U.S. Army Environmental Center

FINAL

Community Environmental Response Facilitation Act (CERFA) Report

Army Materials Technology Laboratory Watertown, MA

Prepared for

U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND 21010

Prepared by

ENVIRONMENTAL RESOURCES MANAGEMENT, INC.
855 Springdale Drive
Exton, PA 19341

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ST #A, AUTH: USAEC/SFIM-AEC-RMI
(MS. BARRY -DSN 584-1659)
PER TELECON 14 JULY 94 CB

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MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
COMMENT RESPONSE PACKAGE

Page 4-4 para. 9 Please note that a closeout report will be required documenting the soil condition at the east side of building 39. This is the location where the 500 gallon underground storage tank was removed.

Concur w/out incorporation: A letter report concerning USTs is being prepared by the installation. However, since the status of the closure is a future action, it will not impact the CERFA classification of this parcel and will therefore not be incorporated into the CERFA report.

Page 4-6 para. 1 Please include this section in the tank closeout report.

Concur w/out incorporation: This type of information will be incorporated into a letter report being prepared by the installation. However, since the status of the closure is a future action, it will not impact the CERFA classification of this parcel and will therefore not be incorporated into the CERFA report.

Page 4-6 para. 9 Please clarify whether the line between the aboveground storage tank in Structure 295 is indeed leaking or has leaked. According to 310 CMR 40.0300, if a release has occurred or if there is a threat of release, reporting is required and action should be taken to eliminate the release.

Concur and with additional information: The release discussed is not a release from a pipe, it was a spill that took place during filling. The cap was removed from the tank and the internal pressure of the tank caused some of the product to spill out before filling could even begin. Clean up of the spill took place immediately, aided by the very low temperatures. Additional information regarding this release should be obtained from the installation. The discussion in the CERFA report is only as detailed as needed to classify the parcel.

Page 4-8, para. 5 The closeout report should include the tank removal near building 117.

Concur w/out incorporation: The information regarding the tank in Building 117 should be included in the letter report being prepared by the installation. However, since the status of the closure is a future action, it will not impact the CERFA classification of this parcel and will therefore not

be incorporated into the CERFA report.

Page 4-10, para. 2 The statement indicating that the State of Massachusetts is planning to perform the investigation in the parking lot of building 37 and 131 should be clarified to reflect that the Army contractors' will be performing the actual investigation and the State of Massachusetts will review
and advise on the remediation.

Concur and incorporate: The work described in the text is to be accomplished by the Corps of Engineers in accordance with the appropriate state regulations and will include the appropriate oversight during the field work. The text will be changed.

Page 4-10 para. 3 The status of the confirmatory sampling should be clarified in this section. The report should denote that the Department will require a closeout report to assure that contamination was not present.

Concur w/out incorporation: The information regarding the removal of these tanks will be included in the letter report being prepared by the installation. Since this report is pending and no sampling results are available the text of the CERFA report will not be changed. The information required to classify this parcel is complete.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 1
COMMENT RESPONSE PACKAGE

1. The draft CERFA report does not include an Executive Summary. A generic Executive Summary was forwarded to this office as a supplement to the CERFA report. This generic Executive Summary should be tailored to AMTL and inserted in the final CERFA report.

Concur and incorporate: The Executive summary provided to your office will be updated and incorporated into the CERFA report to adequately reflect the MTL site specific conditions.

2. Page 2-1, Section 2.0: A title search is not listed as a component of the CERFA investigation. Was a title search performed? If so, it should be included here. If no title search was completed, one should be completed prior to finalization of the CERFA report.

Concur and partially incorporated: More information will be included in the final CERFA report which clarifies how the Army satisfied this requirement. This requirement was satisfied based on a legal interpretation of the CERFA legislation to define the title search requirements. This interpretation concluded that a comprehensive, document-by-document, conveyance-by conveyance title search is not required by the CERFA statute. This conclusion was reached because of the following:

(1) The plain language of CERFA is Clear, Congress intended that the federal agency conducting the investigation rely on existing studies to the extent practicable, and to supplement these studies as necessary in order to expeditiously assess and identify those parcels most readily suitable for re-use. Based on these factors, the Army believes that in most cases a legally sufficient CERFA title search can be accomplished by:

(a) Comparing tentatively identified CERFA Parcels with a USAEC installation Real Estate Map or some equivalent document: and,

(b) Examining the list of historic owners who originally transferred each tentatively identified CERFA Parcel to the federal government.

