

**Draft Final Proposed Plan - Landfill No.10
FTLE-19_LANDFILL NO.10/Landfill 19
Site ID: 51315.1019
Fort Gregg-Adams, Virginia**

July 2024



PUBLIC COMMENT PERIOD

July 8, 2024– August 7, 2024

During the comment period, interested parties may submit written comments on the Proposed Plan.

Virtual Public Meeting:	Document Repository location:	For additional information contact:
Date: July 24, 2024 Time: 6:30 to 7:30 pm	https://home.army.mil/greggadams/about/Garrison/directorate-public-works/environmental-management/documents-review	Mr. Craig Norris Environmental Engineer Directorate of Public Works Environmental Management Division Building 6005 825 19th Street USAG Fort Gregg-Adams, Virginia 23801 Desk: (804)734-3772 craig.a.norris10.civ@army.mil

1.0 INTRODUCTION

This Proposed Plan (PP) describes land use controls (LUCs) proposed remedy for Landfill 10 and provides the rationale for selecting this remedy. This site is located on the Fort Gregg-Adams Military Reservation (Fort Gregg-Adams) in Virginia and is indicated in the database of record as FTLE-19_LANDFILL NO.10 and the WBS number is 51315.1019. It is the U.S. Army’s (Army’s) judgment that the proposed remedy identified in this Proposed Plan is appropriate, as no current or potential threat of releases of hazardous substances, and therefore no current or potential threat to human health and the environment, as long as contact with landfill waste is prevented.

This PP summarizes information presented in the Final Remedial Investigation (RI) Report, Landfill 10 Site, Fort Gregg-Adams, Virginia, April 1999; the Final Feasibility

Study (FS) Report, Landfill 10 Site, April 2002; November 2015 Annual LTM Groundwater Monitoring Report 2014. and other documents contained in the public information repository at the Appomattox Regional Library in Hopewell, VA.

The Army is issuing this PP as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and Title 40 Code of Federal Regulations (CFR) Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan is issued by the Army (the lead agency for site activities), in consultation with the Virginia Department of Environmental Quality (VDEQ; the support agency).

The PP informs the public of the remedial alternative preferred by the Army in consultation with VDEQ and acts as a mechanism to solicit public comments pertaining to the preferred remedy. The Army, in consultation with VDEQ, will make a final decision for the site following review and consideration of all information received during the 30-day public comment period. The public is encouraged to review the RI Report, FS and other documents located in the Administrative Record (AR) available at the Document Repository (noted above) to gain a better understanding of the site and investigation activities conducted at the site to date. In accordance with NCP, 40 CFR Section 300.430(f)(3)(i)(D), a public meeting will be held during the public comment period.

2.0 SITE BACKGROUND

This PP provides a brief description of the site, an overview of the site history, as well as summary of previous investigations, and is divided into the following sections:

- Introduction (1.0)
- Site Background (Section 2.0)
- Site Characteristics (Section 3.0)
- Scope and Role of Response (Section 4.0)
- Remedial Action Objectives (Section 5.0)
- Summary of Remedial Alternatives (Section 6.0)
- Summary of Preferred Decision (Section 7.0)
- Community Participation (Section 8.0)
- Glossary – Provides definitions of terms.

Landfill 10 is in the southwest portion of Fort Gregg-Adams (Figure 1). It is bounded to the north by both the General Evaluation and Testing Area (GETA) and the Military-in-the-Field Training Area (MF Site); to the east by a forested training area; to the west by a residential area; and, to the south by a gas line easement, mobile home park, and cleared fields.

The landfill, which is approximately ten (10) acres, was believed to have been in operation from the late 1950s to

the early 1960s. Aerial photographs dating from this period indicate the landfill was of the trench and fill type into which non-specified debris was dumped and covered with soil. Two test pits dug into the north side of the landfill during the RI confirmed the trench and fill nature of the landfill.

