Final

Record of Decision
for Soil and Dry Sediment at the
Open Demolition Area #2 (RVAAP-04)

Ravenna Army Ammunition Plant
Ravenna, Ohio

September 2007

GSA Contract No. GS-10F-0076J
Delivery Order No. W912QR-05-F-0033

Prepared for:

US Army Corps of Engineers®

United States Army Corps of Engineers
Louisville District

Prepared by:

SAIC
From Science to Solutions

Science Applications International Corporation
8866 Commons Boulevard, Suite 201
Twinsburg, Ohio 44087

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LIST OF ACRONYMS

AOC	Area of Concern
BGS	below ground surface
BRA	Baseline Risk Assessment
BRACD	Base Realignment and Closure Division
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
COC	constituent of concern
DoD	U. S. Department of Defense
EPC	exposure point concentration
IRP	Installation Restoration Program
MC	munitions constituents
MCL	Maximum contaminant level
MEC	munitions and explosives of concern
MMRP	Military Munitions Response Program
NCP	National Oil and Hazardous Pollution Contingency Plan
NGB	National Guard Bureau
ODA2	Open Demolition Area #2
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency
PCB	polychlorinated biphenyls
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RTLS	Ravenna Training and Logistics Site
RVAAP	Ravenna Army Ammunition Plant
SARA	Superfund Amendments and Reauthorization Act of 1986
SVOC	semivolatile organic compound
USACE	U. S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UXO	Unexploded Ordnance
VOC	volatile organic compound

PART I: THE DECLARATION

A. SITE NAME AND LOCATION

This Record of Decision (ROD) addresses soil and dry sediment contaminants at the Open Demolition Area #2 (ODA2), Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio (Figure 1). ODA2 is identified in the Army Environmental Database for Restoration as RVAAP-04. The RVAAP is located in east-central Portage County and southwestern Trumbull County, Ohio, approximately 4.8 km (3 miles) east-northeast of the city of Ravenna and approximately 1.6 km (1 mile) northwest of the city of Newton Falls. ODA2 is located in the central portion of the RVAAP. The U.S. Environmental Protection Agency (USEPA) Comprehensive Environmental Response, Compensation and Liability Information system (CERCLIS) Identifier for the RVAAP is OH5210020736.

B. STATEMENT OF BASIS AND PURPOSE

The US Army is the lead agency and presents the decision that No Further Action is required for soil and dry sediment at ODA2. The No Further Action decision is selected in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Oil and Hazardous Pollution Contingency Plan (NCP). This decision is based on information contained in the Administrative Record file for ODA2.

The Ohio Environmental Protection Agency (Ohio EPA), the lead regulatory agency, approved the *Addendum to the Phase II Remedial Investigation Report for Open Demolition Area #2 at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2006), which recommended No Further Action for soil and dry sediment at ODA2. The decision that No Further Action is required for soil and dry sediment at ODA2 will satisfy the requirements of the Ohio EPA Director's Final Findings and Orders (Ohio EPA 2004).

C. DESCRIPTION OF THE SELECTED REMEDY

No further action under CERCLA is necessary for soil and dry sediments at ODA2. Groundwater and surface water at ODA2 will be addressed under future CERCLA decisions. Land use controls will not be implemented as part of this decision because chemicals in soil and dry sediment do not exceed cleanup goals for the intended land use. Land use is currently restricted at ODA2 because of the documented presence of munitions and explosives of concern (MEC). ODA2 will be maintained as restricted access under intended future land use. The Army will address land use controls for ODA2 under the Military Munitions Response Program (MMRP), as part of future response actions for MEC. The Army will maintain current interim use restrictions at ODA2 until such time that final actions are completed under the MMRP.

D. STATUTORY DETERMINATION

No Further Action for soil and dry sediment is protective of human health under the intended future land use and is protective of the environment. No Further Action meets the statutory requirements for cleanup standards established in Section 121 of CERCLA. The Army will address requirements for periodic reviews under the MMRP, as part of future response actions for MEC.

E. AUTHORIZING SIGNATURES AND SUPPORT AGENCY ACCEPTANCE

Thomas E Lederle — 30 Oct 2007

Tom Lederle — Date

~~Division Chief~~ BRANCH Chief

Base Realignment and Closure Division (BRACD)

[signature] — 1/28/08

Christopher Korleski — Date

Director

Ohio Environmental Protection Agency

PART II: DECISION SUMMARY

A. SITE NAME, LOCATION, AND DESCRIPTION

ODA2 was identified as an Area of Concern (AOC) at the RVAAP in the Preliminary Assessment (USACE 1996). When the RVAAP Installation Restoration Program (IRP) began in 1989, the RVAAP (CERCLIS Identification Number OH5210020736) was identified as a 21,419-acre installation. The property boundary was resurveyed by the Ohio Army National Guard (OHARNG) over a 2-year period (2002 and 2003) and the actual total acreage of the property was found to be 21,683 acres. As of February 2006, a total of 20,403 acres of the former 21,683 acre RVAAP have been transferred to the National Guard Bureau (NGB) and subsequently licensed to OHARNG for use as a military training site. The current RVAAP consists of 1,280 acres scattered throughout the OHARNG Ravenna Training and Logistics Site (RTLS).

