Draft

Proposed Plan
for Soil, Sediment, and Surface Water
at RVAAP-06 C Block Quarry

Former Ravenna Army Ammunition Plant
Portage and Trumbull Counties, Ohio

Contract No. W912QR-15-C-0046

Prepared for:

US Army Corps of Engineers®

U.S. Army Corps of Engineers
Louisville District

Prepared by:

leidos

Leidos
8866 Commons Boulevard, Suite 201
Twinsburg, Ohio 44087

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None.

14. ABSTRACT

This Proposed Plan for C Block Quarry presents to the public the physical characteristics, geology, and hydrogeology of C Block Quarry; compiles historical and newly acquired environmental data; summarizes nature and extent of contamination in soil; evaluates contaminant fate and transport; provides human health and ecological risk assessments; and presents a preferred alternative to meet the remedial action objective at this AOC. The preferred alternative for C Block Quarry is Alternative 2: Surficial ACM Removal and land use controls (LUCs). This alternative meets the threshold and primary balancing criteria and meets the remedial action objectives (RAOs) by removing ACM on the ground surface and implementing LUCs to prevent Unrestricted (Residential) Land Use and prohibit digging by the Industrial Receptor.

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Documentation of Ohio EPA Concurrence of Final Document

(Documentation to be provided once concurrence is issued.)

DISCLAIMER STATEMENT

CONTRACTOR STATEMENT OF INDEPENDENT TECHNICAL REVIEW

Leidos has completed the Proposed Plan for Soil, Sediment, and Surface Water at RVAAP-06 C Block Quarry at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of data quality objectives; technical assumptions; methods, procedures, and materials to be used; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing United States Army Corps of Engineers (USACE) policy.

Jed Thomas, P.E.
Study/Design Team Leader

November 7, 2019
Date

Sarika Johnson
Independent Technical Review Team Leader

November 7, 2019
Date

Significant concerns and the explanation of the resolution are documented within the project file. As noted above, all concerns resulting from independent technical review of the project have been considered.

Lisa Jones-Bateman
Senior Program Manager

November 7, 2019
Date

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ARNG = Army National Guard.
I&E = Installations & Environment.
NEDO = Northeast District Office.
OHARNG = Ohio Army National Guard.
Ohio EPA = Ohio Environmental Protection Agency.
REIMS = Ravenna Environmental Information Management System.
SWDO = Southwest District Office.
USACE = U.S. Army Corps of Engineers.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

ACM	Asbestos-containing Material
amsl	Above Mean Sea Level
AOC	Area of Concern
ARAR	Applicable or Relevant and Appropriate Requirement
Army	U.S. Department of the Army
ARNG	Army National Guard
bgs	Below Ground Surface
CAHES	Certified Asbestos Hazard Evaluation Specialist
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CJAG	Camp James A. Garfield
CMCOPC	Contaminant Migration Chemical of Potential Concern
COC	Chemical of Concern
COPC	Chemical of Potential Concern

COPEC	Chemical of Potential Ecological Concern
CSM	Conceptual Site Model
DERP	Defense Environmental Restoration Program
DNT	Dinitrotoluene
ERA	Ecological Risk Assessment
FS	Feasibility Study
FWCUG	Facility-wide Cleanup Goal
HHRA	Human Health Risk Assessment
ISM	Incremental Sampling Methodology
LUC	Land Use Control
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PBA08	2008 Performance-based Acquisition
PCB	Polychlorinated Biphenyl
PP	Proposed Plan
QC	Quality Control
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
TNT	2,4,6-Trinitrotoluene
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This Proposed Plan (PP) presents the conclusions and recommendations for soil, sediment, and surface water within the C Block Quarry area of concern (AOC) at the former Ravenna Army Ammunition Plant (RVAAP).

The former RVAAP is now known as Camp James A. Garfield (CJAG) Joint Military Training Center and is located in Portage and Trumbull counties, Ohio (Figure 1). C Block Quarry is designated as AOC RVAAP-06.

The Army National Guard (ARNG), in coordination with the Ohio Environmental Protection Agency (Ohio EPA), issues this PP to provide the public with necessary information to comment on selecting an appropriate response action. The remedy will be selected for C Block Quarry after all comments submitted during the 30-day public comment period are considered. Therefore, the public is encouraged to review and comment on all alternatives presented in this PP.

ARNG 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) of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations 300). Selecting and implementing a remedy will be consistent with the requirements of the Ohio EPA Director's Final Findings and Orders, dated June 10, 2004 (Ohio EPA 2004).

This PP summarizes information that can be found in detail in the *Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-06 C Block Quarry* (Leidos 2019), herein referred to as the C Block Quarry RI/FS Report. The Administrative Record File, containing information used in selecting the remedy, is available for public review.

Public Comment Period:

Public Meeting:
The Army National Guard will hold an open house and public meeting to present the conclusions and additional details presented in the *Remedial Investigation/Feasibility Study Report for Soil, Sediment, and Surface Water at RVAAP-06 C Block Quarry* (Leidos 2019). Oral and written comments also will be accepted at the meeting. The open house and public meeting are scheduled for

Information Repositories:
Information used in selecting the remedy is available for public review at the following locations:

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827

Hours of operation:
9AM-9PM Monday-Thursday
9AM-6PM Friday
9AM-5PM Saturday
1PM-5PM Sunday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282

Hours of operation:
9AM-8PM Monday-Thursday
9AM-5PM Friday and Saturday

Online
http://www.rvaap.org/

The **Administrative Record File**, containing information used in selecting the remedy, is available for public review at the following location:

Camp James A. Garfield Joint Military Training Center (former Ravenna Army Ammunition Plant)

Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444
(614) 336-6136

Note: Access is restricted to Camp James A. Garfield, but the file can be obtained or viewed with prior notice.

ARNG's preferred alternative at the C Block Quarry is Alternative 2: Surficial Asbestos-Containing Material (ACM) Removal and Land Use Controls (LUCs). This alternative meets the remedial action objectives (RAOs) by removing ACM on the ground surface, implementing LUCs to prevent Unrestricted (Residential) Land Use, and prohibiting digging by the Industrial Receptor. ARNG encourages the public to review the background documents to gain a more comprehensive understanding of the AOC, activities that have been conducted to date, and the rationale for the preferred alternative.

2.0 SITE BACKGROUND

2.1 Facility Description and Background

The former RVAAP, now known as CJAG, located in northeastern Ohio within Portage and Trumbull counties, is approximately 3 miles east/northeast of the city of Ravenna and 1 mile north/northwest of the city of Newton Falls (Figures 1 and 2). The facility is approximately 11 miles long and 3.5 miles wide. The facility is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad to the south; Garrett, McCormick, and Berry Roads to the west; the Norfolk Southern Railroad to the north; and State Route 534 to the east. In addition, the facility is surrounded by the communities of Windham, Garrettsville, Charlestown, and Wayland. The facility is federal property, which has had multiple accountability transfers amongst multiple Army agencies, making the property ownership and transfer history complex. The most recent administrative accountability transfer occurred in September 2013 when the remaining acreage (not previously transferred) was transferred to the U.S. Property and Fiscal Officer for Ohio and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (Camp James A. Garfield).

2.2 C Block Quarry Background

The C Block Storage Area contains parallel rows of 99 aboveground reinforced concrete igloos that formerly stored munitions. During the 1940s and 1950s, C Block Quarry was used to mine Homewood Sandstone. Figure 3 presents the location and current features of the site.

In March 1950, a conference was conducted to assess waste disposal for the former RVAAP. The conference concluded that C Block Quarry was the most satisfactory location to dispose of sulfuric acid, nitric acid, mercury, chromic acid, phosphoric acid plus accelerator, alkali compound stripper, and surfactants commonly used in detergents.

