. Previous actions

The NHRA, a US Department of Housing and Urban Development (HUD) funded quasi-governmental agency acquired the Site in 1981. In 2016, HUD required NHRA to conduct an ASTM Phase I Environmental Site Assessment (ESA) as part of a broader programmatic audit of its properties), which identified the former dry-cleaner operation as a Recognized Environmental Condition (REC).

As a result, a Phase II investigation was performed that identified chlorinated volatile organic compounds (CVOCs) present in groundwater above NH's Ambient Groundwater Quality Standards (AGQS), which was reported to NHDES in May 2017. Under the Env-Or 600 Contaminated Site Management rules, NHDES required supplemental investigations which took place between 2017 and 2018 that identified contamination related to the on-site historical dry-cleaning operations including impacted groundwater, soil, soil gas, and indoor air.

NHDES requested screening of indoor air quality at seven adjacent properties that are situated within 100 feet of Site groundwater monitoring wells or vapor monitoring points having concentrations of certain CVOCs exceeding applicable screening levels.

In December 2022, EBI Consulting submitted a Remedial Design Plan developed for NHDES to address vapor intrusion from the crawl space beneath the building located at 9 Fossa Avenue. In April 2023, EBI Consulting submitted a Vapor Intrusion System Design Plan to NHDES, which NHDES accepted in May 2023. OBAR installed the sub-membrane depressurization system (SMD) on July 26, 2023.

In October 2023, EBI Consulting submitted the Vapor Intrusion Mitigation System Implementation Report to NHDES which included general system information, system start-up and commissioning data, post-installation testing results (August 2023), and Operations and Maintenance information. In February 2024, EBI Consulting submitted a Bi-Annual Vapor Intrusion Mitigation System Status Report to NHDES, which included a system inspection to confirm the effectiveness of the SMD system and bi-annual indoor air sampling on the first floor of all four units within the 9 Fossa Avenue building (Units 9A through 9D).

Prior to the Site Investigation in January 2024, EPA had not conducted any previous actions at the Site.

2. Current actions

EPA's PA/SI efforts initiated in January 2024 and closed in September 2024. Currently, no response actions have been conducted by EPA at the Site.

C. State and Local Authorities' Roles

1. State and local actions to date

As discussed in Section B, sub-section 1, NHRA joined forces with the HUD in 1981. NHRA and HUD conducted an assessment in 2016 as part of a broader programmatic audit of its properties which identified CVOCs in groundwater. The data was then reported to NHDES who required supplemental investigations. As a result of many investigations, a mitigation system was installed within the exterior crawl space located beneath the 9 Fossa Avenue building on July 26, 2023.

2. Potential for continued State/local response

Based on the exigencies of the situation, neither the state nor the Housing Authority have the resources to respond to the Site in a timely manner.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the Site meet the general criteria1 for a removal action, as set forth in 40 CFR §300.415(b)(1) in that "there is a threat to public health or welfare of the United States or the environment," and in consideration of the factors set forth in 40 C.F.R. §300.415(b)(2) as described below.

The following substances are hazardous substances as defined by Section 101(14) of CERCLA, 42 U.S.C. 9601 (14): Tetrachloroethylene (PCE)

EPA's Agency for Toxic Substances and Disease Registry (ATSDR) "Tetrachloroethylene – ToxFAQs" information sheet states: "Breathing high levels of tetrachloroethylene for a brief period may cause dizziness or drowsiness, headache, and incoordination; higher levels may cause unconsciousness and even death. Exposure for longer periods to low levels of tetrachloroethylene may cause changes in mood, memory, attention, reaction time, and vision. Studies in animals exposed to tetrachloroethylene have shown liver and kidney effects, and changes in brain chemistry.

The Department of Health and Human Services considers that tetrachloroethylene is reasonably anticipated to be a human carcinogen. EPA considers tetrachloroethylene likely to be carcinogenic to humans by all routes of exposure. Studies in humans suggest that exposure to tetrachloroethylene might lead to a higher risk of getting bladder cancer, multiple myeloma, or non-Hodgkin's lymphoma.

