Final Proposed Plan
Spring Valley Formerly Used Defense Site Groundwater
Washington, D.C.
April 2024

1.0 INTRODUCTION

This **Proposed Plan (PP)**[1] presents the proposed decision of **No Action** required for groundwater at the Spring Valley Formerly Used Defense Site (SVFUDS), referred to hereafter as the "Site," in Washington District of Columbia (D.C.) pursuant to Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act** (**CERCLA**).

The PP discusses the Site's groundwater history, findings, and conclusions from previous environmental investigations. It explains how the public can participate in the selection of remedial action (**Box 1**).

The U.S. (United States) Army is the Department of Defense (DoD) lead Agency for SVFUDS. The U.S. Army Corps of Engineers (USACE), Baltimore District executes this project under the Defense Environmental Restoration Program (DERP) and FUDS Program to address releases of hazardous substances or pollutants and **contaminants** from past DoD activities. The U.S. Environmental Protection Agency (EPA) Region 3, and the D.C. Department of Energy and Environment (DOEE) provide oversight as Partners of the SVFUDS investigation activities.

BOX 1. MARK YOUR CALENDAR FOR THE PUBLIC COMMENT PERIOD FROM AUGUST 6, 2024 THROUGH SEPTEMBER 20, 2024

The USACE, Baltimore District will accept written comments on the Proposed Plan during the public comment period.

Comment letters must be postmarked by mid-night on September 20, 2024, and submitted to:

Cynthia Mitchell
USACE, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201
410-962-2626
NAB-PAO@usace.army.mil

To request an extension, please send a written request to the above.

PUBLIC MEETING:

A public meeting will be held August 13, 2024 to explain this Proposed Plan and answer questions. Interested parties should contact Cynthia Mitchell (contact information above) on or before September 20, 2024.

Figure 1 in **Section 9.0** presents the location of SVFUDS. This PP describes the Groundwater at Spring Valley FUDS and summarizes the detailed technical information from the **Remedial Investigation** (**RI**) (USACE, 2016) and RI Addendum Report (USACE, 2023) contained in the **Information Repository** (i.e., D.C. Public Library) and **Administrative Record** File for this Site, which can be viewed at **Box 2** (Page 2).

[1] Definitions for terms shown in boldface are included in a Glossary in **Section 12.0**. Acronyms and abbreviations used in this document are listed in **Section 11.0**.

BOX 2. INFORMATION REPOSITORY AND ADMINISTRATIVE RECORD

D.C. Public Library
Tenley-Friendship Library Branch
4450 Wisconsin Avenue, N.W.
Washington, D.C. 20016
202-727-1488

USACE, Baltimore District
ATTN: Cynthia Mitchell
2 Hopkins Plaza
Baltimore, MD 21201
410-962-2626

Go online: https://www.nab.usace.army.mil/Home/Spring-Valley/

The Army is required under CERCLA §117(a) and the **National Oil and Hazardous Substances Pollution Contingency Plan** (**NCP**) §300.430(f)(2) to issue this PP and seek public comment and participation. The Army will select the final action for the groundwater at SVFUDS after reviewing and considering all information submitted during the public comment period and the public meeting. The Army may modify the proposed No Action decision based on updated information or public comments. A final determination will not be made until the public comment period of no less than 30 days ends, and all comments are reviewed and addressed. Therefore, the public is encouraged to review and comment on the information and rationale presented in this PP. See **Box 1** for public participation information.

The Army encourages the public to review these documents to gain a more comprehensive understanding of the Site and investigation activities that have been conducted. Public input to this PP will be documented in a **Responsiveness Summary** that will be included in a **Record of Decision** (**ROD**) that documents the selected final determination.

2.0 SITE BACKGROUND

During World War I, the U.S. Government established the American University Experiment Station (AUES) to investigate the testing, production, and effects of noxious gases, antidotes, and protective masks. The AUES, located on the current grounds of American University (AU), used additional property in the vicinity to conduct this research and develop warfare materials such as **mustard gas, lewisite,** and **adamsite**. After the war, these activities were transferred to other locations and the AUES property was returned to AU and the owners of the adjoining properties. Chemical releases to the environment and waste disposal associated with the historical AUES activities caused the former AUES and surrounding area to be designated a FUDS, eligible for conduct of environmental investigation and remediation.

PREVIOUS SITE INVESTIGATIONS

Soil and Source Removal Actions

Soil and debris removal activities were conducted at the AU from 1999 through 2022. It is likely that these actions and others have reduced the amount of chemicals that may have contributed to past groundwater contamination.

The completed SVFUDS removal activities listed below include removal of soil, debris, and munitions in areas near the identified groundwater contamination.

- Soil investigation and remediation activities included sampling 1,632 residential, Federal and D.C., and commercial properties for **arsenic**, and 178 were determined to require cleanup, primarily through excavation of arsenic-contaminated soil. These removal actions included removal of soil on the AU campus upgradient of the identified groundwater contamination, including soil removal at the Child Development

Center and the AU Lots Time Critical Removal Action.

