DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: **Former Lorton Correctional Complex**
Facility Address: **Lorton, Virginia 22079**
Facility EPA ID #: **VAD980830988**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

☒ If yes - check here and continue with #2 below.

☐ If no - re-evaluate existing data, or

☐ If data are not available, skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

The Former Lorton Correctional Complex site was located at 8515 Silverbrook Road in Lorton, Fairfax County, Virginia and consists of approximately 2,700 acres (note that this was the address of the facility when it was active; since the property has been divided for several uses, this address no longer applies). The DC Department of Corrections site was assembled from 11individual parcels of land with acquisitions taking place between 1910 and 1954. Prior to development as the Lorton Correctional Complex, the site was rural with farmland, woodland, and rural residential properties. The Lorton Correctional Complex was established circa 1911 and included dormitories, cell blocks, residences, maintenance facilities, a large oil and coal-fired boiler house (steam plants), industrial facilities such as furniture manufacturing and repair facilities, vehicle repair centers, a hog farm, a dairy farm, a water treatment plant, and wastewater treatment plants. In October 2008, the EPA and DEQ conducted a site visit and identified 26 solid waste management units (SWMUs). SWMUs include drum storage areas, satellite accumulation areas, underground storage tanks (USTs), aboveground storage tanks (ASTs), non-permitted landfill, laundry wastewater clarifier, tear gas and firing ranges, buried drum area, central facilities industries shops, vehicle maintenance facilities, agricultural areas, facilities management PCB storage shed, former NIKE missile complex, central facilities boiler house and Occoquan facilities boiler house and coal piles, wastewater and water treatment plants, former and current landfills, and dumping areas. These areas were cleaned up in accordance with the Virginia Hazardous Waste Management and Petroleum Underground Storage Tank (UST) Regulations.

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land

and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			
Air (indoors) [2]		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)		X		
Air (outdoors)		X		

☐ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

☒ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

☐ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale:

Soil:

There are no active SWMUs at the site. All permitted units were closed under the oversight of various VDEQ Programs. In addition, the Former Lorton Correctional Complex has been subject to corrective action during closure of the facility and transfer of the property in accordance with the Fairfax County re-use plan. Corrective actions have focused on leaking USTs, closure of the Laundry Wastewater Clarifier, Non-Permitted Landfill, and Firing Ranges. It should be noted that in excess of 215,000 tons of contaminated soil, solid waste, debris, and hazardous waste has been removed during implementation of closures and corrective action or remediation measures at the former Lorton site. This material was transported to off-site treatment and disposal facilities permitted to accept these wastes. Current operations at the site (i.e., mix of residences, recreational space, and open land) are anticipated to have a low release potential.

Groundwater:

The results from past characterization activities have only identified lead in the groundwater above applicable drinking water standards, except for trichloroethene detected on the Former NIKE Missile Complex. The former NIKE Missile Complex facility falls under the Formerly Used Defense Sites (FUDS) list and information and documentation pertaining to the nature and extent of decommissioning of this NIKE Missile Complex would have been completed by the Department of Defense under the FUDS program. Detections of lead in groundwater are limited to sporadic, discrete locations and are not indicative of a definable plume. Furthermore, the areas are served by public water source and the installation of potable drinking water wells is prohibited by local County ordinance and by Homeowner Association covenants.

Surface Water, Sediment, Air:

Surface water samples were collected from an unnamed tributary near the former unpermitted landfill during closure. Sample results indicated that VOCs, SVOCs, and PAHs were not detected above laboratory method detection limits. There is no evidence that indicates sediment and air have been impacted by VOCs, SVOCs, and PAHs.

Reference:

1. DEQ Tank Program Case Files
2. Hazardous Waste Management Plan, VDEQ, July 30, 1999
3. Phase I Environmental Site Assessment Report, AAS Environmental Inc., August 27, 1999
4. Phase II Environmental Site Assessment Report, AAS Environmental Inc., August 27, 1999
5. Hazardous Waste Determination Survey Report, AAS Environmental, Inc., October 12, 1999
6. Comprehensive Site Characterization and Remedial Action Plan for the Three Firing Ranges, AAS Environmental, Inc., February 25, 2000
7. Comprehensive Site Characterization and Remedial Action Plan for the Non-Permitted Landfill Areas, AAS Environmental, Inc., March 29, 2000
8. Disposal of the Lorton Correction Complex – Draft Environmental Assessment Report, Greenhorne and O'Mara Inc. and Heery International, September 2000
9. Survey Sheet for Inspection of Hazardous Waste Facilities, VDEQ, December 4, 2000
10. RCRA Inspection Report – DC Dept. of Corrections, VDEQ, January 16, 2001
11. Letter to VDEQ relating to the voluntary remediation of three firing ranges, the non-permitted landfill area, and the drum dumping area, AAS Environmental, Inc., March 21,2001
12. Firing Range Remediation Closeout Report, AAS Environmental, Inc., May 1, 2001
13. Non-Permitted Landfill Closure Report, AAS Environmental, Inc., September 15, 2001
14. Survey Sheet for Inspection of Hazardous Waste Facilities, VDEQ, October 22, 2001
15. Letter to the VDEQ indicating that the Central Facility Industries Metal Fabrication, Auto body and Paint Shops have been permanently closed, AAS Environmental, Inc., October 22, 2001
16. RCRA Inspection – DC Dept. of Corrections, VDEQ, November 9, 2001
17. Notification to the VDEQ that all requirements under the Consent Order had been satisfied, AAS Environmental, Inc., June 19, 2002
18. Submission of 2001 Hazardous Waste Report, AAS Environmental, Inc., May 13, 2002.
19. Notification to the VDEQ that all requirements under the VDEQ issued Consent Order had been satisfied, AAS Environmental, Inc., June 19, 2002
20. Quarterly Monitoring Report No. 4 – Final Monitoring Event – Closure of the Laundry Wastewater Clarifier (Ink Pit), AAS Environmental Inc., July 12, 2002
21. Letter of cancellation of Consent Order as the requirements had been met, VDEQ, July 26, 2002
22. Letter to VDEQ describing history of the area where buried drums were discovered in the Pulte Homes Area of the Lorton site, Consolidated Engineering Services, April 7,2003
23. Letter to GSA documenting the buried drum clean -up activities conducted in the Pulte Homes Area of the Lorton site, Consolidated Engineering Services, June 30, 2003