The summary report (U.S. Government 1950) of the 1950 conference stated that C Block Quarry was selected for facility waste disposal due to:

- Infiltration benefits through stone substrata and combinations with elements of the stone substrata due to relative positions of elements;
- Distance from any water supply or contributory surface water that might contaminate the raw water supply;
- Lack of recognizable traces in any water supply or surface water to date; and
- Evaporation of mixed compounds, which probably leave complex molecular salts of low solubility.

During the 1950s and 1960s, C Block Quarry also was used as a disposal area for annealing process waste for a short duration (USATHAMA 1982). Liquid waste was dumped on the ground surface in the bottom of the abandoned unlined borrow pit. The volume of liquid waste disposed of at C Block Quarry is unknown.

Currently, the AOC is heavily forested with brush and trees. No surface water or sediment sources have been identified at the site.

The 2008 Performance-based Acquisition (PBA08) Remedial Investigations (herein referred to as the PBA08 RI) in 2010 and 2012 confirmed the presence of roofing shingle material, ACM, wooden doors, metal hinges and doorknobs, corrugated sheet metal, glass bottles, bricks, and insulation-like foam. As no buildings were constructed within C Block Quarry, these materials are assumed to be the result of dumping during an unknown timeframe. The site is believed to have been inactive since the 1960s.

2.3 Potential Contaminants

The *Characterization of 14 AOCs at the Ravenna Army Ammunition Plant* (MKM 2007) (herein referred to at the Characterization of 14 AOCs) and the 2010 and 2012 PBA08 RI established anticipated primary chemicals of potential concern (COPCs), including metals and ACM. These COPCs are associated with the history of manufacturing waste disposal at C Block Quarry.

2.4 Remedial Investigations

C Block Quarry has been involved in numerous assessments and investigations conducted by the U.S. Department of the Army (Army). Assessments performed to initially evaluate site use, assess potential contamination, and help prioritize the site include the following:

- Soil and Sediment Analysis Performed for Ravenna Arsenal (Mogul 1982),
- Installation Reassessment of the Ravenna Army Ammunition Plant (USATHAMA 1982),
- Soil Contamination Survey (Mogul 1986),
- Resource Conservation and Recovery Act (RCRA) Facility Assessment (Jacobs 1989),
- Preliminary Assessment for the Characterization of Areas of Contamination (USACE 1996), and
- Relative Risk Site Evaluation (USACHPPM 1996).

The nature and extent of contamination, conceptual site model (CSM), fate and transport assessment, human health risk assessment (HHRA), and ecological risk assessment (ERA) are based on RIs conducted from 2004–2019. The following RIs have been conducted at C Block Quarry:

- 2004/2005 Characterization of 14 AOCs (MKM 2007),
- 2010 PBA08 RI, and
- 2012 PBA08 RI focused on chromium speciation sampling.

C Block Quarry sample data were aggregated to evaluate contaminant nature and extent and complete the HHRA and ERA. The initial basic aggregation of sample data was by environmental medium (e.g., surface soil and subsurface soil), site characteristics, operational data, and available maps. For each medium-specific sample aggregate, further aggregation or grouping of sample data was performed, usually by a certain area or common feature, such as a pond or ditch.

The following subsections further describe the RIs conducted at C Block Quarry. The soil, sediment, and surface water sample locations are presented in Figure 4.

2.4.1 2004/2005 Characterization of 14 AOCs

From 2004–2005, sample collection activities were conducted at C Block Quarry to determine if residual contaminants remain at the AOC. Soil and groundwater were sampled during the investigation to identify if a need for more extensive risk assessments exists, and if remedial actions are appropriate. The Characterization of 14 AOCs investigation was performed to accomplish the following:

- Provide data for future assessments that may be conducted,
- Develop a CSM,
- Identify key elements to be considered in future actions,
- Assess potential sources of contamination,
- Identify whether releases of contamination extend beyond the AOC boundary,
- Provide an initial assessment of the nature and lateral extent of contamination, and
- Provide a preliminary human health risk screening evaluation and ecological risk screening evaluation.

The field activities from October 2004 to May 2005 included the following:

- Collected six multi-increment surface soil (0–1 ft below ground surface [bgs]) samples,

- Collected one discrete surface soil (0–1 ft bgs) sample for volatile organic compounds, (VOCs), and
- Completed sampling location survey.

Sampling locations are presented in Figure 4.

Based on the analytical results of the field investigation the Characterization of 14 AOCs, the report recommended a full range of human health and ecological risks should be considered to assist in the overall risk management decisions for C Block Quarry.

The Characterization of 14 AOCs RI identified site-related contamination in surface soil at C Block Quarry. Based on the human health and ecological screening risk evaluations, human health COPCs were identified for surface soil at C Block Quarry. Site conditions during the Characterization of 14 AOCs RI did not support a no further action decision.

Sample results and findings from the Characterization of 14 AOCs RI were included in the overall nature and extent of contamination evaluation, HHRA, and ERA that are summarized in the C Block Quarry RI/FS Report (Leidos 2019).

2.4.2 PBA08 Remedial Investigation – March 2010

In November 2008, Science Applications International Corporation scientists performed a site walk of C Block Quarry. In March 2010, the PBA08 RI was implemented by collecting surface and subsurface soil using incremental sampling methodology (ISM) and discrete sampling techniques. No groundwater samples were collected during the PBA08 RI, and no surface water or sediment samples were collected because these media are not present at the AOC. Figure 4 presents the sampling locations at the site.

Subsurface soil was characterized by placing five borings in ISM areas with previous surface soil results greater than the screening criteria. In all cases, soil samples were collected from the subsurface borings to further define the vertical extent of contamination in subsurface soil at the AOC. To assess the depths of exposure of the Resident Receptor, each soil boring was sampled at 0–1, 1–4, and 4–7 ft bgs (or refusal) using a hand auger. Depth of borehole completion was limited by the depth to bedrock at the quarry pit bottom.

Since suspected ACM, consisting predominantly of loose transite tiles, was observed at C Block Quarry during the reconnaissance activities in 2008, a Certified Asbestos Hazard Evaluation Specialist (CAHES), licensed by the State of Ohio Department of Health, conducted the asbestos survey and sampling at C Block Quarry. Results from the asbestos survey sample collection are presented in Table 1.

In addition to an asbestos survey and sample collection by a CAHES, asbestos sampling during the PBA08 RI consisted of analyzing soil boring samples for asbestos. None of the nine soil samples exhibited detectable asbestos content.

2.4.3 August 2012 Chromium Speciation Sampling

In August 2012, two ISM chromium speciation samples (and one quality control [QC] field duplicate and one quality assurance split) were recollected from historically sampled ISM areas identified as having elevated total chromium concentrations. Sample location CBLss-003M had a historical total chromium concentration of 240 mg/kg, and sample location CBLss-005M had a historical total chromium concentration of 920 mg/kg. The August 2012 samples were collected and analyzed to evaluate the potential contribution of hexavalent chromium to the total chromium concentrations in soil.

In addition, four discrete surface and subsurface soil samples and one QC field duplicate were collected from two soil borings located within the ISM area with elevated chromium concentration (CBLss-003M) or near CBLsb-010 that had a historical total chromium concentration of 2,100 mg/kg.

These results are included as part of the site-related contaminant screens and in the HHRA and ERA.

3.0 SITE CHARACTERISTICS

C Block Quarry is a 0.96-acre AOC located between roads 3C and 4C of the C Block Storage Area north of Newton Falls Road in the northwestern portion of CJAG (Figure 2).

The C Block Storage Area contains a network of roadways leading to 99 aboveground reinforced concrete igloos that formerly stored munitions on site. These igloos are earth covered. C Block Quarry currently has a maximum depth of 25 ft below the surrounding grade.

Current site features, groundwater flow direction, and surface water flow direction are presented in Figure 3.

The quarry is characterized by a large plateau, which slopes radially in all directions (MKM 2007). The quarry bottom has a maximum depth of 25 ft below the surrounding grade. Hinkley Creek is approximately 2,400 ft west of C Block Quarry.