- USACE identified and removed munitions and debris from burial pits and several debris fields containing more than 1,000 **ordnance** items, including rounds filled with chemical agent. Two of the burial pits were located at 4801 Glenbrook Road and were investigated and cleaned up between March 1999 and March 2000. A third burial pit straddled the area between 4801 and 4825 Glenbrook Road N.W.
- From the Lot 18 Debris Area on AU and vicinity, several hundred pounds of AUES-related debris and over 20 pieces of munitions have been removed.
- The final Remedial Action for 4825 Glenbrook Road included removal of soil down to bedrock on most of the property. In 2021, the USACE remediated, removed, or recovered: 556 munition items (23 of them filled with chemical agent), 2,139 pounds of laboratory debris, 53 intact and sealed glass containers of chemical agent, and 7,500 tons of contaminated soil.
- The Site-Wide Decision Document included requirements to investigate and remove any potential Army-related contamination under the old Public Safety Building (PSB) if the building was demolished and the basement slab was removed. AU removed the PSB in August 2017, and USACE is currently removing soil and debris at the PSB.

Groundwater Investigations

The Groundwater RI (USACE, 2016) assessed groundwater chemistry through the installation of a groundwater monitoring network at three **Exposure Units** (**EUs**). The network was used to collect groundwater samples for chemical analysis. Groundwater samples were collected from 56 different groundwater monitoring locations. At some locations, multiple vertical intervals were monitored, for a total of 84 discrete monitored intervals, including a pre-existing sump and vault. Chemicals representing the following classes were analyzed: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, explosives, chemical agents and agent breakdown products, and other chemicals including **perchlorate**. As monitoring results became available and were evaluated, the Partners narrowed the focus of the analytical program throughout the course of the investigation.

After evaluating all the data collected during RI, the Partners determined that there were two **chemicals of concern (COCs)** identified (arsenic and perchlorate) that could pose an unacceptable risk if groundwater were used as a drinking water source in the future within exposure unit 2 (EU2). **Figure 2** (**Section 9.0**) presents the EU2 groundwater monitoring well network.

The human health risk assessment (HHRA) conducted as part of the 2016 RI indicated that exposure to groundwater at EU1 and EU3 posed no unacceptable risk for all human receptors. The Final Groundwater RI Report (Sept 2016) for the SVFUDS concluded that there was an unacceptable risk from perchlorate and arsenic in EU2 groundwater and that there was evidence that the concentrations of perchlorate and arsenic were stable or decreasing at several monitoring well locations within EU2.

Therefore, the USACE and the United States Geological Survey (USGS) conducted additional EU2 groundwater sampling and analysis of arsenic and perchlorate during the following months: September 2019, June 2020, and March 2021. The 2023 RI Addendum uses the 2019 through 2021 groundwater results in the revised SVFUDS

EU2 groundwater HHRA conducted in 2023. The 2019 through 2022 groundwater monitoring well results at EU2 further supported the 2016 RI conclusions that arsenic and perchlorate groundwater concentrations were stable or decreasing. The 2023 HHRA determined that exposure to groundwater at EU2 posed no unacceptable **risk** for all human receptors.

More information on the Spring Valley project and history can be found at: http://www.nab.usace.army.mil/Home/SpringValley.aspx.

3.0 SITE CHARACTERISTICS

The SVFUDS groundwater monitoring data suggest that the mobility of arsenic in groundwater at the SVFUDS is not sufficient to have caused widespread elevated arsenic concentrations in groundwater. Elevated arsenic concentrations in groundwater were localized to the area of the Glenbrook Road Disposal Areas where arsenic concentrations in monitoring wells MW-24, MW-25, and MP-2 were confirmed. Elevated arsenic concentrations occurred in both shallow groundwater and in deep groundwater up to 200 feet below ground surface (bgs) in fractured bedrock.

However, arsenic concentrations in groundwater in this area have decreased during the time period of the SVFUDS RI and the RI Addendum. The implication is that the arsenic source has either become depleted or removed. The SVFUDS remedial activities and soil removal (**Section 2.0**) is likely responsible for the decreasing groundwater arsenic concentrations.

The SVFUDS groundwater monitoring data support the interpretation that perchlorate is mobile and persistent. Low perchlorate concentrations near the analytical detection limit are frequently detected within the SVFUDS groundwater.

Despite the fact that perchlorate tends to be persistent, monitoring data clearly indicate that the concentrations of perchlorate in SVFUDS groundwater is decreasing. This implies that the perchlorate source has either become depleted or removed due to the remedial activities described in **Section 2.0**.

Details of the sampling methodology and results are documented in the Final RI Report (USACE, 2016) and RI Addendum (USACE, 2023).

Because no unacceptable risks were found at the Site for current or reasonably anticipated future receptors, the RI Addendum concluded that a **Feasibility Study** (FS) was not warranted, and that no remedial action is necessary to ensure protection of human health and the environment.