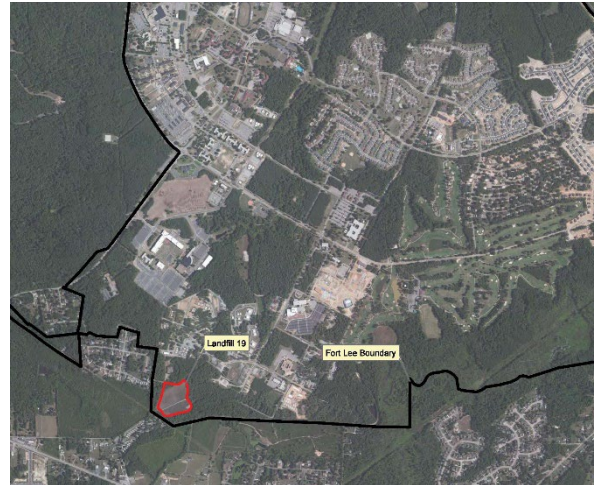


Figure 1 Site Location

At the request of VDEQ, a Preliminary Assessment/Site Inspection (PA/SI) was conducted at Landfill 10 in 1992 and included subsurface soil sampling and the installation and sampling of two groundwater monitoring wells. One well, MW-W1, was installed prior to the PA/SI. The PA/SI revealed the presence of volatile organic compounds (VOCs) and target analyte list (TAL) metals in soil and groundwater. Additional sampling was performed to confirm and delineate identified contaminants. Confirmatory sampling was conducted in 1994. A RI was completed in 1998 to define the nature and extent of contamination reported in the PA/SI and confirmatory sampling. The RI also evaluated actual or potential hazards to human health and the environment. Based on the conclusions drawn during the RI, a FS was completed to evaluate alternatives for further action. No regulatory enforcement action has been taken at Landfill 10.

The RI included the installation of groundwater monitoring wells for sampling and the collection and analysis of

groundwater and soil samples. Surface water samples were also collected; however, surface water is only present at the site after a rain event. Soil samples were also collected to determine the boundaries and the depth of the landfill.

Samples were analyzed for VOCs, base-neutral-acid compounds (BNAs), metals and pesticides. Contaminants were detected in both groundwater and soil. A risk assessment completed as part of the RI concluded Landfill 10 would not present a significant risk to human health based on current and predicted future land uses. During the 1998 RI the following compounds were detected:

- VOCs were detected in both soil and groundwater during the 1998 RI. The highest concentrations of VOCs detected in groundwater were found in the southern half of the Site.
- BNAs were also detected in the majority of the surface soil samples. Groundwater and subsurface soil samples were not analyzed for BNAs since they were not identified as constituent of potential concern (COPCs) during the previous sampling event.
- Pesticides were detected in the majority of the surface soil samples but less frequently in subsurface soil and groundwater.
- Metals were detected at concentrations exceeding background levels in soil and groundwater. Elevated concentrations of metals were widely distributed across Landfill 10 in soil and groundwater samples. Chlorinated herbicides were not detected in any medium.

No source materials were identified as principal threats based on detected concentrations in groundwater or soil or by way of potential migration.

During the preparation of the FS, data gaps were identified in the characterization of landfill cover. A separate field survey was completed at Landfill 10 in

September 2000 to identify the specific portions of the landfill that lacked adequate cover material. The study consisted of hand auger borings to a maximum depth of three (3) feet below ground surface (bgs). The results of the field study indicated that the landfill cover was not sufficient. More than 70 percent of the samples indicated less than two (2) feet of cover (VDEQ regulation 9VAC20-81-130), and more than 40 percent of the locations had essentially no cover. In addition, the topographic conditions resulting from the operation of the trench and fill landfill appeared to provide inadequate drainage at the site.

A Remedial Design was completed in 2004 and remedial action (RA) was conducted during the fall of 2006 through spring of 2007. The components of the RA included the removal of trees and vegetation, re-grading of the landfill surface and addition of cover material to obtain the required thickness of two feet and constructing positive surface water drainage and control.