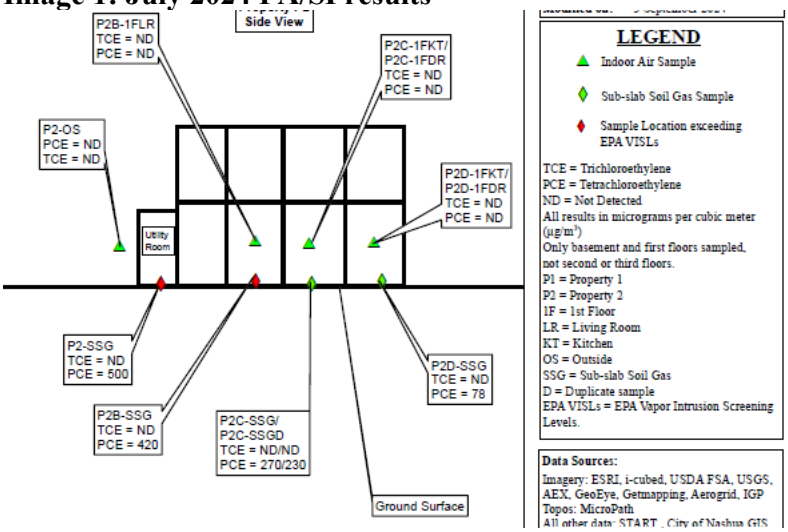
Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants; [§300.415(b)(2)(i)];

Previous soil gas data indicated that levels of VOCs, in particular PCE may migrate to the surface impacting the residents. This concern was mitigated at 9 Fossa Avenue with the installation of a mitigation system to keep the indoor air quality safe. However, the threat still exists at 11 Fossa Avenue with data indicating high readings of PCE in soil gas that may pose a threat of actual or potential exposure to the residents living there.

High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate [§300.415(b)(2)(iv)];

The July 2024 PA/SI followed the trend of previous investigations executed at the Site. EPA's PA/SI detected elevated concentrations of PCE in soil gas near the surface via vapor ports beneath the building (refer to image 1). These concentrations exceed the EPA's Soil Removal Management Levels and may migrate to the surface.

Image 1: July 2024 PA/SI results



IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances or pollutants or contaminants from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment. In accordance with OSWER Directive 9360.0-34 (August 19, 1993), an endangerment determination is made based on "appropriate Superfund policy or guidance, or on collaboration with a trained risk assessor," which is outlined and discussed in Section III above. "Appropriate sources include, but are not limited to, relevant action level or clean-up standards, Agency for Toxic Substances and Disease Registry documents or personnel, or staff toxicologists." In this case, EPA relied on the health and toxicological information from ATSDR's toxicological profiles for the CERCLA hazardous substances identified in Section III above and the Vapor Intrusion Screening Levels (VISLs) published by EPA at https://epa-visl.ornl.gov/cgi-bin/visl_search to provide action levels for the Site.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

To address potential risk to human health, EPA will implement mitigation measures to reduce the migration of VOCs within soil gas to indoor air spaces. Mitigation may include sealing vapor intrusion points, installing a sub-slab depressurization system (SSDS), or other appropriate measures.

1. Proposed action description

- Conducting a Site walk with EPA contractors to determine appropriate equipment, personnel and utilities required;
- Developing and implementing a Site health and safety plan;
- Preparing an air monitoring plan to ensure the safety of workers and the public and conducting air monitoring, as necessary;
- Developing site-specific work plans including plans to install a vapor mitigation system, as necessary;
- Mobilizing personnel and equipment to the Site;
- Ensuring safe working environment for contractors when installing mitigation system
- Implementing measures to prevent access by the public to contractors during installation of mitigation system;
- Coordinating the mitigation system installation process, ensuring adherence to project plans;
- Monitoring progress and resolving any issues that arise during installation;
- Conducting additional sampling as necessary;
- Performing post-installation testing to verify system effectiveness;
- Repairing response-related damage, as necessary;
- Establishing a long-term monitoring plan to ensure ongoing compliance and performance with NHDES, and NRHA; and
- Demobilizing personnel and equipment from the Site;

2. Community relations

EPA will remain involved with the local community during the removal action through press releases, fact sheets, and public meetings, as necessary. The OSC will receive assistance from the EPA Community Involvement Coordinator to assist with all public relations activities. EPA will work closely with the NHDES, NRHA, and the community.

3. Contribution to remedial performance

The cleanup proposed in this Action Memorandum is designed to mitigate the threats to human health and the environment posed by the Site. The actions taken at the Site would be consistent with and will not impede any future responses.

4. Description of innovative technologies and sustainable approaches

In accordance with the December 23, 2013 Memorandum, updated August 02, 2016, issued by Office of Land and Emergency Management as well as the Region 1 Clean and Greener Policy for Contaminated Sites, greener cleanup practices should be considered for all cleanup projects. Greener cleanup incorporate practices that minimize the environmental impacts of cleanup actions and maximize environmental and human benefit. Alternative technologies and sustainable approaches will be considered and incorporated, as appropriate, throughout the implementation of the removal action.

5. Applicable or relevant and appropriate requirements (ARARs)

Federal ARARs:

Clean Water Act, National Pollutant Discharge Elimination System (NPDES), 40 C.F.R. Parts 122 – 125; 122.26: Establishes the specifications for discharging pollutants from any point source into the waters of the U.S. Also, includes storm water standards for construction sites over one acre. Removal activities will be managed to prevent stormwater discharge from the Site. To the extent water generated from the removal action needs to be discharged to the river, applicable discharge standards will be met.