4.0 SCOPE AND ROLE OF THE ACTION

This PP addresses the SVFUDS groundwater. It is anticipated that the preferred decision of No Action will constitute the final action. The overall strategy of the Army and USACE is to eliminate human health risks from the Site. The proposed No Action decision is appropriate at the Site because the results of the RI and RI Addendum illustrated that the Site has been sufficiently characterized, and there are no unacceptable risks to human health or the environment. The drinking water exposure pathway was evaluated for the on-Site residential scenario, assuming that the SVFUDS groundwater may be used in the future for drinking water purposes. The city supplies drinking water to SVFUDS study area. The HHRA risk results for the future resident are acceptable. Therefore, it is the Army's current judgement that No Action is appropriate for the SVFUDS groundwater to protect human health, welfare, and the environment.

5.0 SUMMARY OF SITE RISKS

The 2016 and 2023 HHRAs addressed two exposure scenario timeframes: current/future and future. The current/future scenarios represent current Site conditions and the populations that are exposed to SVFUDS groundwater. The "future" portion of this timeframe assumes that the exposure or use of SVFUDS groundwater did not change in the future. Hereafter, the current/future scenario is referred to as the current scenario.

The future timeframe represents a change in the accessibility of groundwater at SVFUDS; these scenarios assume that a drinking water well is installed at the Site and future receptors are using the groundwater for potable purposes (e.g., drinking water, bathing, and cleaning).

The 2016 and 2023 HHRAs evaluated a **reasonable maximum exposure (RME)** and **central tendency exposure (CTE)** scenario for each receptor. The RME scenario refers to people who are at the high end of the exposure distribution (approximately the 95th percentile). The RME scenario is intended to assess exposures that are higher than average but are still within a realistic range of exposure. The CTE scenario refers to individuals who have average or typical intake of environmental media. The proposed plan presents the RME results only; SVFUDS Partners agreed that any risk-based management decisions for the groundwater would be made using RME results, the most conservative scenario evaluation.

The current adult and child resident currently lives on the Site. Both the current and future child and adult resident are potentially exposed to groundwater if it is used to water lawns or run sprinklers. Groundwater exposure pathways include incidental ingestion and dermal contact. The future adult and child resident are assumed to use the groundwater as a future source of tap water. Currently, the city supplies water to the residences at the SVFUDS. If the future resident installs a potable well on his/her property, the potable groundwater pathways would include ingestion of groundwater as a tap water source and dermal contact while showering or bathing.

The risk-based screening results of the HHRA identified no volatile **chemicals of potential concern (COPCs).** Therefore, the inhalation of vapors while showering/bathing or inhalation of vapors in indoor air (i.e., vapor intrusion) are considered incomplete exposure pathways for the SVFUDS receptors.

The current AU student is assumed to be a young adult who lives on campus year-round while pursuing a bachelor's degree for four years. Currently, the city supplies drinking water to the university, so potable use of the groundwater is not a complete exposure pathway. Also, the AU student is not likely to be regularly watering lawns or gardens as part of his/her on-campus activities. The future AU student is a student assumed to use the groundwater as a future source of tap water. Similar to the future resident, the potable use of groundwater exposure pathways includes ingestion of groundwater as tap water and dermal contact while showering or bathing.

The current indoor office worker is assumed to spend 8 hours per day for 250 days per year working in a commercial or university building. No complete exposure pathways exist for the indoor office worker because no volatile COPC**s** were identified in the groundwater, and city-supplied water is used for tap water. The future indoor office worker is an office worker assumed to use groundwater as a future tap water source. Groundwater pathways include ingestion of groundwater as tap water and dermal contact while showering or bathing.

The current outdoor worker is assumed to be a landscaper who maintains the grounds around the university or commercial/industrial buildings. Groundwater exposure pathways include incidental ingestion and dermal exposure while watering the lawns. Future use of groundwater as a tap water source is addressed under the future indoor office worker scenario.

The current construction/utility worker is assumed to dig into the subsurface for land re-development construction projects or to access utility lines. This receptor is not likely to be exposed to SVFUDS groundwater because the groundwater is deeper than a typical construction-related excavation depth of 10 ft bgs. As such, this receptor is not addressed in this HHRA.

The findings of the 2016 SVFUDS RI and HHRA identified acceptable risk to both current and future scenarios at EU1 and EU3, but identified unacceptable risks posed by the potential future use of groundwater as drinking water at EU2. The 2016 HHRA identified the following groundwater COPC**s** for EU2: arsenic, **cobalt**, **manganese**, and perchlorate. These were carried forward in the 2023 RI Addendum HHRA for further evaluation because their maximum detected concentrations still exceed the EPA tap water regional screening levels (RSLs) and federal maximum contaminant levels (MCLs) are not available (EPA, 2023a and 2009). Even though cobalt and manganese were eliminated from the SVFUDS monitoring program in 2011 because the Partners believed these metals were not related to any source area releases, they were detected above the EPA tap water RSLs and were carried forward into the 2016 and 2023 HHRAs to examine potential cumulative exposure.

The Site remediation goal set forth in the NCP allows a cumulative cancer risk of 1×10^{-4} (one in 10,000) to 1×10^{-6} (one in one million) as the **acceptable cancer risk range**. In effect, estimated risks that are less than 1×10^{-6} are considered negligible. Risks that are greater than 1×10^{-4} are considered sufficient justification for undertaking remedial action (i.e., **unacceptable cancer risk**). Risks in the intermediate range between these two values can be considered acceptable on a case-by-case basis.