Long-term groundwater monitoring was initiated in March 2007 with the collection of eight quarterly groundwater samples from three monitoring wells (MW-02D, MW-03 and MW-1608) for Virginia Solid Waste Regulations (VSWR) Table 3.1, Column B constituents (9 VAC-20-81-250). The background data base was established.

Semiannual groundwater monitoring occurred from 2007 through 2014 and three monitoring wells MW-03, MW-02D, and MW-1608 were sampled and analyzed for select VDEQ VSWR (9 Virginia Administrative Code [VAC]-20-80-3000) analytes. The last three sampling events (May 2011, June 2012, and May 2014) yielded no maximum contaminant levels (MCL) exceedances of pesticides, VOCs, or semivolatiles organic compounds (SVOCs). Metals detections were also below MCLs or at concentrations comparable to background concentrations and metals sampling was discontinued for the 2014 long term monitoring (LTM) event. Given absence of detections exceeding MCLs in all wells within FTLE-19,

the 2014 Annual LTM Groundwater Monitoring Report Recommended that LTM be discontinued.

During the sampling events the landfill was inspected to ensure that the landfill cover was maintained in accordance with VDEQ requirements.

Although this is the initial request for public comment, the public is encouraged to review the background data contained in the Administrative Record.

3.0 SITE CHARACTERISTICS

Landfill 10 is currently unused. Private residences are located along the western boundary of the site (Figure 2). These residences use city water as a drinking water source. There are no drinking water wells adjacent to the site. Shallow groundwater flows away from the residential area in an east to southeast direction across Landfill 10.

Landfill 10 has an irregular, rolling topography and is heavily vegetated. The unique topography of the site creates a surface water drainage divide through the northern portion of the site. The northern corner of the site drains northeast toward Bailey Creek, while the remainder of the site drains eastward, then south to an ephemeral stream that drains into Blackwater Swamp.

The shallow geology consists of three definable units. The first unit was classified as a sandy to silty, low plasticity orange clay extending from the land surface to a depth of approximately 10 feet bgs. The second unit, beneath the clay was classified as clayey, fine to medium grained sand extending from approximately 10 feet bgs to approximately 24 feet bgs. Beneath the sand layer the material graded back to dark gray, medium plasticity clay. The thickness of this deeper clay unit was not determined, but it is believed to be the upper confining unit for the shallow aquifer in the Petersburg area.

Shallow groundwater at the site was found in the sand unit located beneath the surficial clay unit. Recharge of the sand unit occurs primarily through infiltration due to

precipitation. The presence of large areas of ponded water following precipitation events suggested that the recharge rate through the surficial clay was slow.

The most common waste materials identified in the landfill were an ash, a slag material and a combination of these materials mixed with soil. Glass, metal, paper and other trash or debris were also detected.



Figure 2 - Site Map

Human Health Risk

Human health risks associated with soils (surface, subsurface, and sediment) were determined to be below target risk levels or within an acceptable risk range based upon exposure of trespassers, future industrial workers, future construction workers, or future hypothetical residents.

Based on groundwater modeling, VOCs in groundwater could potentially migrate beyond the site boundary; however, due to biodegradation and natural attenuation, the concentrations would not be significant. The BNAs, pesticides and metals are not expected to migrate beyond site boundary due to their high adsorption potentials.

Human health risks based on the current site use were determined to be below target levels. Under a

hypothetical residential scenario, however, risks exceed target levels based on the use of groundwater as a potential domestic water source.

Ecological risks for exposure to iron in surface soils were determined to pose a minor risk to small mammal (shrew and groundhog) ecological receptors.

Shallow groundwater modeling indicated that contaminant migration to Blackwater Swamp would not occur until 47,000 years in the future. Therefore, the ecological risk from groundwater exposure is minimal.

Due to the ephemeral nature of surface water, no significant ecological risk exists.

Risk Summary

Site contaminants do not present an unacceptable risk to human health based on the current and predicted future land use. However, a hypothetical future onsite resident could be exposed to a noncarcinogenic hazard exceeding the acceptable level. No significant ecological risks were identified from exposure to site- related contaminants.