Clean Water Act, 40 C.F.R. Sections 122.26(c)(ii)(C) and 122.44(k): NPDES regulations for storm water control and management.

Clean Air Act, 40 C.F.R. Part 61, 42 U.S.C. Section 112(b)(1): standards for controlling dust. The regulations establish emissions standards for 187 hazardous air pollutants. Standards set for dust and release sources. If the removal of contaminated soils generates regulated air pollutants, then measures will be implemented to meet these standards.

If endangered species are or might be at the Site:

Endangered Species Act (50 C.F.R. 402; 16 USC 1531 *et seq*., 50 C.F.R. 200): Requires federal agencies to ensure continued existence of any endangered or threatened species and that their habitats will not be jeopardized by a site action.

If historical or archaeological:

National Historical Preservation Act (16 U.S.C. 469 *et seq.*; 36 C.F.R. Part 65): When a federal agency finds, or is notified, that its activities in connection with a federal construction project may cause irreparable loss or destruction of significant scientific, pre-historical, historical, or archeological data, the substantive standards under the Act will be met. If, during the removal action, it is determined that the removal action may cause irreparable loss or destruction of significant scientific, pre-historical, historical, or archaeological data, the substantive standards under the Act will be met.

State ARARs:

New Hampshire:
40 C.F.R. Parts 260-262 and 264 Resource Conservation and Recovery Act, Subtitle C-Hazardous Waste Identification and Listing Regulations; Generator and Handler Requirements, Closure and Post-Closure – New Hampshire has been delegated the authority to administer these RCRA standards through its state hazardous waste management regulations. Waste generated will be tested to determine whether it exceeds hazardous waste thresholds and, if so, the hazardous waste will be managed on-site and until such time as it is shipped to an EPA-approved off-site disposal location.

The OSC will coordinate with state officials to identify additional state ARARs, if any. In accordance with the National Contingency Plan and EPA Guidance Documents, the OSC will determine the applicability and practicability of complying with each ARAR that is identified in a timely manner.

6. Project schedule

Upon approval of the proposed removal action, at the Site, initiation of a time critical removal action will begin during the fall/winter of 2024 and will be complete within four months. If impacts to indoor air are detected that pose risks to human health, mitigation actions will be taken to address them.

B. Estimated Costs

COST CATEGORY		CEILING
REGIONAL REMOVAL ALLOWANCE COSTS:		
ERRS Contractor		$50,000.00
Interagency Agreement		$0,000.00
OTHER EXTRAMURAL COSTS NOT FUNDED FROM THE REGIONAL ALLOWANCE:		
START Contractor		$30,000.00
Extramural Subtotal		$80,000.00
Extramural Contingency	10%	$8,000.00
TOTAL, REMOVAL ACTION CEILING		**$88,000.00**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will increase public health risks by allowing continued migration of PCE vapors in soil gas to migrate off-site, potentially exposing nearby residents to hazardous substances.

VII. OUTSTANDING POLICY ISSUES

There are no precedent-setting policy issues associated with this Site.

VIII. ENFORCEMENT ... For Internal Distribution Only

See attached Confidential Enforcement Strategy.

The total EPA costs for this removal action that will be eligible for cost recovery are estimated to be $88,000.00 (extramural costs) + $30,000 (EPA intramural costs) = $118,000 X 1.3933 (regional indirect rate) = **$164,409.**

[3] Direct Costs include direct extramural costs $88,000.00 and direct intramural costs $30,000.00. Indirect costs are calculated by using regional indirect rate in effect at time cost estimate is prepared and is expressed as a percentage of the 39.33% (effective January 4, 2024) x $118,000.00, consistent with EPA's full cost accounting methodology. These estimates do not include pre-judgment interest, do not consider other enforcement costs, including Department of Justice costs, and may be adjusted during a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

IX. RECOMMENDATION

This decision document represents the selected removal action for the Fossa Ave VI Site in Nashua, New Hampshire, developed in accordance with CERCLA, as amended, and is not inconsistent with the National Contingency Plan. The basis for this decision will be documented in the administrative record to be established for the Site.

Conditions at the Site meet the NCP Section 300.415 (b) (2) criteria for a removal action due to the following:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants [§300.415(b)(2)(i)];

High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate [§300.415(b)(2)(iv)].

I recommend that you approve the proposed removal action. The total extramural removal action project ceiling if approved will be $240,000.

APPROVAL: BRYAN OLSON Digitally signed by BRYAN OLSON Date: 2024.11.20 14:02:03 -05'00' DATE:_____