For non-cancer hazards, potential adverse health effects cannot be ruled out if the target **hazard index** (**HI**) is greater than 1. If the HI exceeds 1, a **target organ analysis** is conducted. Only chemicals that act upon the same target organ would be expected to be additive (i.e., chemicals acting together to be toxic to the same target organ) (EPA, 1991). The SVFUDS project is using the non-cancer HI of 1 as a cumulative and target organ-specific threshold.

2016 and 2023 HHRA Results

The 2023 HHRA addendum indicates the current SVFUDS chemical concentrations do not pose cancer risks or non-cancer HIs above 1E-06 or 1, respectively, to the on-site resident, and outdoor worker (landscaper) where the EU2 groundwater is used for watering.

For the future scenarios (i.e., EU2 groundwater is used for potable purposes), the cumulative cancer risk estimates for the lifetime resident equals but does not exceed the cumulative cancer risk threshold. The cumulative cancer risk of 1×10^{-4} (1E-04) represents the upper end of the EPA acceptable cancer risk range; adverse health effects are not likely for the lifetime future resident from drinking the SVFUDS groundwater. The cumulative cancer risk estimates for the future AU student and indoor office worker were 2×10^{-5} which is within the acceptable cancer risk range.

The non-cancer cumulative HIs were above 1 for the future adult resident, child resident, and AU student, assuming that the SVFUDS EU2 groundwater is used for drinking water. The target organ HIs were below 1 for the adult resident. The results are similar to the future scenario results from the 2016 HHRA except the non-cancer cumulative HIs were lower in 2023 due to the lower arsenic and perchlorate groundwater concentrations. The 2016 and 2023 HHRA results for the future child resident and AU student identified a target organ HI of 1 and 2, respectively, for the nervous system which is attributed to manganese. Updated EPA (2022) statistical guidance recommended that the maximum detected concentration for manganese be used in the 2023 HHRA calculations instead of the **upper confidence limit (UCL)** that was used in the 2016 HHRA calculations. The nervous system HI increased from 1 to 2 for the future child resident and AU student scenarios for the 2016 and 2023 HHRA results, respectively.

The 2023 HHRA endocrine system HI of 2 for the child resident is attributed to cobalt (**hazard quotient** [**HQ**] of 0.4) and perchlorate (HQ = 1.4) when the groundwater is used for drinking water. The 2016 HHRA EU2 cumulative HI results for the future child resident was 7, with a thyroid (endocrine system) HI of 4.3 (perchlorate HQ of 3.9 and a cobalt HQ of 0.4). The 2016 HHRA EU2 cumulative HI results for the future AU student was 4, with a thyroid (endocrine system) HI of 2.6 (perchlorate HQ of 2.6 and a cobalt HQ of 0.03).

2023 RI Addendum and HHRA Conclusions

There was no unacceptable carcinogenic risk identified, therefore arsenic is not a COC.

After examining additional lines of evidence and historical practices at SVFUDS, perchlorate was eliminated as a groundwater COC because:

- Perchlorate contributed to the endocrine system HI being above 1 for the child resident (potable use exposure pathway); however, perchlorate's HQ of 1.4, when rounded to one significant figure, equals but does not exceed the HI threshold of 1.
- Potential source materials for perchlorate near the Kreeger Hall wells have been removed.
- Locations where perchlorate concentrations exceeded the drinking water health advisory (DWHA) of 15 micrograms per liter (µg/L) are limited to collocated monitoring wells MW-44 and PZ-4D. The RI findings indicate that a plume of perchlorate was not identified at EU2.

After examining additional lines of evidence and historical practices at SVFUDS, cobalt and manganese were eliminated as groundwater COCs because:

- The Partners agreed in January 2011 to remove cobalt and manganese from the SVFUDS groundwater monitoring program because these metals were not likely to be attributed to a source area release. However, cobalt and manganese were detected above the EPA tap water RSLs and were carried forward into the 2016 and 2023 HHRAs to examine potential cumulative exposure.
- The 2023 HHRA used maximum detected concentrations for cobalt and manganese as the groundwater EPC**s** so the non-cancer hazard results may have been overestimated. EPA guidance recommends using a UCL versus a single concentration because the UCL is more representative of the groundwater conditions beneath EU2 (EPA, 1989 and 2022).
- The maximum detected concentration of 2.5 µg/L for cobalt is an estimated value

(i.e., "J"-flag meaning that the concentration is above the laboratory's method detection limit but is below the method reporting limit).

- The maximum detected concentration of 946 µg/L for manganese was identified as an outlier in the EU2 data. The remaining EU2 concentrations for manganese range from 6 µg/L to 165 µg/L. However, due to the size of the EU2 manganese groundwater data set (less than 8 data points), the maximum detected concentration was retained and used as the groundwater EPC.
- EPA's statistical software program ProUCL 5.2 was able to derive a 95 percent (%) UCL for manganese of 629 µg/L; when the 95% UCL is used in the 2023 HHRA risk calculations, the nervous system HI equals but does not exceed the EPA HI threshold of 1.
- Cobalt contributed an HQ of 0.4 to the non-cancer target organ-specific HI being above 1 for the endocrine system for the child resident (potable use exposure pathway); cobalt's chemical-specific HQ was below 1.