(2) Unless this examination reveals owners who are reasonably suspected of having the property for industrial purposes, wastes disposal, or other activities which would suggest potential contamination, or identifies an environmentally based land use restriction, pursuing the record search backwards through time to other previous owners will not be necessary.

As a result of these observations, this Center concludes that the requirements for CERFA "chain of title" examination is satisfied by examining the list of historic owners who originally transferred the current BRAC property to the Federal Government. This information was obtained from transfer documents acquired from the applicable USACE Real Estate office. It is believed that this approach is consistent with the Congressional intent that the CERFA investigations build on existing studies, and supplement them as necessary in order to expeditiously assess and identify potential parcels most readily suitable for re-use.

3. Page 2-1, Section 2.0: The text should indicate the source and location of the aerial photographs.

Concur and incorporate: The preparations of aerial photographic report was part of the original installation assessment. Environmental Monitoring Systems Laboratory produced the report titled "Installation Assessment of the Army Materials Technology Laboratory" in March 1988. This information will be incorporated into the CERFA report.

4. Section 3.1: This section should include a description of pesticide handling practices (i.e., storage/mixing areas, application) at AMTL in the past.

Concur and incorporate: There is no historical record of pesticide mixing or storage at the installation. Historically the installation has found it more cost effective to hired a pest management contractor to apply pesticides as needed. This information will be reflected in the CERFA report.

5. Page 3-1, Section 3.1, 1: The last sentence of this paragraph indicates that an 11 acre plot between North Beacon Street and the Charles River has been out-granted to the Commonwealth of Massachusetts. The text should explain what this term means and how it relates to the conveyance of property under BRAC.

Concur and incorporate: The status of the ownership of the land and its impact on the BRAC law are currently being defined. However to clarify the text of the CERFA report the following text will be added. "An eleven acre plot between North Beacon Street and the Charles River has been conveyed to

the Commonwealth of Massachusetts for road and park purposes and presently consists of a park and marina. The Army in its deed has reserved the right to make such use of the river front and lands comprised of the right of way as the Secretary of War may deem necessary for the uses of the Arsenal."

6. Page 3-2, last paragraph: It is EPA's understanding that the radiological cleanup of AMTL is complete. However, this paragraph implies that radiological wastes are still being produced. Please clarify whether this is the case. If radiological waste is still being produced, when will this practice cease and what further cleanup will be necessary?

Concur and incorporate: At the time this report was originally written LLRW was present on site. Currently, only mixed wastes are located at the installation. It is uncertain when the mixed waste will be removed. The report will be rewritten to reflect that the mixed waste treatment is ongoing.

7. Page 4-1, Section 4.0: The terms "background", "background tolerance limits" and "calculated guidelines" are used throughout this section when assessing chemical concentrations. These terms need to be defined in the text.

Concur and incorporate: For groundwater the classification will be made by comparison to the Maximum Contaminant Levels (MCL), comparisons to background will be removed. For soils the comparison to background will continue to be made. In this case background will be the levels determined in the risk assessment, Chapter 6 of the RI.

8. Page 4-2, Upgradient Wells: According to the text monitoring well MW-23 is adjacent to a service station. Clarify whether this service station is on AMTL property or off-site.

Concur and incorporate: MW-23 is located off-post on the opposite side of Arsenal street. This will be clarified in the report. The report will be corrected.

9. Page 4-6, last paragraph: The text indicates that a line in Structure 295 may be leaking. This warrants immediate action. If in fact the line is leaking it should be repaired without delay and an assessment of potential impact to the environment should be conducted.

Concur and update: The release discussed is not a release from a pipe, it was a spill that took place during filling. The cap was removed from the tank and the internal pressure of the tank caused some of the product to spill out

before filling could even begin. Clean up of the spill took place immediately, aided by the very low temperatures.

10. Page 4-7, Building 111, 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have occurred.

Concur and incorporate: A 275-gallon heating oil tank is present in Building 111. The tank is part of an auxiliary heating system and is checked twice annually. The source of this information is Mr. David W. Gerety. This information will be used to update the report.

11. Page 4-8, Building 117, 2: It is not clear why the detection of lindane is considered unconfirmed. This must be explained further.

Concur and incorporate: The USAEC chemical analyses procedures require that in order to produce quantifiable results of the presence of pesticides in a sample, two conditions must be met. First, the presence of a pesticide must be quantifiable in the primary chromatic column of the gas spectrometer. The second is that the pesticide must be detected in the secondary column in order to verify the results of the first column. This is different from the EPA's CLP program which would not report a detection unless the pesticide is detected in both window. If the Army had applied the EPA CLP reporting requirements, the sample would have been declared clear for lindane. For the purposes of the CERFA report the reference to lindane will be removed.