The RTLS is in northeastern Ohio within Portage and Trumbull counties, approximately 4.8 km (3 miles) east northeast of the city of Ravenna and approximately 1.6 km (1 mile) northwest of the city of Newton Falls. The RVAAP portions of the property are solely located within Portage County. The RTLS/RVAAP is a parcel of property approximately 17.7 km (11 miles) long and 5.6 km (3.5 miles) wide bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garret, McCormick, and Berry roads on the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (see Figures 1 and 2). The RTLS is surrounded by several communities: Windham on the north; Garrettsville 9.6 km (6 miles) to the northwest; Newton Falls 1.6 km (1 mile) to the southeast; Charlestown to the southwest; and Wayland 4.8 km (3 miles) to the south.

When the RVAAP was operational the RTLS did not exist and the entire 21,683-acre parcel was a government-owned, contractor-operated industrial facility. The RVAAP IRP encompasses investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP and therefore references to the RVAAP in this document include the historical extent of the RVAAP, consisting of the combined acreages of the current RTLS and RVAAP, unless otherwise specifically stated.

The only activities still being carried out at the RVAAP are environmental restoration, ordnance clearance and infrequent demolition of any unexploded ordnance (UXO) discovered during investigation and remediation activities, and building decontamination and demolition.

ODA2, designated as RVAAP-04, is situated in the central portion of the facility and is 25 acres (Figures 2 and 3). Known historical areas of operation within ODA2 include:

- Open Detonation Areas [including the Resource Conservation and Recovery Act (RCRA)-permitted unit]: Following detonation and the removal of metal pieces, the pits were backfilled, mulched, and seeded.

- Open Burning Area: From 1981 to 1986, the US Army used this area within the RCRA unit to thermally destroy explosives-contaminated sludges and residues from other RVAAP production areas.

- 40-mm Projectile Prototype Testing Range: The US Army fired projectiles into targets in this area.

- Three explosive storage bunkers: Buildings 1501, 1502, and 1503.

- Burial Sites 1 and 2: Burial Site 1 is located approximately 200 ft northeast of Building 1501 and is approximately 2 acres in size. Burial Site 2 is located approximately 100 ft north of Building 1503 and is approximately 1 acre in size. MEC was likely buried at both areas.

- A MEC disposal area located along a 70-ft embankment northeast of Building 1503 overlooking Sand Creek. MEC exists at the ground surface in this part of the AOC.

The US Army is the lead agency for any remediation, decisions, and any applicable cleanup at ODA2. These activities are being conducted under the IRP. The Ohio EPA is the lead regulatory agency.

B. SITE HISTORY AND ENFORCEMENT ACTIVITIES

The RVAAP was constructed in 1940 and 1941 for depot storage and ammunition assembly/loading and placed on standby status in 1950. Production activities resumed from 1954 to 1957 and 1968 to 1972. Demilitarization activities, including disassembly of munitions and explosives melt-out and recovery, continued until 1992.

Starting in 1948, the US Army used ODA2 as a location to detonate bombs, various caliber munitions, and off-specification bulk explosives that could not be destroyed through any other means due to their condition at the RVAAP. Materials to be destroyed by open detonation were typically placed in pits excavated to depths of at least 4 ft, then covered with 2 ft of soil, and detonated. Following detonation, the AOC was searched for scrap metal, shrapnel, or MEC. MEC has been found several thousand feet from the detonation site and throughout ODA2. Other operations at this AOC included the burial of MEC and a munitions firing area.

The US Army completed a Phase I Remedial Investigation (RI) in 1998 (USACE 1998) and a Phase II RI in 2005 (USACE 2005). The US Army completed an Addendum to the Phase II RI in 2006 (USACE 2006).

C. COMMUNITY PARTICIPATION

Using the RVAAP community relations program, the US Army and Ohio EPA have interacted with the public through news releases, public meetings, reading materials, direct mailings, an internet website, and receiving and responding to public comments. Specific items of the community relations program include the following:

Restoration Advisory Board (RAB): The US Army established a Restoration Advisory Board (RAB) in 1996 to promote community involvement in the U.S. Department of Defense (DoD) environmental clean-up activities and allow the public to review and discuss the progress with decision makers. RAB meetings are held every two months and are open to the public.

The RVAAP Community Relations Plan: The RVAAP Community Relations Plan (USACE 2003) was prepared to establish processes to keep the public informed of activities at the RVAAP. The plan is available in the Administrative Record at the RVAAP.

The RVAAP Internet Website: The US Army established an internet website in 2004 for the RVAAP. This internet website is accessible to the public at www.rvaap.org.