The 2023 HHRA risk results and lines of evidence review support eliminating arsenic, cobalt, manganese, and perchlorate as groundwater COCs at EU2. Currently, the city supplies drinking water to the university, so potable use of the EU2 groundwater is not a complete exposure pathway. Actions to control exposure to chemicals in groundwater EU2 do not warrant consideration.

6.0 PREFERRED APPROACH

The Army's proposed No Action decision is the appropriate decision for the SVFUDS groundwater because the RI addendum did not identify unacceptable risks to human receptors. Therefore, no CERCLA action is necessary to ensure protection of human health and the environment.

The Army expects the No Action proposed decision will satisfy the following statutory requirements of CERCLA §121(b):

- To be protective of human health and the environment and
- be cost-effective.

The other CERCLA requirements do not apply to a No Action decision because the RI Addendum and HHRA did not identify any COCs in the SVFUDS groundwater that would require a remedial action.

7.0 REGULATORY PARTICIPATION

EPA and DOEE actively participated with USACE to evaluate the SVFUDS groundwater during development of Work Plan/**Uniform Federal Policy-Quality Assurance Project Plan** (**UFP-QAPP**) and the RI report. In cooperation, Army, EPA, and DOEE are in mutual agreement that No Action is the preferred approach for the SVFUDS groundwater.

The preferred approach can change in response to public comment or if new information is obtained for the Site.

8.0 COMMUNITY PARTICIPATION

Public input is important to the decision-making process. Information regarding the implementation of the proposed No Action decision at SVFUDS groundwater is provided to the public through information and documents in the Information Repository (i.e., D.C. Public Library) and Administrative Record File (**Box 2**, Page 2), and announcements published in the Washington Post and at https://www.nab.usace.army.mil/Home/Spring-Valley/. The public is encouraged to refer to these sources to stay informed on issues pertaining to activities at the SVFUDS.

The dates for the public comment period and the location of the investigation and risk assessment reports at the D.C. Public Library and USACE Public Affairs Office are provided on **Boxes 1** and **2** on Pages 1 and 2 of this PP. Nearby residents and other interested parties are encouraged to use the comment period for questions and concerns about the proposed decision for the SVFUDS groundwater. The Army will summarize and respond to public comments in a responsiveness summary, which will become part of the ROD.