The preferred remedy is protective of human health and the environment since it prevents exposure to the landfill waste.

4.0 SCOPE & ROLE OF RESPONSE

Landfill 10 is not associated with other Fort Gregg-Adams sites currently in the RI/FS process. No source materials were identified as principal threats requiring remedial action and this proposed action is the final remedy for Landfill 10. The remedy will address the protection of human health and the environment as well as compliance with Applicable or Relevant and Appropriate Requirements (ARARs). The VDEQ regulations identified and utilized as ARARS are as follows:

- Virginia Groundwater Standards: Virginia administrative Code 9 VAC20-81-250 Table 3.1

Groundwater Solid Waste Constituent
Monitoring List

- Virginia Solid Waste Management Regulations: 9 VAC 20-81-10 to 760
- Virginia Monitoring Well Installation and Abandonment: 12 VAC 5-630-420 to 450
- Virginia Water Protection Permit Program Regulation: 9 VAC 25-210-50

Potential future risk to onsite human health will be addressed by restricting current and future land use and groundwater use. Potential risk to environmental receptors was addressed by additional landfill cover that eliminated existing and future potential exposure pathways to the landfill material. LUCS and landfill inspections/cover maintenance will continue, and five-year reviews will be performed as required by the NCP. These activities will be required for as long as the landfill waste is left in place.

Compliance with ARARs was addressed by adding a minimum of two (2) feet of landfill cover material to comply with applicable portions of the Virginia Solid Waste Management Regulations (Virginia Solid Waste Management Regulations: 9 VAC 20-81-10 to 760).

The proposed remedy described in this PP addresses the entire site and is intended to be the final decision for Landfill 10.

5.0 REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are site-specific, qualitative, or quantitative initial cleanup objectives established based on the nature and extent of contamination, the resources that are currently and potentially threatened, and the potential for human exposure.

The following remedial action objectives (RAOs) were identified for Landfill 10:

- Prevent contact with wastes left in-place.
- Ensure compliance with chemical specific ARARs outside the waste boundary.

Current land use, as well as anticipated future land use, is expected to remain as undeveloped. Shallow groundwater is not utilized as a potable water source and its use is not expected to change in the foreseeable future. Site conditions are not suitable for development for residential, commercial, or industrial purposes.

6.0 SUMMARY OF REMEDIAL ALTERNATIVES

Although no exposed populations and no site-specific constituents of concern (COCs) were identified during the 1998 Human Health Risk Assessment (HHRA), remedial alternatives were developed as part of the 2002 FS to support the RAOs. The 2002 FS included four remedial alternatives which are identified and described below. Three of the alternatives include LUCs which are designed to eliminate the risk to human health associated with contact, consumption, or inhalation of the regulated contaminant. LUCs prevent the risk of creating pathways from contaminant source to human receptors and are outlined in an installation-wide Land Use Control Implementation Plan (LUCIP).

There were no detections exceeding MCLs in all wells during the last three LTM sampling events, therefore the November 2015 LTM Report recommended that Landfill 10 be removed from the LTM program pending VDEQ concurrence. The alternatives identified in the 2002 FS were as follows:

Alternative 1 - No Action

Which serves as the baseline against which the effectiveness of other alternatives is judged. Under this alternative, no further effort or resources would be expended. This alternative is required under the NCP

and is not considered protective of human health or the environment. At a minimum, choosing this alternative would create non-compliance with the requirements under the remedy selection under the NCP, 40 CFR Section 300.430(a)(1)(i). Impacted media and landfill waste would be left in place, requiring LUCs and a review of the site conditions every five years as per the NCP, 40 CFR Section 300.430(f)(4)(ii). CERCLA requires that the No Action alternative be evaluated at every site to establish a baseline for comparison.

Under this alternative, no actions would be taken at Landfill 10 to prevent exposure to contaminants or to ensure compliance with the relevant and appropriate requirements under the Virginia Solid Waste Regulations.