Access to the quarry bottom is limited to two gradually sloped areas near the northwestern and southwestern corners of the AOC. Bedrock is typically encountered at 1,149 ft above mean sea level (amsl) across the AOC. No perennial surface water features are present within the AOC or in the immediate vicinity. Intermittent surface water flows into the quarry and accumulates in low-lying areas.

C Block Quarry is located on a local bedrock high. Bedrock was typically encountered in the southern and western extents of the AOC around 4 ft bgs. Groundwater elevations recorded in April 2017 indicate the groundwater water table occurs between 1,132–1,138 amsl (TEC-Weston 2018). The potentiometric surface shows the groundwater flow pattern to the east/southeast toward Sand Creek, which is approximately 2,000 ft east/southeast of C Block Quarry.

Surface water drainage generally follows the topography at the AOC radially inward toward the quarry bottom. Low-lying areas contain surface water for short periods of time only during precipitation events or periods of snow melt. The bedrock sidewall of the quarry does not contribute to surface water within the AOC because the water table is below the quarry bottom. No migration pathways for surface water runoff to exit the AOC have been identified within C Block Quarry.

4.0 SCOPE AND ROLE OF RESPONSE ACTION AND LAND USE

ARNG, in coordination with Ohio EPA, is implementing the Installation Restoration Program with the overall program strategy of addressing the principal environmental threats at each site posing a risk to applicable receptors. This PP addresses soil, sediment, and surface water, although sediment and surface water are not present at the site. The response action for these media at C Block Quarry is being conducted to meet this overall program strategy. Groundwater will be evaluated as part of the Facility-wide Groundwater AOC (RVAAP-66) as a separate decision. However, the selected remedy for soil and sediment at C Block Quarry also must be protective of groundwater.

The potential future uses for C Block Quarry are Military Training Land Use or Commercial/Industrial Land Use. Although residential use is not anticipated at CJAG or C Block Quarry, Unrestricted (Residential) Land Use was evaluated in accordance with Defense Environmental Restoration Program (DERP) Manual 4715.20 (DoD 2012) in order to make appropriate risk management decisions.

Resident Receptor (Adult and Child) Facility-wide Cleanup Goals (FWCUGs) were used to conduct an Unrestricted (Residential) Land Use evaluation. Sites that meet the standards for Unrestricted (Residential) Land Use are also considered protective for Military Training and Commercial/Industrial Land Uses.

No prior removal actions have been conducted at this site, and early or interim actions are not planned. The proposed response actions at C Block Quarry will be implemented under the authority of, and in accordance with, the requirements of the Ohio EPA Director's Final Findings and Orders, dated June 10, 2004 (Ohio EPA 2004).

5.0 SUMMARY OF SITE RISKS

The results of the 2004/2005 Characterization of 14 AOCs RI, 2010 PBA08 RI, and 2012 Supplemental Chromium Speciation were used to evaluate the nature and extent of contamination, assess potential future impacts to groundwater, conduct HHRAs and ERAs, and evaluate the need for remedial alternatives.

In total, 21 surface soil samples, 10 subsurface soil samples, 7 sediment samples, 5 surface water samples, and 6 building debris samples have been collected to characterize C Block Quarry.

As of 2019, 75 groundwater samples have been collected within C Block Quarry. Although groundwater will be evaluated as part of the Facility-wide Groundwater AOC (RVAAP-66) as a separate decision, the information was evaluated in the C Block Quarry RI/FS Report (Leidos 2019), since the selected remedy for soil must also be protective of groundwater.

5.1 Human Health Risk Assessment

The HHRA identified chemicals of concern (COCs) and conducted risk management analysis to determine if COCs pose unacceptable risk to the Resident Receptor. If no unacceptable risk to the Resident Receptor exists, it can be concluded that no unacceptable risk to the National Guard Trainee and Industrial Receptor exists. However, if unacceptable risk is identified for the Resident Receptor, the risk to the National Guard Trainee and Industrial Receptor is evaluated.

Media of concern at C Block Quarry are surface soil and subsurface soil. Surface water and sediment were not present within the C Block Quarry. Hexavalent chromium was identified as a COC to be carried forward for potential remediation in surface soil and subsurface soil for Unrestricted (Residential) and Military Training Land Uses. No COCs were identified for Commercial/Industrial Land Use.

A CAHES collected bulk/debris samples and conducted an ACM survey. Four of six bulk/debris samples contained asbestos fibers, ranging from containing 10 to 35% chrysotile, and were considered friable. The ACM survey indicated several areas of exposed transite/shingle and steel panels with block insulation and paper within C Block Quarry. The survey indicated that suspect ACM occurred in an area of approximately 2,750 ft^2, although visible debris occupied less than 10 ft^2.

Cleanup goals for C Block Quarry are presented in Table 2.

5.2 Ecological Risk Assessment

C Block Quarry is approximately 0.96 acres and is currently inactive. The habitat is mostly forest and brush with trees at least 1 ft in diameter. Surface water drainage generally follows the topography at the AOC radially inward toward the quarry bottom. Low-lying areas contain surface water for short periods of time only during precipitation events or periods of snow melt. The size of the habitat is large enough to completely support cover and food for small birds and mammals that typically require approximately 1 acre of habitat (USEPA 1993). The terrestrial vegetation provides a habitat for birds, mammals, insects, and other organisms.

The northern long-eared bat (*Myotis septentrionalis*; federally threatened) exists at CJAG. No other federally listed species or critical habitats are on the facility. C Block Quarry has not had a site-specific survey for federal- or state-listed species. However, surveys have been conducted throughout the facility and have not identified state-listed, federally listed, threatened, or endangered species at C Block Quarry (OHARNG 2014).

The Level I ERA presented important ecological resources on or near the AOC and evaluated the potential for current contamination to impact ecological resources. Chemical contamination was present in surface soil at C Block Quarry; no sediment or surface water were present at the AOC. This contamination was identified using discrete soil data collected for the PBA08 RI. Eight integrated chemicals of potential ecological concern (COPECs) were identified in surface soil.

Ecological resources at C Block Quarry were compared to the list of important ecological places and resources. None of the 39 important places and resources were present, and nothing was ecologically significant at C Block Quarry. The ERA summarized the chemicals and resources in detail to demonstrate that contamination exists at C Block Quarry, but no important or significant ecological resources were present. No further action is required to be protective of ecological resources.

5.3 Impacts to Groundwater

Potential impacts to groundwater at C Block Quarry was evaluated using 1) groundwater data collected to date at the AOC, and 2) modeling to assess the potential for chemicals to leach from surface and subsurface soil and impact groundwater beneath the sources.

Groundwater samples were collected from 5 monitoring wells around C Block Quarry during 13 separate sampling events under the Characterization of 14 AOCs (MKM 2007) and the Facility-wide Groundwater Monitoring Program from January 2005 to November 2016 to assess the potential impact that historical site activities may have had on groundwater. Explosives, propellants, VOCs, pesticides, perchlorate, and cyanide results were all below the screening level (maximum contaminant level, Resident Receptor FWCUG, or Resident Tap Water regional screening level [RSL]). Only seven chemicals (hexavalent chromium, manganese, polychlorinated biphenyl [PCB]-1248, benz[a]anthracene, benzo[b]fluoranthene, indeno[1,2,3-cd]pyrene, and bis[2-ethylhexyl]phthalate) exceeded the screening levels.

A conservative fate and transport evaluation identified 2,4,6-trinitrotoluene (TNT); 2-amino-4,6-dinitrotoluene (DNT); and 4-amino-2,6-DNT as final contaminant migration chemicals of potential concern (CMCOPCs). However, none of these final CMCOPCs were detected in AOC groundwater samples collected from 2009–2013.

A qualitative assessment concluded that CMCOPCs are not adversely impacting groundwater quality based on current data and are not predicted to have future impacts. The contaminant fate and transport evaluation concludes that no further action is required for soil to be protective of groundwater.