In accordance with Section 117(a) of CERCLA and Section 300.430 (f)(2) of the NCP, the US Army released the *Proposed Plan for Soil and Dry Sediment at ODA2* (USACE 2007) to the public on March 7, 2007. The Proposed Plan and other project-related documents were made available to the public in the Administrative Record maintained at the RVAAP and in the Information Repositories at Reed Memorial Library in Ravenna, Ohio and Newton Falls Public Library in Newton Falls, Ohio. A notice of availability for the Proposed Plan was sent to the media outlets; radio stations, television stations, and newspapers (*Newton Falls Press, Youngstown Vindicator, Warren Tribune Chronicle, Akron Beacon Journal, and Ravenna Record Courier)*, as specified in the RVAAP Community Relations Plan (USACE 2003). The notice of availability initiated the 30-day public comment period beginning March 7, 2007 and ending April 5, 2007.

The US Army held a public meeting on March 13, 2007, at the Newton Falls Community Center to present the Proposed Plan to the public. At this meeting, representatives of the US Army provided information and answered questions about soil and dry sediment contamination at ODA2. A transcript of the public meeting is available to the public and has been included in the Administrative Record. Responses to the verbal comments received at this meeting are included in the Responsiveness Summary, which is Part III of this ROD. No additional written comments were received during the public comment period.

The US Army considered public input on the Proposed Plan prior to selecting the No Further Action decision for soil and dry sediments at ODA2.

D. SCOPE AND ROLE OF RESPONSE ACTION

The overall program goal of the IRP at the RVAAP is to clean up previously contaminated lands to reduce contamination to concentrations that are not anticipated to cause risks at the RVAAP, with primary emphasis on those areas that may impact human health and environment. ODA2 is one of 51 AOCs at the RVAAP. This ROD addresses soil and dry sediment and does not address other potentially contaminated media in ODA2. The selected remedy described in this ROD is consistent with the stated future action(s) to be performed at the RVAAP. Other contaminated media at ODA2

and other AOCs at the RVAAP will be managed by separate actions or decision by the US Army and will be considered under separate RODs.

The contamination present in soil and dry sediment at ODA2 does not pose a potential risk to human health or the environment. Therefore these media are already within the acceptable level of risk, and the program goal of the IRP at the RVAAP has been met for ODA2.

E. SITE CHARACTERISTICS

The AOC characteristics, nature and extent of contamination, and conceptual site model are based on the RIs conducted at ODA2 (USACE 1998, 2005, 2006).

E.1 Topography/Physiology

Elevations across ODA2 range from approximately 1,017 to 1,071 ft above mean sea level. ODA2 is characterized by gently to steeply sloping topography. As shown in Figure 3, the AOC is bisected by Sand Creek. Structures at ODA2 include three above-ground explosive storage bunkers and gravel access and paved roads. Access to ODA2 is restricted by a locked gate on the main access road that enters the AOC from the south.

E.2 Geology

The regional geology at the RVAAP consists of horizontal to gently dipping bedrock strata of Mississippian and Pennsylvanian age overlain by varying thickness of unconsolidated glacial deposits. Soils in the area of ODA2 are generally comprised of fine- to medium-grained sand layers containing some gravel interspersed within silty clay or clay layers. Surface soils are highly disturbed across much of ODA2 down to a depth of 4 ft or more due to the detonation, disposal, and MEC clearance activities at the AOC.

E.3 Hydrogeology

The water table at ODA2 is shallow, typically less than 20 ft, and groundwater flow is generally towards Sand Creek consistent with surface drainage patterns. Results of slug test performed during the Phase II RI reveal low to moderate hydraulic conductivities in the unconsolidated sediments. The wells at ODA2 generally show conductivities ranging from 3.79×10^{-7} to 6.53×10^{-4} cm/sec.

E.4 Ecology

The dominant cover types at the RVAAP are forests and old fields of various ages. Much of the land at the RVAAP was cleared for agriculture before government acquisition of the property in the 1940s. Now, over 80 percent of the RVAAP is forested.

ODA2 consists of the following vegetative habitats: old field, woodlot, and grassy areas. Sand Creek, an aquatic resource, runs through the central portion of the site. These habitats support a variety of wildlife including vegetation, small and large mammals, birds, insects, and fish. There are currently no federally-listed species or critical habitat on the RVAAP property. State-endangered, State-threatened, State species of concern, and State special interest species have been identified at the RVAAP, but none have been documented at ODA2.

E.5 Nature and Extent of Contamination

The nature and extent of contaminated surface and subsurface soil and dry sediment was determined based on the evaluation of the Phase I and Phase II RIs for ODA2 (USACE 1998, 2005c, 2006). Contamination of other media and other AOCs are known to be present at the RVAAP; however, those media and AOCs are being addressed separately from this ROD.