Alternative 2 – Land Use Controls

This alternative includes the following:

- Defining and issuing notice of prohibitions for the purpose of LUCs.
- The prohibition of utilizing the groundwater within the site boundary, and a safety buffer of 100 feet from the historic fill material to preclude construction of inhabitable structures.
- The prohibition of residential use within the site boundary.
- The prohibition of excavation or soil disturbance, without the appropriate prior authorization, beyond a depth of five feet within the site boundary.
- A periodic review (every five years) of site conditions including, current land use, projected future land use, regular inspection of landfill cap condition, and evaluation of LUCs effectiveness

in protecting humans working in or around the area.

Alternative 3 – Land Use Controls and Limited Soil Cover

This alternative includes the following:

- Containment – limited landfill cover repair.
- Institutional controls - groundwater and/or land use restrictions.
- Operations and maintenance - ongoing maintenance of landfill cover
- Monitoring requirements - groundwater monitoring for 10 years

Alternative 4 – Land Use Controls and Soil Cover

This alternative includes the following:

- Containment – regrade and replace landfill cover over entire LF Site.
- Institutional controls - groundwater and/or land use restrictions.
- Operations and maintenance - ongoing maintenance of landfill cover.
- Monitoring requirements - groundwater monitoring for 10 years.

Each alternative was screened against the nine criteria identified in the NCP, 40 CFR Section 300.430(e)(9)(iii), and Alternative 4 was the preferred remedy in the 2002 FS. This remedy was implemented, and remedial action was completed in 2007. The FS Alternative 4 also included the development of a long-term groundwater monitoring program.

Following the 2002 FS and implementation of RA, long term monitoring was conducted from 2007 through 2014 to ensure that VDEQ-regulated constituents did not impact groundwater quality beyond the limits of the waste. The groundwater sampling results from the RI fieldwork, combined with the long-term monitoring results, indicates there have been no MCLs exceedances since March 2008. Based on these data, there is no regulatory requirement to continue groundwater sampling; and therefore, Alternative 2 is the preferred remedy going forward.

With the exception of Alternative No. 1, each alternative would include the addition of land-use and water-use restrictions to prevent future residential use of the site.

The primary goal of LUCs would be to eliminate the risk to human health associated with contact, consumption, or inhalation of regulated constituents and landfill contents. Controls and inspections prevent the risk of creating pathways from contaminant source to human receptors.

Alternative 2 is the preferred remedy. Details regarding the methods for implementing the LUCs and landfill inspections/cover maintenance will be outlined in an installation wide LUCIP.

This alternative complies with presumptive remedy guidance for historic landfilling operations. Based on EPA guidance, the presumptive remedy generally fulfills the nine criteria for an acceptable remedy, as discussed below. Based on the existence of a Presumptive Remedy, the United States Environmental Protection Agency (USEPA) suggests selection of other remedies only if they offer specific advantages for the site and/or address other site-specific

7.0 SUMMARY OF PREFERRED REMEDY

LUCs with landfill inspections/cover maintenance, and statutory five-year review is the preferred remedy. It is

anticipated these activities will continue for as long as landfill waste is left in place. This remedy complies with the VDEQ Solid Waste Management Regulations and other ARARs. Containment, which includes LUCs, is the USEPA's Presumptive Remedy for historic land filling operations. This indicates that the selection generally meets the nine criteria defined in the NCP for an acceptable remedy. The preferred remedy would not reduce toxicity, mobility, and volume of COCs. However, there are no contaminant exceedances beyond the waste boundary, which complies with the ARARs. There is no evidence of a contiguous plume of contamination migrating past the landfill/waste boundary.

LUCs will be used to prevent potential contact with contaminated media and to eliminate risk to human health impacts associated with these contaminants. LUCs will be used at the site to provide adequate protection against changes in land use that could create new exposure pathways and receptors.

This selection is preliminary and subject to public comment. The selection could subsequently be changed if additional information is presented.