6.0 REMEDIAL ACTION OBJECTIVE

The HHRA identified hexavalent chromium as a soil COC requiring remediation for the Resident Receptor and the National Guard Trainee Receptors in C Block Quarry. No COCs were identified for Commercial/Industrial Land Use.

Hexavalent chromium in soil at and near sample locations CBLss-003M and CBLss-005M exceeded the residential RSL of 3 mg/kg. In addition, friable ACM (e.g., transite and black tar paper) was intermixed with the soil.

The RAO for C Block Quarry is as follows:

- Prevent Resident Receptor exposure to hexavalent chromium in soil with concentrations above 3 mg/kg at sample locations CBLss-003M and CBLss-005M and prevent Resident Receptor and Industrial Receptor exposure to friable ACM.

7.0 SUMMARY OF REMEDIAL ALTERNATIVES

Remedial technologies and process options were screened to identify potential remedial alternatives that can achieve the RAO. These remedial alternatives are presented below, and potential applicable or relevant and appropriate requirements (ARARs) are presented in Appendix A.

7.1 Alternative 1: No Action

In accordance with the NCP, the No Action alternative must be evaluated. This alternative provides the baseline against which other remedial alternatives are compared. This alternative assumes all current actions (e.g., access restrictions and environmental monitoring) are discontinued and that no future actions will take place to protect human receptors or the environment. Consequently, the COCs at the AOC are not removed or treated.

7.2 Alternative 2: Surficial ACM Removal and LUCs

Alternative 2 consists of 1) removing surficial ACM through non-intrusive, no-digging methods to prevent Industrial Receptor exposure to ACM in surface soil; 2) implementing LUCs to prevent the Industrial Receptor from digging and possibly encountering subsurface ACM; 3) implementing LUCs to prevent Resident Receptor use of the site; and 4) performing five-year reviews to assess the effectiveness of LUCs and whether there is a need to modify them.

Implementing Alternative 2 would not attain a level of protection required for Unrestricted (Residential) Land Use of the AOC; therefore, LUCs and five-year reviews are components of this alternative.

The LUCs will be developed in a LUC Remedial Design. The LUCs will consist of preventing intrusive and digging activities since friable ACM potentially exists in the subsurface soil, installing signs to enhance compliance with digging restrictions at the site, installing Seibert stakes to ensure high visibility of the site boundary, and maintaining the LUC training program. ARNG will be responsible for implementing and overseeing these LUCs, and the LUCs will be documented in the Property Management Plan.

7.3 Alternative 3: Excavation and Off-site Disposal – Attain Unrestricted (Residential) Land Use

Alternative 3 includes conducting a subsurface evaluation to determine if and where ACM is present in subsurface soil, performing pre--excavation and waste characterization sampling, excavating and disposing of surface and subsurface soil to remove COC-contaminated soil and ACM, and performing site restoration.

This alternative will meet the RAOs by removing soil with hexavalent chromium concentrations exceeding the residential RSL of 3 mg/kg and removing surface and any potential subsurface friable ACM. An estimated 1,517 yd^3 (ex situ) of soil and debris would require removal and disposal under this alternative. ACM would be handled, packaged, transported, and disposed of in accordance with applicable federal and state regulations. Figure 5 shows the extent of soil that would need to be removed and replaced under this alternative. Excavations would be backfilled with clean, approved soil from a local commercial supplier. Disturbed areas would be restored to surrounding grade, re-vegetated using an OHARNG-approved seed mixture, and mulched.

No LUCs or five-year reviews pursuant to CERCLA would be required because this alternative attains a level of protection for Unrestricted (Residential) Land Use of the AOC.

8.0 EVALUATION OF ALTERNATIVES

A comparative analysis was performed for the three alternatives in order to provide a direct comparison to one another with respect to common criteria. **Table 3** provides a comparative analysis of the alternatives conducted.

Alternative 1 was determined to not be protective of human health. No further action is required for protection of ecological resources. Potential ARARs are not applicable for Alternative 1, since no actions would be implemented. Alternative 1 was not eligible for selection.

For the remaining alternatives, the balancing criteria (i.e., long-term effectiveness and permanence; reduction of contaminant toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost) were used to select a recommended alternative among the alternatives that would satisfy the threshold criteria. The remaining alternatives were scored among one another for each of the balancing criteria, and a total score was generated.

The alternatives were compared to CERCLA threshold and balancing criteria, and a comparative analysis was completed to justify the selection of a recommended alternative for soil at C Block Quarry.

Alternative 2 scores the highest in regard to short-term effectiveness and implementability, as the minimal ACM removal will have low risks and limited exposure to workers and the public. In addition, the cost to implement Alternative 2 is significantly less than the cost of Alternative 3. Although Alternative 3 scores higher in the long-term effectiveness criteria, the minimal future use of the site does not justify the need for the extent of the remediation anticipated for Alternative 3.

9.0 PREFERRED ALTERNATIVE

The preferred alternative for C Block Quarry is Alternative 2: Surficial ACM Removal and LUCs. Alternative 2 meets the threshold and primary balancing criteria and meets the RAOs by removing ACM on the ground surface and implementing LUCs to prevent Unrestricted (Residential) Land Use and prohibit digging by the Industrial Receptor. The estimated cost of Alternative 2 is $108,534, which includes operation and maintenance costs.

This recommendation is not a final decision. ARNG, in coordination with Ohio EPA, will select the remedy for C Block Quarry after reviewing and considering all comments submitted during the 30-day public comment period. Comments received from the public on this PP will be considered in preparing a Record of Decision (ROD) to document the final remedy. The ROD also will include a responsiveness summary addressing comments received on the PP.

10.0 COMMUNITY PARTICIPATION

Public participation is an important component of the remedy selection. ARNG, in coordination with Ohio EPA, is soliciting input from the community on the preferred alternative. The comment period extends from Month DD, YYYY to Month DD, YYYY. This period includes a public meeting at which ARNG will present this PP and accept oral and written comments.

10.1 Public Comment Period

The 30-day comment period is from Month DD, YYYY to Month DD, YYYY, and provides an opportunity for public involvement in the decision-making process for the proposed action. The public is encouraged to review and comment on this PP.

ARNG and Ohio EPA will consider all public comments before selecting a remedy. During the comment period, the public is encouraged to review documents pertinent to C Block Quarry.

This information is available at the Information Repositories and online at www.rvaap.org. To obtain further information, contact Kathryn Tait of the Camp James A. Garfield Environmental Office at kathryn.s.tait.nfg@mail.mil.

10.2 Written Comments

If the public would like to comment in writing on this PP or other relevant issues, please deliver comments to ARNG at the public meeting or mail written comments (postmarked no later than Month DD, YYYY).

POINT OF CONTACT FOR WRITTEN COMMENTS

Mailing Address:
Camp James A. Garfield Joint Military Training Center
Environmental Office
Attn: Kathryn Tait
1438 State Route 534 SW
Newton Falls, Ohio 44444

Email Address:
kathryn.s.tait.nfg@mail.mil

10.3 Public Meeting

ARNG will hold an open house and public meeting on this PP on

This meeting will provide an opportunity for the public to comment on the proposed action. Comments made at the meeting will be transcribed.

10.4 Review of Public Comments

ARNG will review the public's comments as part of the process in reaching a final decision for the most appropriate action to be taken.

The responsiveness summary, a document that summarizes ARNG's responses to comments received during the public comment period, will be included in the ROD. ARNG's final choice of action will be documented in the ROD.

The ROD will be added to the RVAAP Restoration Program Administrative Record and Information Repositories.

ADMINISTRATIVE RECORD FILE

Camp James A. Garfield Joint Military Training Center (former Ravenna Army Ammunition Plant)
Environmental Office
1438 State Route 534 SW
Newton Falls, Ohio 44444
(614) 336-6136

Note: Access is restricted to Camp James A. Garfield, but the file can be obtained or viewed with prior notice.