Evaluation of data collected for surface and subsurface soil and dry sediment at ODA2 during the RI phase identified explosives, propellants, and metals. Semivolatile organic compounds (SVOCs) and volatile organic compounds (VOCs) were either not detected or were present at low concentrations in surface soil [(0 to 1 ft below ground surface (BGS)]; however, some were detected in subsurface soil (1 to 3 ft BGS). Pesticides and polychlorinated biphenyls (PCBs) were either not detected in soil or were limited to low concentrations.

E.6 Contaminant Fate and Transport

The fate and transport analysis concluded that one chemical, hexavalent chromium, in soil at ODA2 north and south of Sand creek may leach to groundwater at concentrations exceeding the maximum contaminant level (MCL). Hexavalent chromium was not predicted to migrate to Sand Creek or beyond the AOC boundary at concentrations above risk-based criteria. Therefore, soil remediation for protection of groundwater is not required at ODA2.

F. CURRENT AND POTENTIAL FUTURE LAND USES

ODA2 is managed as “Restricted Access” due to the presence of MEC. The area is closed to all normal training and administrative activities. Certain activities, such as security patrols, surveying, and sampling, may be conducted at ODA2 only after authorized personnel have been properly briefed on potential hazards. Individuals unfamiliar with the hazards are escorted by authorized personnel at all times while in the restricted area (USACE 2005).

ODA2 is suspected to contain MEC throughout most of the AOC based on operational history and field observations. Because of the unique hazards associated with MEC, response actions are regulated separately from environmental hazards at the federal level. The USEPA Military Munitions Rule (40 CFR Part 266) addresses the management and response for MEC. The Department of Defense implements the regulations through the MMRP, which addresses MEC at ODA2. This investigation and response is separate from the IRP. Additionally a RCRA-permitted open

detonation/open burn unit located within ODA2 will be addressed separately in accordance with RCRA closure requirements or other program documentation.

G. SUMMARY OF SITE RISKS

The Baseline Risk Assessment (BRA) estimates risks ODA2 potentially poses to both human and ecological receptors under current conditions. The BRA identifies exposure pathways, constituent of concern (COCs), if any, and provides a basis for the remedial decisions. This section of the ROD summarizes the results of the baseline risk assessment for ODA2, specifically for soil and dry sediment. The results are presented in detail in the following documents.

- *Phase II RI Report for the Open Demolition Area #2 (AOC-4) at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2005).

- *Phase II RI Addendum for the Open Demolition Area #2 (RVAAP-04) at the Ravenna Army Ammunition Plant, Ravenna, Ohio* (USACE 2006).

G.1 Human Health Risk Assessment

The human health risk assessment at ODA2 evaluated risks and hazards for one potential human receptor (Security Guard/Maintenance Worker) exposed to shallow surface soil (0 to 1 ft deep). The extensive presence of MEC prevents most activities at ODA2, including OHARNG training activities, and precludes unrestricted (residential) land use. Consequently, the risk assessment did not evaluate OHARNG training and residential land use receptors.

Total carcinogenic risk to a Security Guard/Maintenance Worker from all contaminants was calculated as 5.3E-06. This estimated risk is below the Ohio EPA target risk level of 1E-05 and at the lower end of the USEPA target risk range of 1E-06 to 1E-04. The chemical hazard index was 0.051, indicating no unacceptable hazard.

One metal (arsenic) was identified as a COC in surface soil for the Security Guard/Maintenance Worker at ODA2. This COC does not require remediation because the estimated exposure point concentration (EPC) for arsenic in soil at ODA2 (14 mg/kg) is less than the Security Guard/Maintenance Worker cleanup goal (26 mg/kg) and the RVAAP background value (15 mg/kg).

G.2 Ecological Risk Assessment Summary

The ecological risk assessment for ODA2 evaluated risk to plants and animals from contaminants in soil, surface water, and sediment. Chemicals of potential ecological concern identified for these media include metals, one explosive chemical, one pesticide chemical, SVOCs, and one VOC. The RI Addendum (USACE 2006) presents a weight-of-evidence evaluation that no quantitative ecological cleanup goals are required at ODA2. This weight-of-evidence includes field survey results showing the existing ecosystem is

healthy and reductions of ecological chemical risk by extensive soil and dry sediment excavation could result in destruction of high-quality ecological habitat, especially along Sand Creek.

H. DOCUMENTATION OF NO SIGNIFICANT CHANGE

The *Proposed Plan for Soil and Dry Sediments at ODA2* (USACE 2007) was released for public comment in March 2007. The Proposed Plan recommends No Further Action for soil and dry sediment at ODA2. No significant changes, as originally identified in the Proposed Plan, were necessary or appropriate following the conclusion of the public comment period.