8.0 COMMUNITY PARTICIPATION

The Fort Gregg-Adams Public Affairs Office canvassed the surrounding communities for potential interest in establishing a Restoration Advisory Board (RAB) in October 2021. No responses were received from the local community. Based on the results of Fort Gregg-Adams's efforts to determine interest in forming a RAB, it was determined that there was not enough community interest to establish and sustain a RAB at this time. The surrounding community for Fort Gregg-Adams includes the Cities of Petersburg (population of approximately 32,000), Hopewell (population of approximately 22,000), and Colonial Heights (population of approximately 17,000), and the County of Prince George (population of approximately 36,000).

The Installation Restoration Program (IRP) at Fort Gregg-Adams operates under the guidelines established by the Fort Gregg-Adams Community Relations Plan, whose implementation and maintenance are the responsibility of the Fort Gregg-Adams Public Affairs Office. The site reports, including the PA/SI and the Proposed Plan, have been made available at the public information repository at the Appomattox Regional Library in Hopewell, VA, for a public comment period, which will begin on July 8, 2024 and end on August 7, 2024.

In accordance with NCP, 40 CFR Section 300.430(f)(3)(i)(D), a public meeting will be held during the public comment period. The meeting format is anticipated to be virtual, and an advance copy of the Proposed Plan will be provided electronically. To send written comments during the comment period or obtain further information, contact:

Mr. Craig Norris
Environmental Engineer
Environmental Management Division
Building 6005
825 19th Street
USAG Fort Gregg-Adams, Virginia 23801
Desk: (804)734-3772
Email: craig.a.norris10.civ@mail.mil

The VDEQ representative reviewing and providing concurrence for the PP is:

Mr. Kyle Newman
Risk Assessor
Office of Remediation Programs
Virginia Department of Environmental Quality
1111 E. Main St. Suite 1400
Richmond, VA 23219
(804) 698-4452
Email: kyle.newman@deq.virginia.gov

A suggested comment form is included at the end of this Proposed Plan. Besides being available in the public information repository, copies of the PA/SI and Proposed Plan are available in the Administrative Record (AR) file for Fort Gregg-Adams or by contacting Mr. Craig Norris in Fort Gregg-Adams's Environmental Management Office.

GLOSSARY OF TERMS

Administrative Record: The official records containing all public information regarding the site. A copy of the Administrative Record is maintained at the Fort Gregg-Adams Environmental Management Office.

Applicable or Relevant and Appropriate Requirements (ARARs): The regulatory requirements set forth by federal and state environmental rules, regulations, and standards, which must be reached during the implementation of the remedial action.

Below Ground Surface (BGS): Reference point used in measuring depth. It is used to indicate that the depth was measured from the ground surface.

Background samples: Samples collected in the environmental media that are not expected to be influenced by the source of contamination or by other sites.

Base-Neutral-Acid Compounds (BNAs): Semi-volatile organic compounds.

Bioaccumulation: The increase in chemical concentration in animals through the food they eat.

Cancer risk: Cancer risks are expressed as a number reflecting the increased chance that a person will develop cancer if exposed to chemicals or substances. (i.e. 1×10^{-6} means one extra cancer in 1,000,000 people)

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): The federal law initially passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The law establishes the program commonly known as Superfund, and regulated by the United States Environmental Protection Agency, to investigate and remediate uncontrolled or abandoned hazardous waste sites.

Confining unit: Is a rock or sediment unit with very low permeability that water is hardly transmitted through the unit. Confining units are often rich in clays and are called confining units because they may be above or below an aquifer and restrict the vertical flow of water through the aquifer.

Conservative: Biased high or overestimation. For example, in relation to environmental risk evaluation, the prescribed methodologies lead to an overestimation of risk. This way, if the results indicate no risk then it will be safe to assume, they are acceptable but if a potential risk is indicated then a more in-depth analysis is carried out to determine if there really is unacceptable risk.

Contaminants of Concern (COCs): Chemicals presenting a significant risk to human health or the environment.