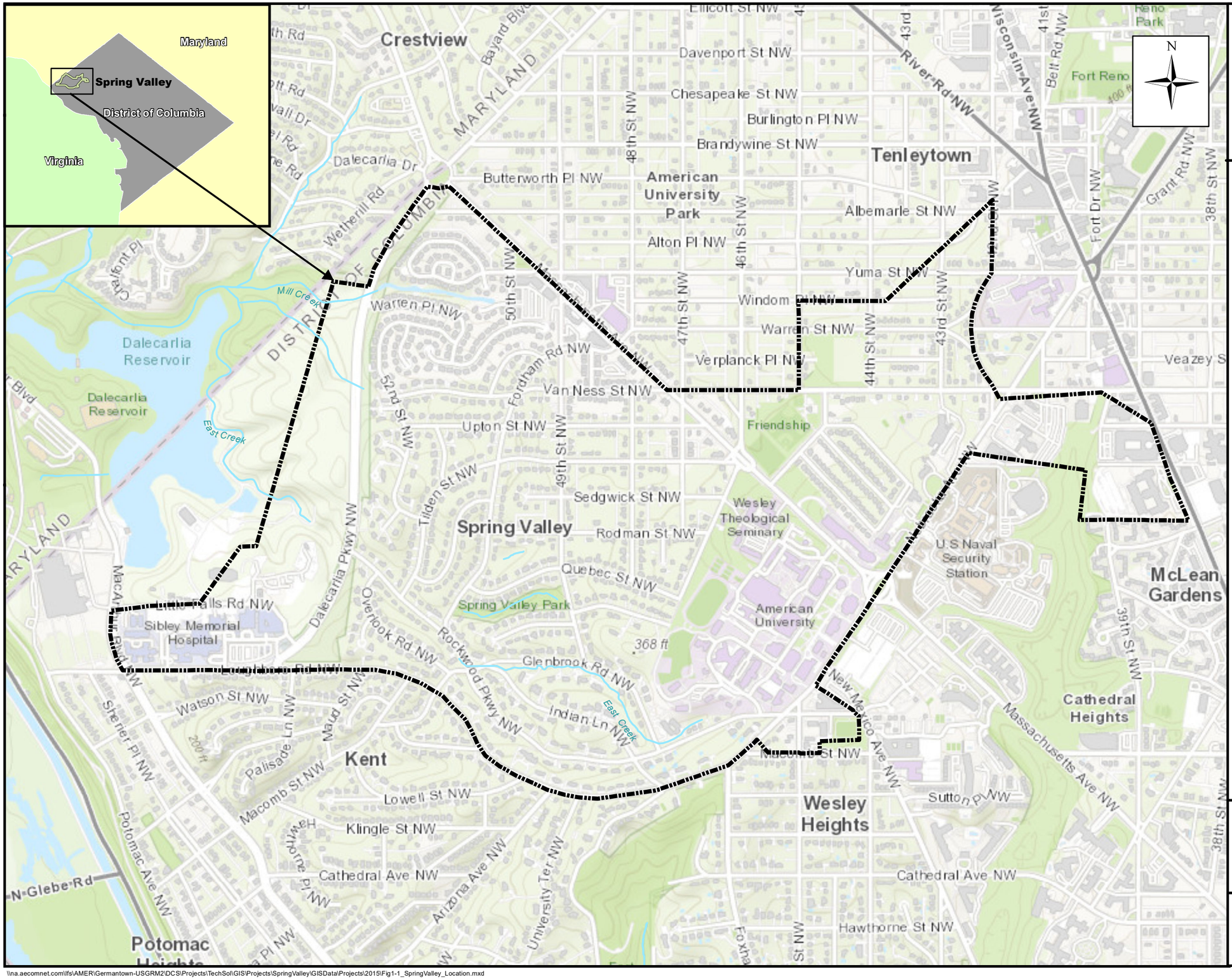

Figure 1
Spring Valley FUDS Location

Spring Valley FUDS
Washington, DC

Legend

- Spring Valley FUDS Boundary

Base Map

- Building/Structure
- Non-Residential Urban
- Parks and Recreation
- Water
- Stream or Creek
- Topographic Contour
- Road

0 600 1,200 2,400 Feet

Original Scale: 1:14,400
Date: 2/23/2015
Revised: 11/23/2021
GIS: AER
PM: BE

Map Source: World Topographic Map, ESRI ArcGIS Online and data partners, 2011.

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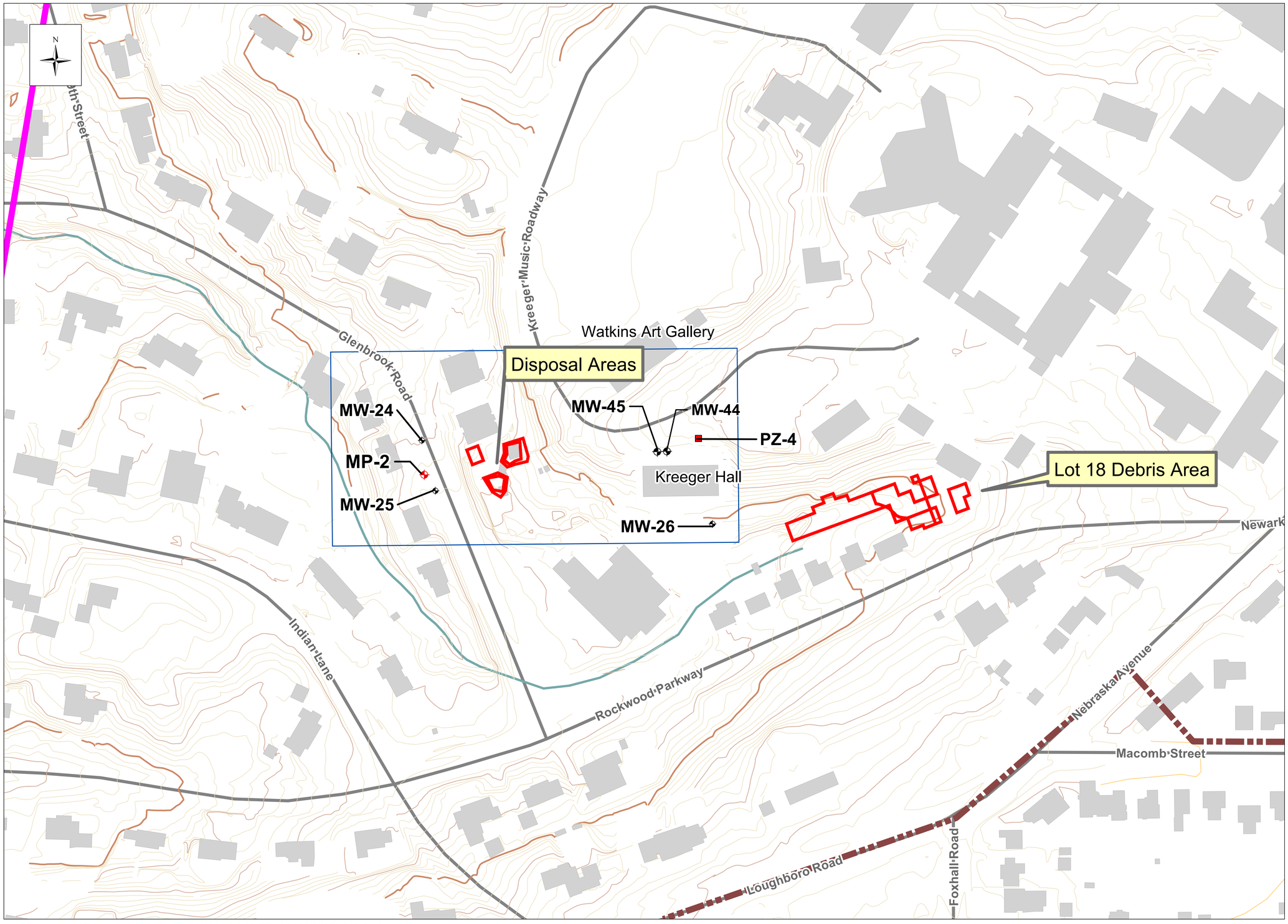