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PART III: RESPONSIVENESS SUMMARY FOR PUBLIC COMMENTS ON THE US ARMY PROPOSED PLAN FOR THE ODA2 AT RAVENNA ARMY AMMUNITION PLANT, RAVENNA, OH

A. OVERVIEW

On March 7, 2007, the US Army released the *Proposed Plan for Soil and Dry Sediment at Open Demolition Area #2 (RVAAP-04) at the Ravenna Army Ammunition Plant* (USACE 2007) for public comment. A 30-day public comment period was held from March 7, 2007 to April 5, 2007. The US Army hosted a public meeting on March 13, 2007, to present the Proposed Plan and take questions and comments from the public for the record. The US Army recommended No Further Action for soil and dry sediment at ODA2. During the public meeting, Ohio EPA concurred with the recommendation of No Further Action. Several oral comments were received at the public meeting and are addressed under Section B.

Based on comments received, the community voiced few objections to the No Further Action recommendation. All public input was considered during the selection of the final decision.

B. SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSES

Comments were received verbally during the public meeting. No written comments were received during the 30-day public comment period.

B.1 Oral Comments from Public Meeting

Oral comments received during the public meeting are grouped together in the following general topic categories: document availability, contaminant fate and transport, MEC, land use, contaminants, cleanup levels, sampling intervals, groundwater modeling, and groundwater monitoring. The transcript from the meeting was incorporated into the Administrative Record. Oral comments and responses are paraphrased, as required for brevity and presentation in this section.

1. Document Availability:
   Comment: One commenter indicated they could not access the ODA2 Proposed Plan at the Newton Falls Library as stated in the Notice of Document Availability published in *The Villager*. The commenter also said the documents were not available online.

   Response: Following the public meeting, availability of the documents in the Administrative Record, Information Repositories, and on the website was verified.

2. Contaminant Fate and Transport
   Comment: One commenter asked for further clarification of the phrase "contaminant fate and transport" and if it identified where contaminants were going and how they will get there.

Response: Contaminant fate and transport assesses the stability of chemicals in soils, (i.e., would the chemicals move or bind in soils). The assessment takes into account the chemical and physical aspects of the soil, and the chemistry of the compounds. An evaluation is performed by computer models to assess the movement and final destination (fate and transport) of these contaminants.

3. MEC

Comment: One commenter asked if the magnetometers that are to be used for testing (under future MMRP activities) will be able to detect ferrous and nonferrous munitions constituents (MC) and MEC, since 40 millimeter grenade rounds are primarily nonferrous material.

Response: Different types of magnetometers would be used. These types include those that detect ferrous munitions and ones that detect nonferrous munitions.

4. Land Use

Comment: One commenter asked whether a mechanism is in place to ensure ODA2 will remain under restricted use unless the areas are cleaned up to a higher level for another use. The commenter asked if there are safeguards against it being forgotten or the documentation being lost that the site is only acceptable for restricted use.

Response: This is a government to government transfer. The federal government will maintain a property management plan, wherein these restrictions and so forth will be documented, and, will include provisions to go along with the property. If, in the future, the property is sold to private ownership, land use controls would be institutionalized legally so that necessary restrictions would be maintained.

5. Contaminants

Comment: One commenter asked why arsenic is not a concern at ODA2 even though it is identified at elevated levels.

Response: The risk-based cleanup goals developed in the risk assessment are conservative and applicable to the intended future land use. At ODA2, the detected chemicals (including arsenic) were less than the human health risk based cleanup goals for the Security Guard/Maintenance Worker. Therefore, No Further Action was recommended for soil and dry sediment.

6. Cleanup Levels

Comment: One commenter wanted to confirm that cleanup levels were based on expected use—that higher levels of contaminants are acceptable under a restricted use scenario than a residential land use scenario.

Response: The cleanup goals were based on the land use scenario. Generally, higher levels of contaminants are acceptable under a restricted land use scenario than a residential land use scenario.

7. Sampling Intervals

Comment: One commenter asked why sampling was only completed to 1 ft below ground surface when munitions were known to be buried at 4 ft depths at ODA 2.

Response: Soil samples were collected to a depth of 3 ft BGS to investigate chemical contamination. The scope of the RI did not include characterizing the extent of MEC. MEC characterization will be addressed as part of future activities under the MMRP

8. Groundwater Modeling

Comment: One commenter asked how the issue of contaminants leaching from soil to groundwater at concentrations above Ohio drinking water maximum contaminant levels is being addressed under the no action plan.

Response: The models employed in the RI evaluated two scenarios. One scenario is where the chemical may leach from the soil and move vertically down and intercept the water table directly beneath the AOC. The second scenario is to evaluate if a chemical would then be likely to move from that point to the edge of the area of concern. That is called lateral movement or lateral transport. The model evaluated both factors, vertical and then the lateral to the AOC boundary. The models employed are very conservative, i.e., they make assumptions that the chemicals won't disperse or degrade. Even under those very conservative assumptions, the models predicted that concentrations of the chemical would be less than risk-based criteria at the edge of the AOC or at Sand Creek. In the interim, a groundwater monitoring is going on at the ODA2 as part of the facility-wide groundwater program at Ravenna. In addition, future decisions for groundwater for ODA2 would more fully evaluate groundwater paths at least in that particular area of concern.