INFORMATION REPOSITORIES

Reed Memorial Library
167 East Main Street
Ravenna, Ohio 44266
(330) 296-2827

Hours of operation:
9AM-9PM Monday-Thursday
9AM-6PM Friday
9AM-5PM Saturday
1PM-5PM Sunday

Newton Falls Public Library
204 South Canal Street
Newton Falls, Ohio 44444
(330) 872-1282
Hours of operation:
9AM-8PM Monday-Thursday
9AM-5PM Friday and Saturday

Online
http://www.rvaap.org/

GLOSSARY OF TERMS

Administrative Record: a collection of documents, typically reports and correspondence, generated during site investigation and remedial activities. Information in the Administrative Record represents the information used to select the preferred alternative.

Applicable or Relevant and Appropriate Requirement (ARAR): a promulgated federal or more stringent state law or regulation, aimed at protecting human health and the environment during the cleanup at a site, and that has been evaluated and found to be legally applicable or relevant for the site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): a federal law passed in 1980, commonly referred to as the Superfund Program. It provides liability, compensation, cleanup, and emergency response in connection with the cleanup of inactive hazardous substance release sites that endanger public health or the environment.

Chemical of Concern (COC): a chemical substance specific to an AOC that potentially poses significant human health or ecological risks. COCs are typically further evaluated for remedial action.

Chemical of Potential Ecological Concern (COPEC): a chemical substance specific to an AOC that potentially poses ecological risks and requires further evaluation in the RI. COPECs are typically not evaluated for remedial action.

Feasibility Study: a CERCLA document that reviews and evaluates multiple remedial technologies under consideration at a site. It also identifies the preferred remedial action alternative.

Human Receptor: a hypothetical person, based on current or potential future land use, who may be exposed to an adverse condition. For example, the National Guard Trainee is considered the hypothetical person when evaluating Military Training Land Use at the former RVAAP.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): the set of regulations that implement CERCLA and address responses to hazardous substances and pollutants or contaminants.

Record of Decision (ROD): a signed legal record that describes the cleanup action or remedy selected for a site, the basis for selecting that remedy, public comments, and responses to comments.

Remedial Action Objective (RAO): medium-specific goal for protecting human health and the environment that specifies contaminants, media of interest, and cleanup goals.

Remedial Investigation (RI): a CERCLA investigation that involves sampling environmental media, such as air, soil, and water, to determine the nature and extent of contamination and to calculate human health and environmental risks that result from the contamination.

Responsiveness Summary: a section of the ROD that documents and responds to written and oral comments received from the public about the Proposed Plan.

Risk Assessment: an evaluation that determines potential harmful effects, or lack thereof, posed to human health and the environment due to exposure to chemicals found at a CERCLA site.

Target Risk: The Ohio Environmental Protection Agency identifies 1E-05 as a target for cancer risk for carcinogens and an acceptable target hazard quotient of 1 for non-carcinogens (Ohio EPA 2009).

Unrestricted (Residential) Land Use: defined for the former RVAAP restoration that is considered protective for all three Land Uses at CJAG. If an AOC meets the requirements for Unrestricted (Residential) Land Use, then the AOC also can be used for Military Training and Commercial/Industrial purposes.

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Mogul (Mogul Corporation) 1982. *Soil and Sediment Analysis Performed for: Ravenna Arsenal, Ravenna, Ohio*. May 1982.

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Ohio EPA (Ohio Environmental Protection Agency) 2004. *Director's Final Findings and Orders for the Ravenna Army Ammunition Plant*. June 2004.

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USATHAMA 1982. *Installation Reassessment of Ravenna Army Ammunition Plant, Records Evaluation Report No. 132R*. December 1982.

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TABLES

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Table 1. Summary of Asbestos-Containing Material Survey Samples

Sample ID	Material Description	Approximate % of Asbestos	Friability*
CBLSS-013-5793-BD	Grey Transite (cement shingle)	16% chrysotile	F
CBLSS-014-5794-BD	Beige Transite (cement shingle)	20% chrysotile	F
CBLSS-014-5795-BD	Black Tar (from black building insulation)	10% chrysotile	F
CBLSS-015-5796-BD	Black Tar Paper (from black building insulation)	35% chrysotile	F
CBLSS-016-5797-BD	Beige Firebrick (orange cement block)	ND	NF-II
CBLSS-017-5798-BD	Surface soil, 0–1 ft bgs (brown soil)	<1% chrysotile	NA
CBLSS-018-5799-BD	Black Cinder (black rock-like material)	ND	NF-II

*Although the Asbestos Results Report in Appendix J of the C Block Quarry RI/FS Report (Leidos 2019) indicates the soil sample in CBLss-017-5798-BD is friable, the friability determination of the soil sample is not applicable.

F = Friable.
FS = Feasibility Study.
ID = Identifier.
NA = Not applicable.
ND = Not detected.
NF-II = Non-friable category II.
RI = Remedial Investigation.
< = Less than.

Table 2. Cleanup Goals for C Block Quarry

COC	Cleanup Goal
Hexavalent Chromium	3 mg/kg
Asbestos	Non-detectable

COC = Chemical of concern.
mg/kg = Milligrams per kilogram.

Non-detectable concentration of asbestos will be determined by using test methods with an analytical sensitivity of at least 0.25% by weight.

Table 3. Comparative Analysis of Remedial Alternatives

NCP Evaluation Criteria	Alternative 1: No Action	Alternative 2: Surficial ACM Removal and LUCs	Alternative 3: Excavation and Off-site Disposal – Attain Unrestricted (Residential) Land Use
Threshold Criteria	***Result***	***Result***	***Result***
1. Overall Protection of Human Health and the Environment	Not protective	Protective	Protective
2. Compliance with ARARs	Not compliant	Compliant	Compliant
Balancing Criteria	***Score***	***Score***	***Score***
3. Long-term Effectiveness and Permanence	Not applicable	1	2
4. Reduction of Toxicity, Mobility, or Volume through Treatment	Not applicable	1	2
5. Short-term Effectiveness	Not applicable	2	1
6. Implementability	Not applicable	2	1
7. Cost	Not applicable ($0)	2 ($108,534)	1 ($390,224)
Balancing Criteria Score	*Not applicable*	*8*	*7*

Any alternative considered “not protective” for overall protection of human health and the environment or “not compliant” for compliance with ARARs is not eligible for selection as the recommended alternative. Therefore, that alternative is not scored as part of the balancing criteria evaluation.
Scoring for the balancing criteria is as follows for applicable alternatives: most favorable = 2, least favorable = 1. The alternative with the highest total balancing criteria score is considered the most feasible.

ACM = Asbestos-containing material.
ARAR = Applicable or relevant and appropriate requirement.
NCP = National Oil and Hazardous Substances Pollution Contingency Plan.
LUC = Land use control.