Figure 2
EU2 Groundwater Monitoring Network

Spring Valley FUDS
Washington, DC

Legend

- Exposure Unit 2
- **MW-16** Well ID
- **USACE Monitoring Wells**
- **Multiport Well**
  - MW: Monitoring Well
  - MP: Multiport Well
  - PZ: Piezometer
- **Spring Valley Boundary**
- **Pit**
- **Trench**
- **Building**
- **Water**
- **Road**

Topography (USACE)

- **50-Foot Contour**
- **10-Foot Contour**
- **2-Foot Contour**

Topography (USGS)

- **50-Foot Contour**
- **10-Foot Contour**
- **Fault (Fleming, et al. 1994)**
- **State Boundary**

0 30 60 120 180 240 Feet

All concentrations in ug/L
FD = Field Duplicate
ND = Non Detection
NT = Not Tested
J = Estimated Concentration
(a) = Samples collected as grab samples (not low flow) during the Kreeger Hall area soil boring program.

MCL for Arsenic = 10 ug/L (ppb)
Interim Drinking Water Health Advisory (DWHA) for Perchlorate = 15 ug/L (ppb)

Detections above MCL or DWHA

Original Scale: 1:14,400
Date: 12/20/2021
Revised: 2/23/2022
GIS: AER
PM: BE

Map Source: Project base map, c.2004.

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10.0 ACRONYMS AND ABBREVIATIONS

%	percent
AU	American University
AUES	American University Experiment Station
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chemical of concern
COPC	chemical of potential concern
CTE	Central Tendency Exposure
D.C	District of Columbia
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DOEE	District of Columbia Department of Energy and Environment
DWHA	Drinking Water Health Advisory
EPA	United States Environmental Protection Agency
EPC	exposure point concentration
EU	exposure unit
FS	Feasibility Study
FUDS	Formerly Used Defense Site
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
MCL	maximum contaminant level
µg/L	micrograms per liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PP	Proposed Plan
PSB	Public Safety Building
RI	Remedial Investigation
RME	Reasonable Maximum Exposure
RSL	Regional Screening Level
SVOC	semi-volatile organic compound
UCL	upper confidence limit
U.S.	United States
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan
USACE	United States Corps of Engineers
USGS	United States Geological Survey
VOC	volatile organic compound

11.0 GLOSSARY

(Terms defined in glossary appear in bold upon first usage in document)

Acceptable Cancer Risk Range	The Site remediation goal set forth in the NCP allows a cumulative cancer risk of 1×10^{-4} (one in 10,000) to 1×10^{-6} (one in one million).
Adamsite	vomiting compound that was developed in the United States in 1918 and was used as a riot-control and chemical warfare agent that contains arsenic. It is released as an aerosol.
Administrative Record	A collection of documents made available to the public that includes all the information considered and relied on in selecting a remedy for a contaminated site.
Arsenic	Chemical element that is a naturally occurring and is widely distributed in the Earth's crust. It was also used as an intentional poison in chemical warfare agents (e.g., arsenic trichloride and dichloromethylarsine) in World War I.
Cancer Risk	Incremental probability of an individual's developing cancer over a lifetime as a result of exposure to a potential carcinogen.
Central Tendency Exposure (CTE)	Scenarios that refer to individuals who have average or typical intake of environmental media and is representative of a sizable portion of the population.
Chemical of Concern	Contaminant identified during in-depth site studies (Remedial Investigation/Feasibility Study) that need to be addressed by a cleanup action because it poses a potential threat to human health or the environment.
Chemical of Potential Concern	A compound or element which may or may not be causing risk or adverse effects to humans, plants, or animals at a site.
Cobalt	Chemical element that is found in the Earth's crust only in a chemically combined form except for small deposits found in alloys of natural meteoric iron. It is sometimes used in electroplating and as a metal alloy in jet and gas turbine generators. Cobalt salts are used to produce brilliant blue colors in paint, porcelain, glass, pottery, and enamels. Radioactive cobalt-60 is used to treat cancer and irradiate food to preserve it.
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)	Passed in 1980 and subsequently amended, this law provides for liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous waste disposal sites that endanger public health and safety of the environment.
Contaminant	A compound or element that upon exposure will or may reasonably be anticipated to cause certain specified harmful health effects.
Exposure Point Concentration (EPC)	is a representative contaminant concentration that is calculated for each exposure unit or area. Generally, a 95 % UCL of the mean concentration is used as the EPC per EPA risk assessment guidance (EPA, 2022 and 1989).