9. Groundwater Modeling

Comment: One commenter asked for the rationale for stating that migration of contaminants in the groundwater is not expected to leave the boundary of the area of concern from the modeling that was done at ODA2.

Response: In terms of the modeling components, the models begin with the concentration of a contaminant at a point beneath the AOC, and it is modeled in terms of lateral transport to an end point, called a receptor. The model factors in how fast groundwater moves. The model factors in the characteristics of the chemical including how likely it is to be bound up in the soil matrix and its propensity to degrade over time. Those factors are inputs into the models. Using those inputs, the models showed that the contaminants are not expected to reach the AOC boundary at a concentration that would be in excess of a risk base standard. The particular models employed are conservative. Further evaluation of the groundwater media will be addressed under future activities related to groundwater.

10. Groundwater Monitoring

Comment: The same commenter as above asked if there were off-site monitors in the event that the groundwater contamination did not behave as predicted by the models.

Response: There is currently groundwater monitoring being done at Open Demolition Area 2.

B.2 Written Comments

No written comments were received for ODA2 during the public comment period.

C. TECHNICAL AND LEGAL ISSUES

There were no technical or legal issues raised during the public comment period.

REFERENCES

Ohio Environmental Protection Agency (Ohio EPA) 2004. Director's Final Findings and Orders in the matter of U. S. Department of the Army, Ravenna Army Ammunitions Plant. June 2004.

U. S. Army Corp of Engineers (USACE) 1996. *Preliminary Assessment for the Ravenna Army Ammunition Plant, Ravenna, Ohio*. February 2006.

USACE 1998. *Phase I Remedial Investigation Report for the Phase I Remedial Investigation of High-Priority Areas of Concern at the Ravenna Army Ammunition Plant, Ravenna Ohio,* DACA62-94-D-0029, D.Os. 0010 and 0029, Final, February 1998.

USACE 2003. *Ravenna Army Ammunition Plant, Ravenna, Ohio, Community Relations Plan*. September 2003.

USACE 2005. *Phase II Remedial Investigation Report for Open Demolition Area #2 (RVAAP-04) at the Ravenna Army Ammunition Plant, Ravenna, Ohio*. September 2005.

USACE 2006. *Addendum to the Phase II Remedial Investigation Report for Open Demolition Area #2 at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* September 2006.

USACE 2007. *Proposed Plan for Soil and Dry Sediment at Open Demolition Area #2 at the Ravenna Army Ammunition Plant, Ravenna, Ohio.* February 2007.

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FIGURES

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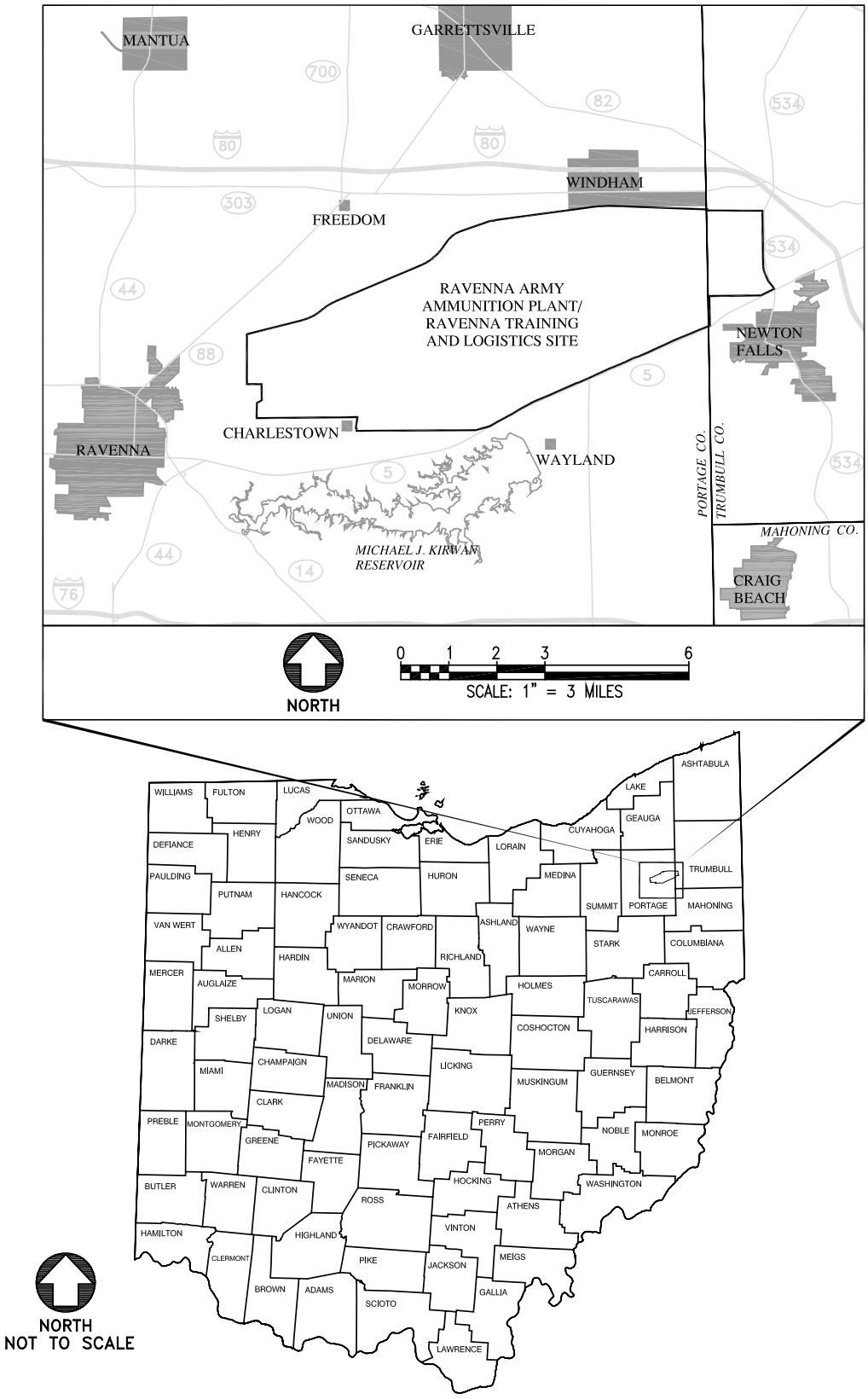