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	NO	NO	NO	YES	NO	NO	NO
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft)							
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

☐ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

☒ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

☐ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

Rationale:

All permitted units were closed under the oversight of various VDEQ Programs. In addition, the Former Lorton Correctional Complex has been subject to corrective action during closure of the facility and transfer of the property in accordance with the Fairfax County re-use plan. Corrective actions have focused on leaking USTs, closure of the Laundry Wastewater Clarifier, Non-Permitted Landfill, and Firing Ranges. It should be noted that in excess of 215,000 tons of contaminated soil, solid waste, debris, and hazardous waste has been removed during implementation of closures and corrective action or remediation measures at the former Lorton site. This material was transported to off-site treatment and disposal facilities permitted to accept these wastes.

Shallow groundwater assessments have been completed under the DEQ tank and the RCRA programs. The results from past characterization activities have only identified lead in the groundwater above applicable drinking water standards, except for trichloroethene detected on the Former NIKE Missile Complex. However, the former NIKE Missile Complex facility falls under the Formerly Used Defense Sites (FUDS) list and information and documentation pertaining to the nature and extent of decommissioning of this NIKE Missile Complex would have been completed by the Department of Defense under the FUDS program. The detections of lead in groundwater have been in isolated areas and have not been observed in a site wide plume.

Based on previous cleanup activities and site assessments, there are no complete exposure pathways for residents, worker, and potential trespassers. In addition, soil vapor abatement systems have been installed during the redevelopment of several areas as a conservative action in response to low levels of PAHs associated with former LUSTs. Furthermore, the areas are served by public water source and the installation of potable drinking water wells is prohibited by local County ordinance and by Homeowner Association covenants.

Reference:

1. DEQ Tank Program Case Files
2. Hazardous Waste Management Plan, VDEQ, July 30, 1999
3. Phase I Environmental Site Assessment Report, AAS Environmental Inc., August 27, 1999
4. Phase II Environmental Site Assessment Report, AAS Environmental Inc., August 27, 1999
5. Hazardous Waste Determination Survey Report, AAS Environmental, Inc., October 12, 1999
6. Comprehensive Site Characterization and Remedial Action Plan for the Three Firing Ranges, AAS Environmental, Inc., February 25, 2000
7. Comprehensive Site Characterization and Remedial Action Plan for the Non-Permitted Landfill Areas, AAS Environmental, Inc., March 29, 2000
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[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

☒ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☐ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

☐ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale:
Based on the information provided above in sections 2 and 3, the only potentially complete exposure pathway is limited to a construction worker to petroleum related contaminants in shallow groundwater within the former UST clean up areas and to a lesser extent lead within the observed discrete locations. Shallow groundwater is encountered approximately 11-15 feet below ground surface and is not used for any purpose. Subsurface construction activities have already been completed in the areas of concern. Furthermore, any identified contaminants in the residential areas of the central facilities and former firing ranges have been removed during redevelopment.

Reference:

1. DEQ Tank Program Case Files
2. Hazardous Waste Management Plan, VDEQ, July 30, 1999
3. Phase I Environmental Site Assessment Report, AAS Environmental Inc., August 27, 1999
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[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

☐ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

☐ If no - (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

☐ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code.

Rationale and Reference(s):

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI (event code CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

☒ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Former Lorton Correctional Facility, EPA ID #VAD980830988, located at 8515 Silverbrook Road, Lorton, Virginia 22079 under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

☐ NO - "Current Human Exposures" are NOT "Under Control."

☐ IN - More information is needed to make a determination.

Completed by (signature) _____ Date: 09-12-2017
(print) Kurt Kochan
(title) Project Manager

Supervisor (signature) _____ Date 09-12-2017
(print) Brett Fisher, P.G.
(title) Team Leader
(EPA Region or State) VA

Locations where References may be found:

US EPA Region III
Land and Chemicals Division
1650 Arch Street
Philadelphia, PA 19103

Virginia Department of Environmental Quality
Office of Remediation Programs
629 East Main Street
Richmond, VA 23219

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