FIGURES

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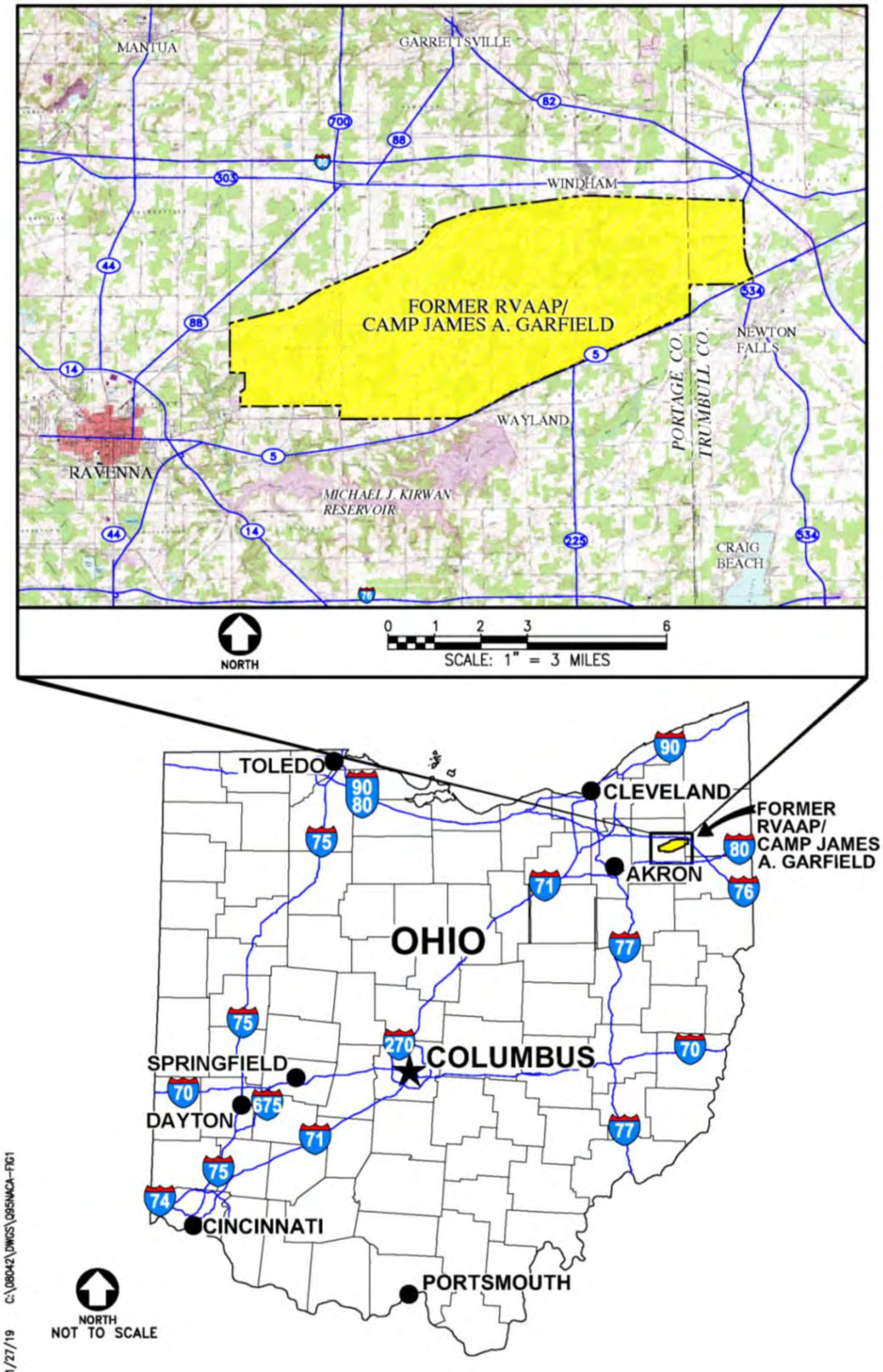