Constituents of Potential Concern (COPCs): Are those constituents at a site which have been shown through laboratory analysis to most likely be causing potential risk to human health. Hundreds of constituents can be detected by typical laboratory methods, and it is necessary to focus investigations on the subset that could logically result from site activities.

Decision Document (DD): A legal public document that describes the cleanup action or remedy selected for a CERCLA site, the basis for the choice of that remedy, and public comments on alternative remedies. The DD is based on information and technical analysis generated during the RI/FS.

GLOSSARY OF TERMS (Continued)

Groundwater: Underground water that fills pores in soils or openings in rocks to the point of saturation. Groundwater is often used as a source of drinking water via municipal or domestic wells.

Groundwater monitoring: Ongoing collection of groundwater data that helps gauge the effectiveness of actions to verify that contaminants are not migrating beyond the expected concentrations.

Hazard Index (HI): A number indicative of noncarcinogenic health effects. It is the ratio of the existing level of exposure to an acceptable level of exposure. A value equal to or less than one indicates that the human population is not likely to experience adverse effects.

Hazard Quotient (HQ): See HHRA.

Headquarters Army Environmental System HQAES: supports championing Installation Enterprise Readiness and delivering unmatched Quality of Life by protecting the Environment for Soldiers, their families, the Army, and the Nation by providing these capabilities:

- Environmental Quality
- Environmental Restoration
- Environmental Performance Assessment
- Environmental Compliance
- Environmental Conservation
- Pollution Prevention

Herbicides: A class of compounds to kill plants

Human Health Risk Assessment (HHRA): Evaluates potential exposures and risks of site-related constituents (e.g., inorganics and organic compounds) detected in the environmental media (i.e., soil, groundwater, surface water and sediments) at a site to human health. Potential risks to human health are evaluated quantitatively by combining calculated exposure levels and toxicity data. A distinction is made between non-carcinogenic and carcinogenic endpoints, and two general criteria are used to describe the HQ for non-carcinogenic effects and ELCR for COPCs evaluated as human carcinogens. The HQ for non-carcinogenic effect is evaluated as the ratio of the estimated exposure dose and the toxicity value. HQ greater than 1 indicates that the estimated exposure level for that constituent exceeds the toxicity value. Although an HQ less than 1 indicates that health effects should not occur, an HQ that exceeds 1 does not imply that health effects will occur, but that health effects are possible. The sum of the HQs estimates the hazard index (HI) benchmark. The ELCR is calculated as the product of the exposure dose and a unit risk factor. The risk estimate is an upper-bound estimate; therefore, the true risk is far less than that predicted by the model. The USEPA considers ELCRs within and below the range of 10^{-6} to 10^{-4} .

Infiltration: Movement of precipitation through surface soil to underlying layers.

Ingestion: Intake through the mouth.

Inhalation: Intake through breathing.

Installation Restoration Program (IRP) - set up by the Department of Defense to restore sites affected by our past operations. The IRP provides money for bases to locate, investigate and clean up waste sites. Under the IRP we are cleaning up waste sites to protect human health and the environment.

Ephemeral Stream - Has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Runoff from rainfall is the primary source of water for stream flow.

Land Use Controls (LUCs) - may consist of engineered and non-engineered instruments, such as administrative and legal controls or engineered and physical barriers, such as fences and security guards. LUCs help to minimize the potential for exposure to contamination and/or protect the integrity of a response action and are typically designed to work by limiting land and/or resource use or by providing information that helps modify or guide human behavior at a site.

Long Term Monitoring (LTM): Monitoring of groundwater to confirm continued degradation of constituents at a sufficient rate to ensure that the wider environment is unaffected and that remedial objectives will be achieved within a reasonable timescale.

Maximum Contaminant Levels (MCLs): MCLs were developed by the EPA, in accordance with the Safe Drinking Water Act. MCLs are legally enforceable for drinking water supplies and represent the allowable concentration for a given constituent in drinking water.