Exposure Unit (EU)	An exposure area is a geographical area over which receptors are likely to average their exposures, based on observed or assumed patterns of receptor behavior and the patterns and extent of contamination.
Feasibility Study (FS)	A document that describes and evaluates potential cleanup alternatives for a contaminated site based on data and risk assessments documented in the RI.
Hazard Index	The sum of two or more hazard quotients for multiple substances and/or multiple exposure pathways.
Hazard Quotient	The ratio of a single substance exposure level over a specified time period to a reference dose for that substance derived from a similar exposure period.
Human Health Threshold	Criterion that determines the potential of a substance to present risks to human health.
Information Repository	A collection of documents readily made available to the public that includes all the information considered and relied on in selecting a remedy for a contaminated site.
Lewisite	Chemical warfare agent produced in 1918 that causes blistering of the skin and mucous membranes on contact. It has an odor like geraniums and contains arsenic.
Manganese	It is a trace mineral that is present in tiny amounts in the body. It is also found in bones, liver, kidneys, and pancreas. It helps the body to form connective tissue, bones, blood clotting factors and sex hormones.
Mustard Gas	Chemical warfare weapon that causes blistering of the skin and mucous membranes on contact.
National Oil and Hazardous Substances Pollution Contingency Plan (NCP)	A set of federal regulations that provide the organizational structure and procedures for preparing for and responding to discharges of oils and releases of hazardous substances, pollutants, or contaminants into the environment. (See 40 CFR Part 300).
No Action	A determination that either no contaminants are present at the site, or that any contaminants present at the site or that have migrated from the site have been remediated in accordance with applicable remediation statutes, rules, and guidance such that no further action is necessary.
Ordnance	Military devices such as projectiles, fuzes, demolition explosives, detonators, grenades, high explosives, primers, ammunition propellants, ammunition shaped charges, and ammunition handling equipment.
Perchlorate	Chemical used in fireworks, road flares, explosives, and rocket fuel. It can also form naturally in the environment in small amounts.
Proposed Plan (PP)	A document used to facilitate public involvement in the remedy selection process for a CERCLA contaminant release site. The document presents the lead agency’s preliminary recommendation concerning how best to address contamination at a site.

Reasonable Maximum Exposure (RME)	Scenarios that refer to people who are at the high end of the exposure distribution (approximately the 95th percentile). The RME scenario is intended to assess exposures that are higher than average but are still within a realistic range of exposure.
Record of Decision (ROD)	A legal document that certifies that the remedy selection process was conducted in accordance with CERCLA and the NCP, which documents the cleanup action or remedy selected for a site, the basis for the choice of that remedy, and public comments received on the Proposed Plan.
Remedial Investigation (RI)	A study of a contaminant release site that includes data collection and analysis to determine 1) the nature and extent of the contamination, 2) the potential risks to human health and the environment from that contamination, and 3) whether or not remedial action is warranted.
Responsiveness Summary	A summary of responses to comments made by the public during the public comment period.
Risk	A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.
Target Organ Analysis	Potential adverse health effects cannot be ruled out if the cumulative HI for a receptor is greater than 1. If the HI exceeds 1, then HQs are separately summed for each affected target organ based on the non-cancer toxicity health effects for each chemical. Separate target organ HIs may be calculated for the receptor. Only chemicals that act upon the same target organ would be expected to be additive (i.e., chemicals acting together to be toxic to the same target organ).
Unacceptable Cancer Risk	Cumulative cancer risk that is greater than 1×10^{-4} (1E-04) is considered sufficient justification for undertaking remedial action.
Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP)	a comprehensive planning document that addresses the complete scope of a project, from planning through implementation, sampling design, analytical laboratory performance, assessment, data validation and verification, data usability, and reporting.
Upper Confidence Limit (UCL)	a reasonable estimate of the concentration likely to be contacted over time; it is a conservative estimate of the average chemical concentration in an environmental medium.

12.0 DOCUMENT REFERENCES

Code of Federal Regulations (CFR). Revised 2014. Applicable Sections of Title 40, Part 300, National Oil and Hazardous Substances Pollution Contingency Plan.

EPA. 2023. *Regional Screening Level (RSL) Table and User's Guide*, May 2023.

EPA. 2022. ProUCL Version 5.2.00 Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. June.

EPA. 2009. National Primary Drinking Water Regulations. EPA 816-F-09-004. May.

EPA. 1991. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions. OSWER Directive 9355.0-30. April 22, 1991.

EPA. 1989. *Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A) Interim Final*. Office of Emergency and Remedial Response. Washington DC 20460. EPA/540/1-89/002. December 1989.

USACE. 2023. *Spring Valley Formerly Used Defense Site, Washington, D.C., Addendum to the Groundwater Remedial Investigation Report*. October.

USACE. 2016. *Spring Valley Formerly Used Defense Site, Washington, D.C., Final Remedial Investigation*. September.

USACE. 2015. *Spring Valley Remedial Investigation/Feasibility Study Report and Project Information*. U.S. Army Corps of Engineers – Baltimore District.