Figure 1. General Location and Orientation of Camp James A. Garfield

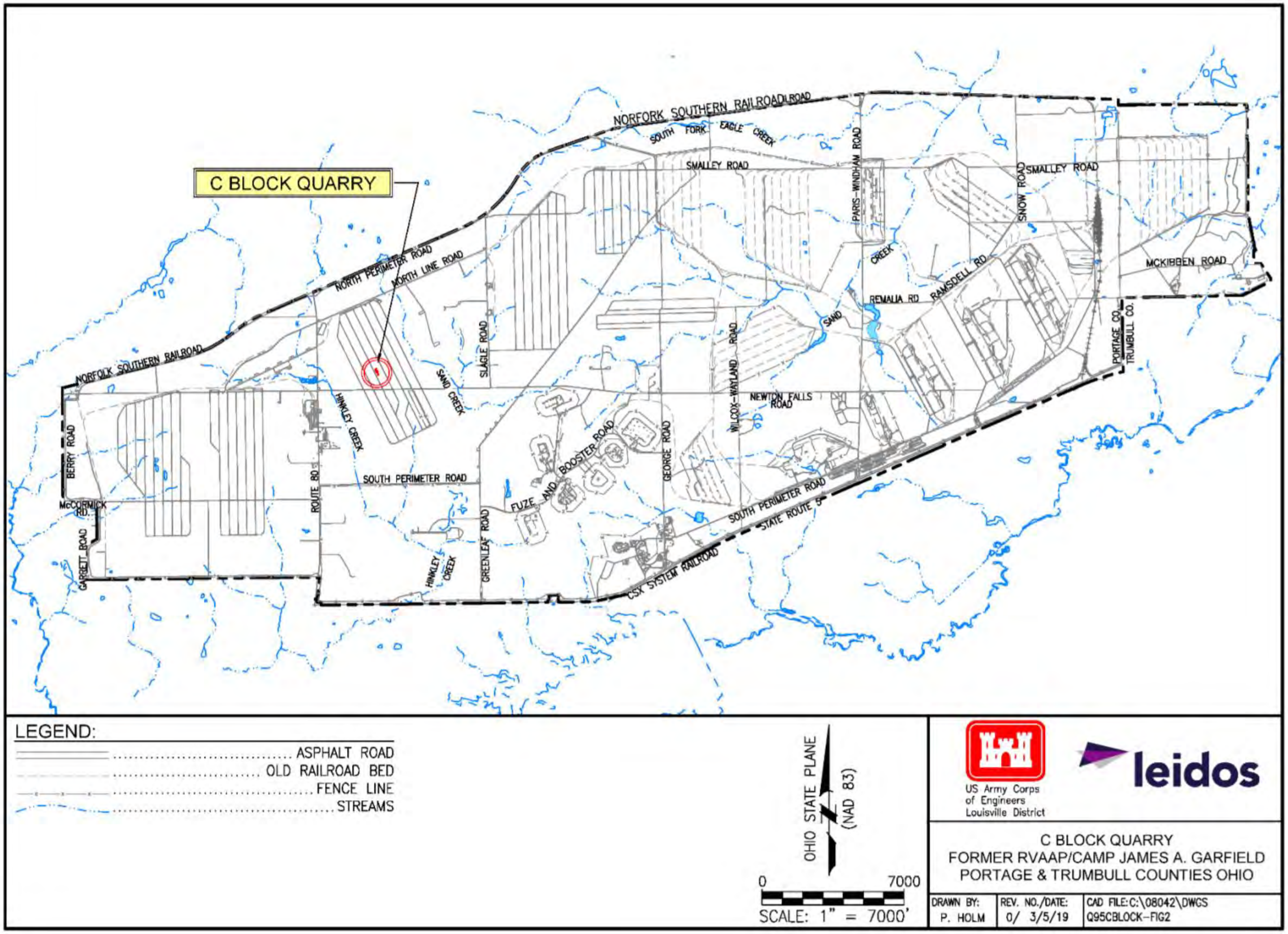

Figure 2. Location of C Block Quarry within Camp James A. Garfield

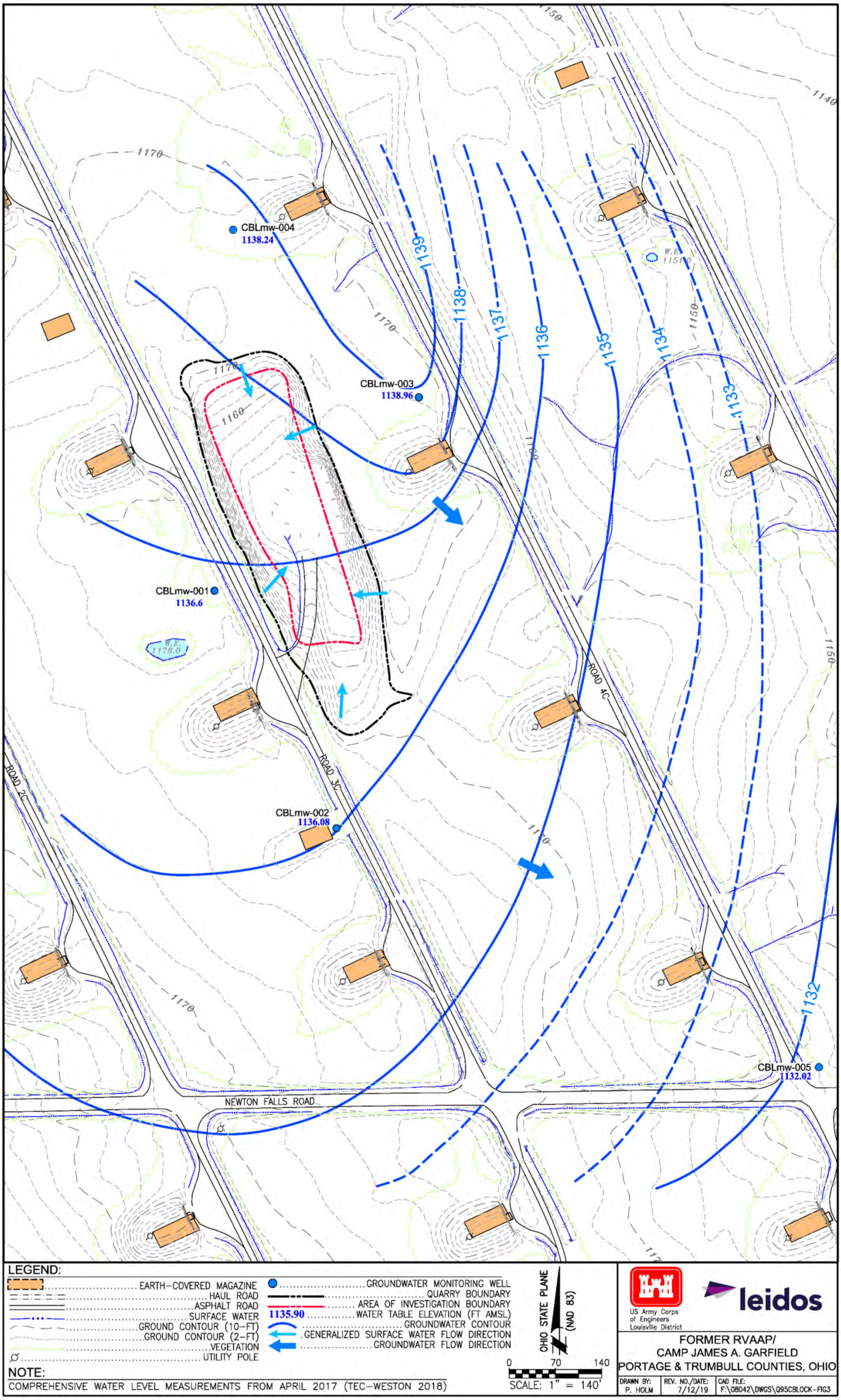

Figure 3. C Block Quarry – Current Site Features

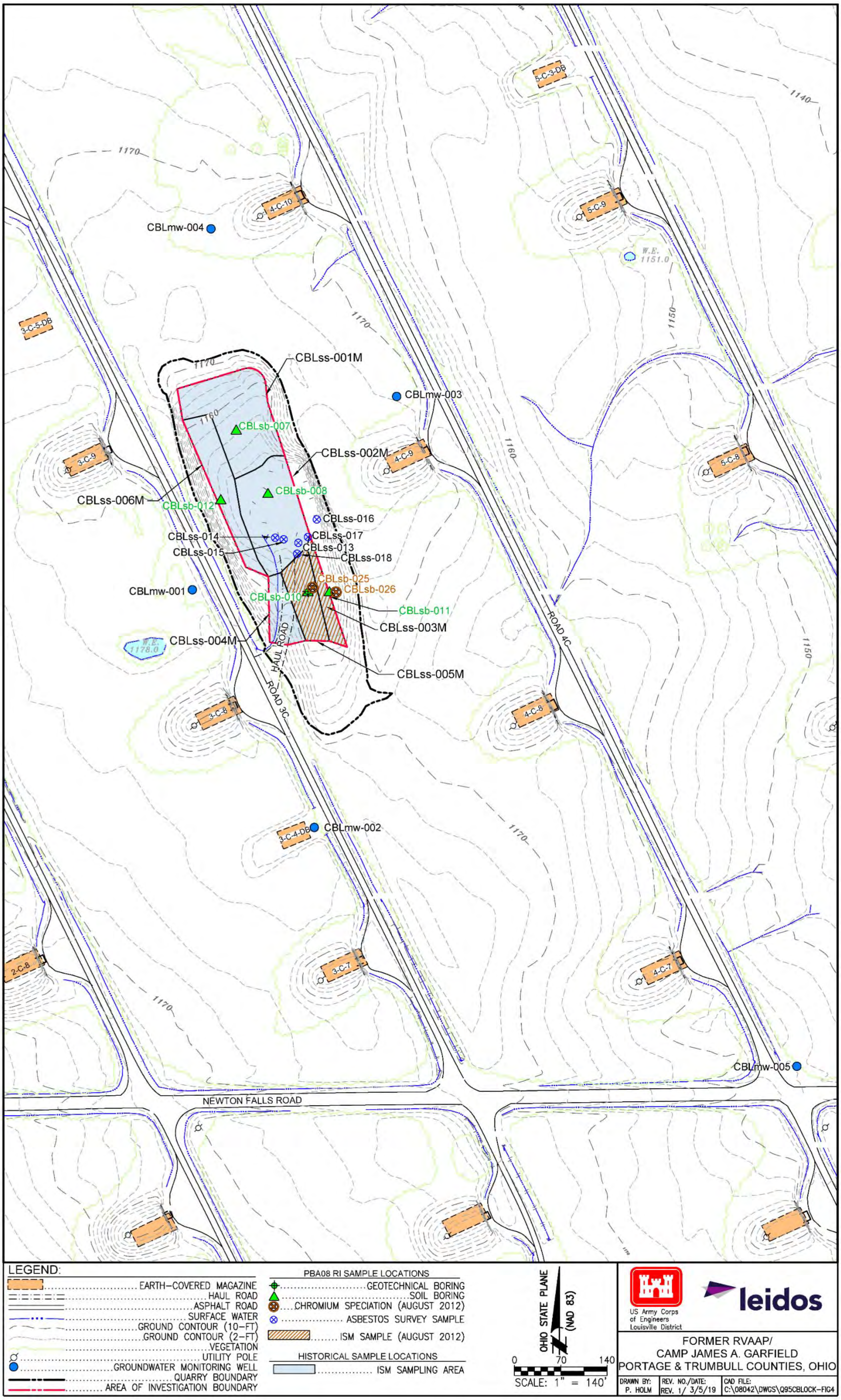

Figure 4. C Block Quarry – Remedial Investigation Sampling Locations

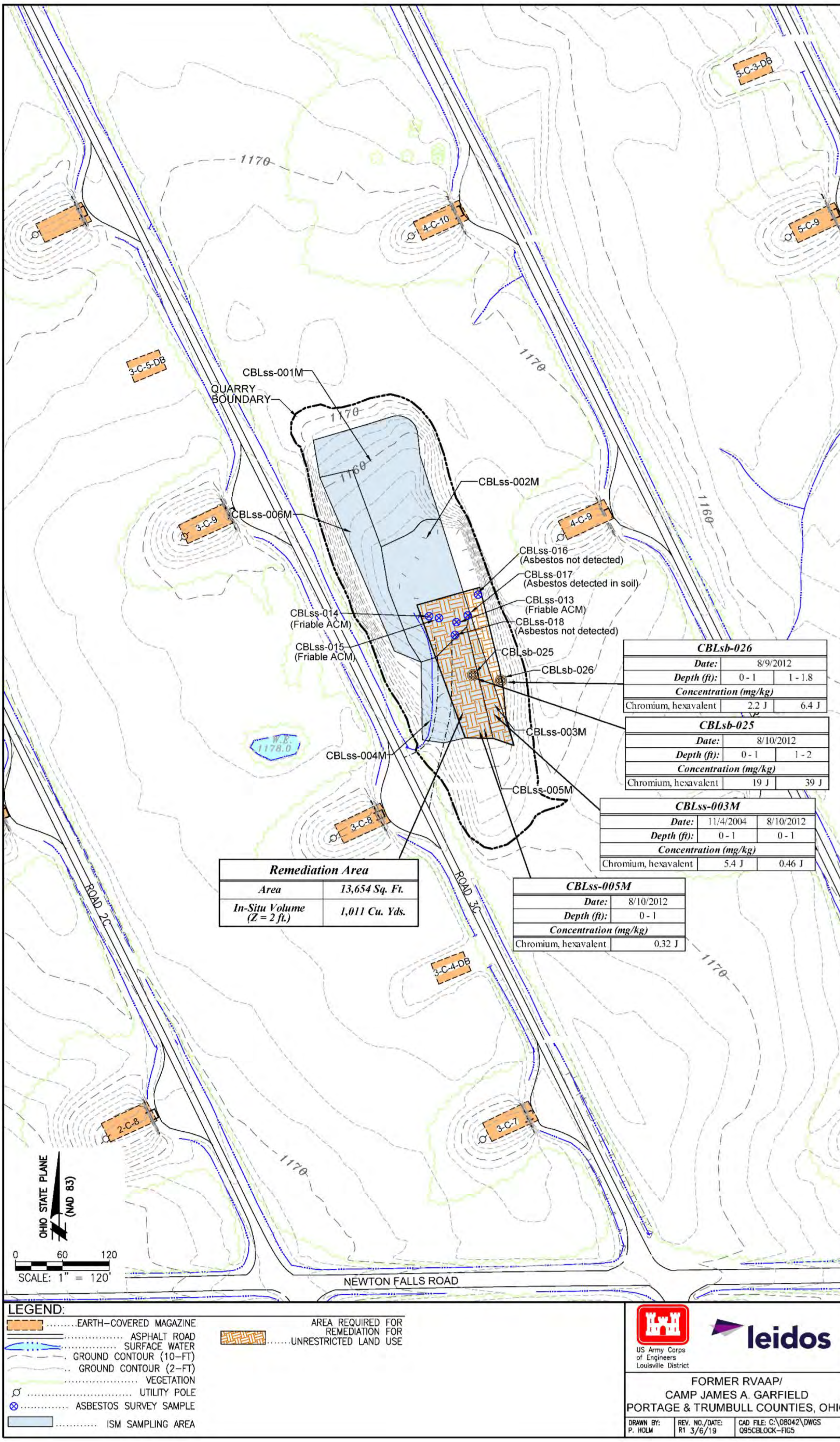

Figure 5. Estimated Extent of Soil Requiring Remediation

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APPENDIX A.

Applicable or Relevant and Appropriate Requirements (ARARs)

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Table A–1. Potential Action-Specific ARARs

Medium and Citation	Description of Requirement	Potential ARAR Status	Standard
Prohibition of air pollution nuisances (e.g., fugitive dust) OAC Section 3745-15-07	These rules prohibit a release of nuisance air pollution that endangers the health, safety, or welfare of the public or causes personal injury or property damage.	Applies to any activity that could result in the release of a nuisance air pollutant. This would include dust from excavation or soil management processes.	Any person undertaking an activity is prohibited from emitting nuisance air pollution.
Asbestos Emission Control OAC Section 3745-20-05	This rule establishes the standards for asbestos waste handling.	Applies to any activity that could result in discharge of visible emissions to the outside air during	Discharge of visible emissions to the outside air is prohibited during asbestos waste handling.
Asbestos Emission Control OAC Section 3745-20-07	This rule establishes the standards for inactive asbestos waste disposal sites.	Applies to inactive asbestos waste disposal sites that could result in discharge of visible emissions to the outside air. Although the site is not considered an inactive waste disposal site, standards and requirements may be relevant and appropriate.	Discharge of visible emissions to the outside air from an inactive asbestos waste disposal site is prohibited or controls are required to prevent exposure of ACM.
Storm water requirements at construction sites 40 CFR Part 450	These rules require that storm water controls be employed at construction sites that exceed 1 acre.	Applies to any construction activity that exceeds 1 acre.	Persons undertaking construction activities (including grubbing and land clearing) at an AOC where the construction footprint is more than 1 acre must design and implement erosion and runoff controls.
Generation of contaminated soil or debris OAC Section 3745-52-11	These rules require that a generator determine whether a material generated is a hazardous waste.	Applies to any material that is or contains a solid waste. Must be characterized to determine whether the material is or contains a hazardous waste.	Any person who generates a waste as defined must use prescribed methods to determine if the waste is considered characteristically hazardous using the prescribed methods.

Table A–2. Potential Action-Specific ARARs (continued)

Medium and Citation	Description of Requirement	Potential ARAR Status	Standard
Management of contaminated soil or debris that is or contains a hazardous waste OAC Sections 3745-52-30 through 3745-52-34	These rules require that hazardous waste be properly packaged, labeled, marked, and accumulated on site pending on- or off-site disposal.	Applies to any hazardous waste or medium containing a hazardous waste that is generated from on-site activities.	All hazardous waste must be accumulated in a compliant manner. This includes proper marking, labeling, and packaging such waste in accordance with the specified regulations. Containers or container areas will be inspected where hazardous waste is accumulated on site.