Monitoring well: Consists of a small diameter borehole tube that is sealed in the earth with a permeable screen section at the bottom, in an underground reservoir where water is expected to collect. It is used to monitor and visualize how groundwater is stored and moves underground and to help in identifying the groundwater quality through sampling and analysis. Because monitoring wells are designed to sample groundwater, they are typically relatively shallow and have low yield as they are only used to obtain small quantities of water from the aquifer. In contrast, water supply wells are usually constructed much deeper than monitoring wells and have much larger water intake intervals to extract high yields of groundwater for drinking or industrial supply. Additionally, a water supply well will have a permanent pump associated with it to bring water to the surface, whereas water from monitoring wells is typically sampled by bailers or other temporary extraction methods.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The, NCP, more commonly called the National Contingency Plan, is the federal government's blueprint for responding to both oil spills and releases of hazardous substances, pollutants, or contaminants. This national response capability plan promotes the overall coordination among a hierarchy of responders and contingency plans.

No Action Decision: A decision that no remedial or cleanup action is required at a site because the site currently poses no unacceptable risk to human health and the environment and is not reasonably anticipated to do so. The No Action decision differs from the No Action alternative, which is required by Federal regulation to be used for comparison purposes when a site does pose an unacceptable risk that requires a remedial action.

Noncarcinogenic effects: A health condition other than cancer.

Pesticides: An agent used to kill pests. Includes insecticides, herbicides, fungicides and rodenticides.

Preliminary Assessment/Site Inspection (PA/SI): Under the scope of CERCLA, the combined PA/SI assessment integrates activities typically performed during the PA (information gathering, site reconnaissance) with activities typically performed during the SI (review of data, development of field work plans, field sampling, filling data gaps) to achieve one continuous site investigation.

Principal threats: Source materials that are dangerous based on potential contact or the ability to move through the environment.

Proposed Plan: A document that presents a proposed cleanup alternative, rationale for the preference, and requests public input regarding the proposed alternative.

GLOSSARY OF TERMS (Continued)

Restoration Advisory Board (RAB) - are a forum for exchange of information and partnership among citizens, the installation, EPA, and State. Most importantly, they offer an opportunity for communities to provide input to the cleanup process.

Remedial Action - an action taken to effect long-term restoration of environmental quality (as under the Comprehensive Environmental Response, Compensation, and Liability Act)

Remedial Action Objective (RAO): RAOs are site-specific, initial clean-up objectives that are established on the basis of the nature and extent of contamination, the resources that are currently and potentially threatened, and the potential for human and environmental exposure.

Superfund Amendments and Reauthorization Act of 1986 (SARA) - required EPA to revise the Hazard Ranking System to ensure that it accurately assessed the relative degree of risk to human health and the environment posed by uncontrolled hazardous waste sites that may be placed on the National Priorities List (NPL).

Semi Volatile Organic compound (SVOC): Are a subgroup of volatile organic compounds that tend to have a higher molecular weight and higher boiling point temperature.

Site Inspection (SI): An investigation conducted under CERCLA, following the PA phase and before the RI. The SI involves conducting tests in the environmental media through field sampling to determine what hazardous substances are present and whether they are being released to the environment and are a threat to human health and the environment.

Target Analyte List (TAL) - List of inorganic compounds/elements designated for analysis as contained in the version of the EPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis.

Volatile Organic Compound (VOC): A class of chemicals, generally man-made, that is considered volatile under normal atmospheric conditions.

Virginia Department of Environmental Quality (VDEQ): DEQ administers state and federal laws and regulations for air quality, water quality, water supply and waste management. In addition, other programs cover a variety of environmental activities. The mission of the Department of Environmental Quality is to protect and improve the environment and the wellbeing of all Virginians.

Virginia Solid Waste Regulations (VSWR): DEQ regulations require the management of solid waste and hazardous waste in a manner to protect human health and the environment. Solid waste is any discarded material that is identified by the Solid Waste Management Regulations. It includes solid, liquid, semi-solid, or contained gaseous material. Types of solid waste are garbage, refuse, household hazardous waste, industrial waste, demolition waste, construction waste, debris, municipal waste, yard waste and other discarded materials.