Figure 1. General Location and Orientation of the RVAAP/RTLS

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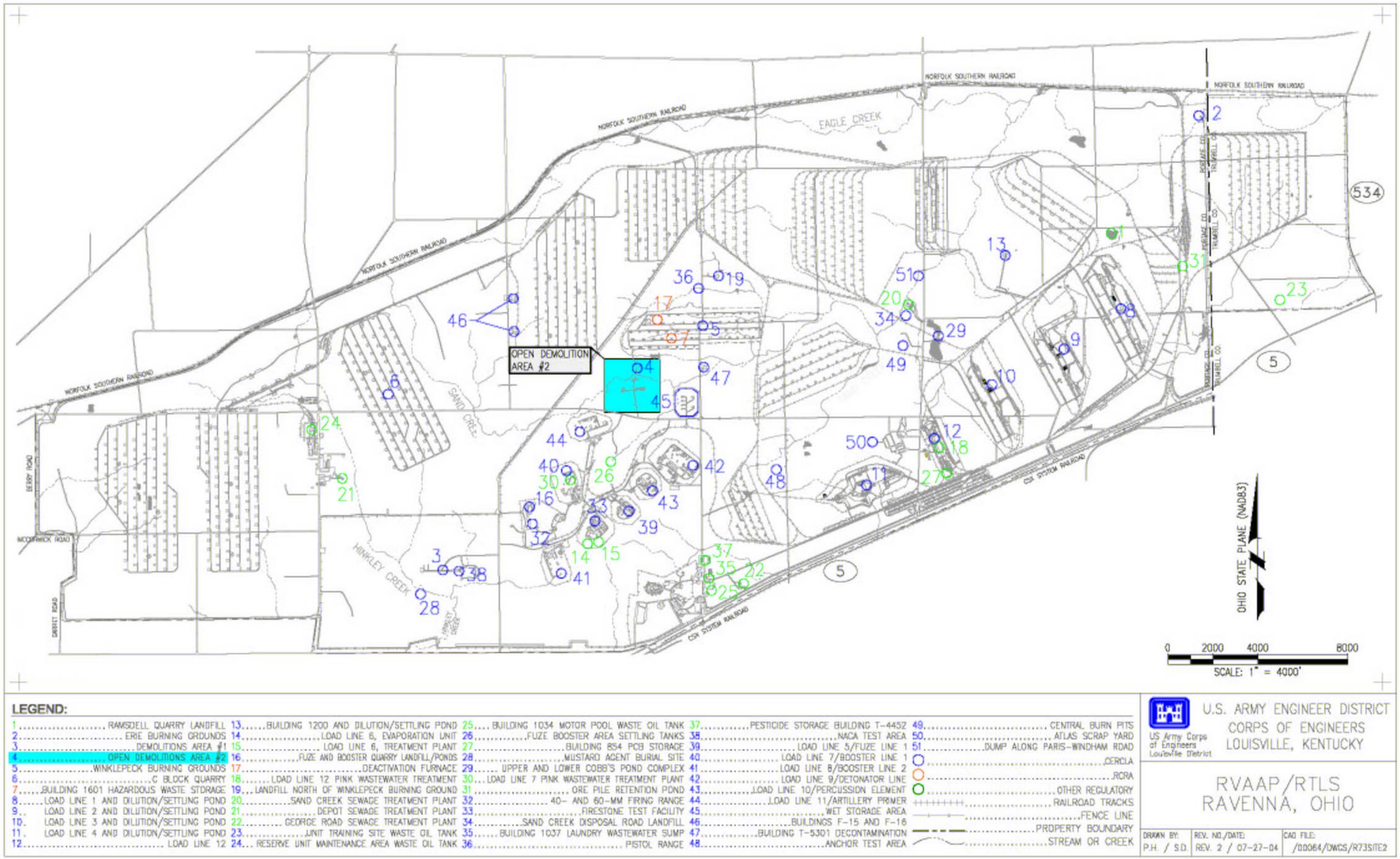