Soil contaminated with RCRA hazardous waste OAC Section 3745-270-49 OAC Section 3745-270-48 UTS	These rules prohibit land disposal of RCRA hazardous waste subject to them, unless the waste is treated to meet certain standards that are protective of human health and the environment. Standards for treating hazardous waste-contaminated soil prior to disposal are set forth in the two cited rules. Using the greater of either technology-based standards or UTS is prescribed.	LDRs apply only to RCRA hazardous waste. This rule is considered for ARAR status only upon generating a RCRA hazardous waste. If any soil is determined to be hazardous under RCRA and if it will be disposed of on site, this rule is potentially applicable to disposal of the soil.	All soil subject to treatment must be treated as follows: 1. For non-metals (except carbon disulfide, cyclohexanone, and methanol), treatment must achieve 90% reduction in total constituent concentration (primary constituent for which the waste is characteristically hazardous, as well as for any organic or inorganic UHC), subject to item 3 below. 2. For metals and carbon disulfide, cyclohexanone, and methanol, treatment must achieve 90% reduction in constituent concentrations as measured in leachate from the treated media (tested according to the TCLP) or 90% reduction in total constituent concentrations (when a metal removal treatment technology is used), subject to item 3 below. 3. When treating any constituent subject to achieve a 90% reduction standard would result in a concentration less than 10 times the UTS for that constituent, treatment to achieve constituent concentrations less than 10 times the UTS is not required. This is commonly referred to as “90% capped by 10xUTS.”

Appendix A. Potential Action-Specific ARARs (continued)

Medium and Citation	Description of Requirement	Potential ARAR Status	Standard
Soil/debris contaminated with RCRA hazardous waste – variance OAC Section 3745-270-44	The Ohio EPA Director will recognize a variance approved by USEPA from the alternative treatment standards for hazardous contaminated soil or for hazardous debris.	Potentially applicable to RCRA hazardous soil or debris that is generated and placed back into a unit and that will be disposed of on site.	A site-specific variance from the soil treatment standards that can be used when treating concentrations of hazardous constituents higher than those specified in the soil treatment standards, minimizing short- and long-term threats to human health and the environment. In this way, on a case-by-case basis, risk-based LDR treatment standards approved through a variance process could supersede the soil treatment standards.

ACM = Asbestos-containing material.
AOC = Area of concern.
ARAR = Applicable or relevant and appropriate requirement.
CFR = Code of Federal Regulations.
LDR = Land disposal restriction.
OAC = Ohio Administrative Code.
Ohio EPA = Ohio Environmental Protection Agency.
RCRA = Resource Conservation and Recovery Act.
TCLP = Toxicity Characteristic Leaching Procedure.
UHC = Underlying hazardous constituent.
USEPA = U.S. Environmental Protection Agency.
UTS = Universal Treatment Standard.

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