Figure 2. RVAAP/RTLS Installation Map

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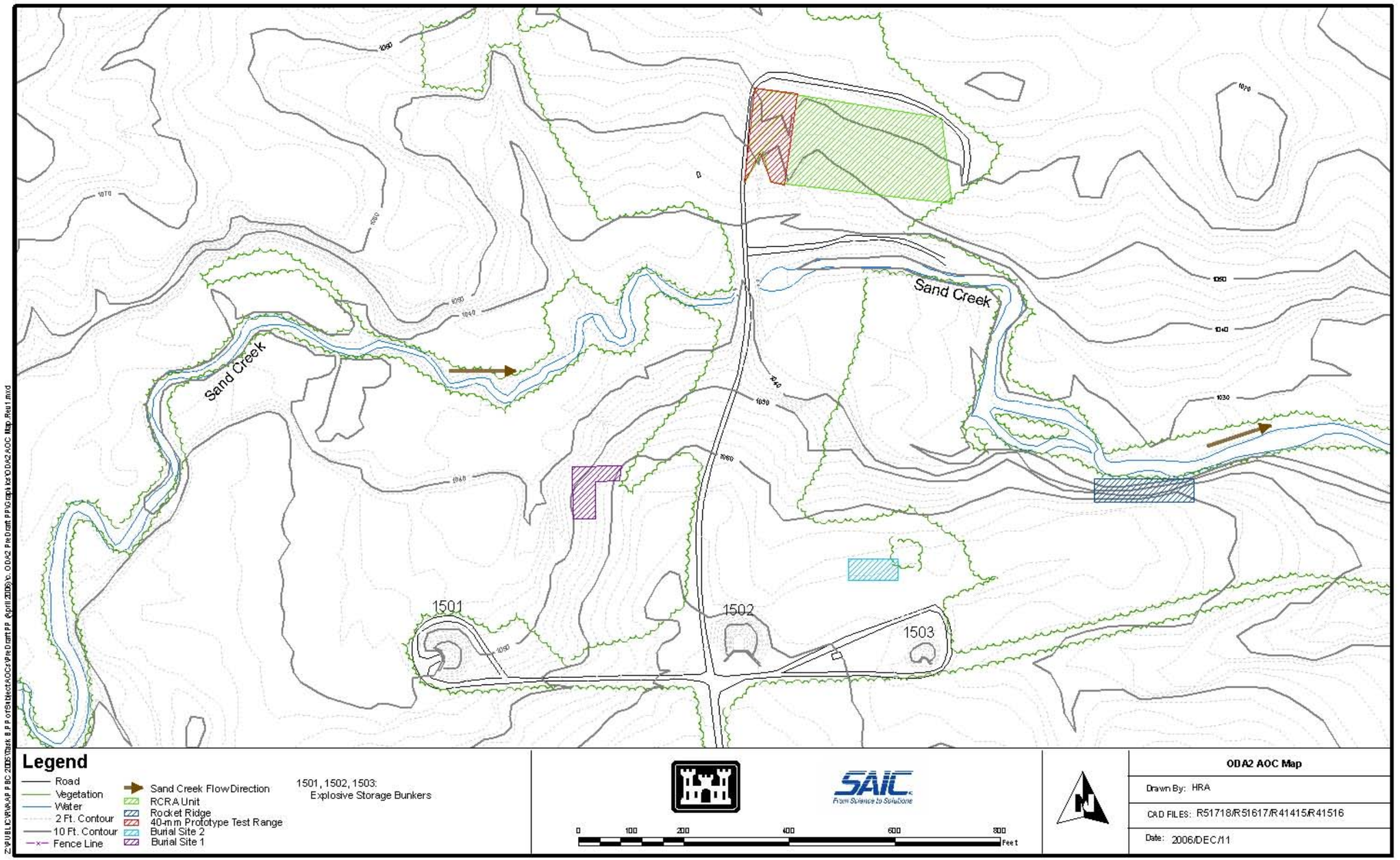

Figure 3. Open Demolition Area #2 Area of Concern Map

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