12. Page 4-8, Building 117, 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have occurred.

Concur and incorporate: A 275-gallon heating oil tank is present in Building 117. The tank is part of an auxiliary heating system and is check twice annually. The source of this information is Mr. David W. Gerety. This information will be included in the text of the report.

13. Page 4-8, Building 118, 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have

occurred.

Concur and incorporate: A 275-gallon heating oil tank is present in Building 118. The tank is part of an auxiliary heating system and is check twice annually. The source of this information is Mr. David W. Gerety. The text will be changed to incorporate this information.

14. Page 4-9, Building 131, 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have occurred.

Concur and incorporate: Based on a conversation with Mr. David W. Gerety it was determined that there is no heating oil tank of any size in this building. Since this is an office building it only source of heat is steam from the power plant. The text will be changed to incorporate this information.

15. Page 4-10, 2: The text indicates that the State of Massachusetts will be performing work to assess the probable release of petroleum. Isn't the Army performing the work? The text should be clarified.

Concur and incorporate: The work described in the text is to be accomplished by the Corps of Engineers in accordance with the appropriate state regulations and will include the appropriate oversight during the field work. The text will be changed.

16. Page 4-17, Building 100, 2: This paragraph should be rewritten to reflect the fact that demolition of Building 100 is underway. The text should also confirm that the concrete contaminated by cooling water will be removed, cleaned and disposed of properly.

Concur and incorporate: The demolition of the reactor is underway. The demolition follows the radiological decommissioning of the facility. The decommissioning met the Nuclear Regulatory Commissions (NRC) requirements for unrestricted reuse. The LLRW generated during decommissioning was disposed of in accordance with all applicable regulations. The coolant water which was responsible for a portion of the contamination was removed from the facility in March of 1970.

17. Page 4-17, Building 100, 3: Since Building 100 is currently being demolished, the PCB-containing transformer mentioned here can no longer be considered operational. Revise the text to indicate how the PCB-containing transformer was/will be handled during the demolition process.

Also, indicate whether CERFA finding changes based on the fact that the transformer is no longer operational.

Concur and incorporate: This transformer has supported a number of buildings other than Building 100. The transformer continues in operation in its industrial setting. There currently are no plans to discontinue the transformers use. Therefore, the second part of the comment does not apply to this transformer

18. Page 4-18, Section 4.2: The possible presence of 275-gallon fuel tanks at Buildings 111, 117, 118 and 131 should also be considered as new items of environmental concern and should be identified here.

Concur and incorporate: Based on a conversation with Mr. David W. Gerety it was determined that there is an auxiliary heating oil tank in buildings 111, 117, and 118. However, Building 131 has no auxiliary heating capacity and no fuel oil tank. The text will be changed incorporate this information.

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ACRONYMS AND ABBREVIATIONS

2,4-DNT	2,4-Dinitrotoluene
ACM	Asbestos Containing Material
AEHA	Army Environmental Hygiene Agency
AMMRC	Army Materials and Mechanics Research Center
AMTL	Army Materials Technology Laboratory
AREE	Area Requiring Environmental Evaluation
AST	Aboveground Storage Tank
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CERFA	Community Environmental Response Facilitation Act
cpm	Counts Per Minute
DARA	Department of the Army Radioactive Material Authorization
DIMP	Di-isopropylmethylphosphonate
DU	Depleted Uranium
EPA	Environmental Protection Agency
ERM	Environmental Resources Management
ERNS	Emergency Response Notification System
FS	Feasibility Study
FY	Fiscal Year

GSA	General Services Administration
HRS	Hazard Ranking System
IRP	Installation Restoration Program
LBP	Lead-based Paint
MA DEP	Massachusetts Department of Environmental Protection
MAGW	Massachusetts Groundwater Quality Standard
MCP	Massachusetts Contingency Plan
MSL	Mean Sea Level
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
^{o}F	Degrees Fahrenheit
PA	Preliminary Assessment
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Perchloroethene
pCi/g	Picocuries Per Gram
POL	Petroleum, Oil, and Lubricant
ppb	Parts Per Billion
ppm	Parts Per Million
QA	Quality Assurance
RCRA	Resource Conservation and Recovery Act

RI	Remedial Investigation
SI	Site Inspection
SVOC	Semivolatile Organic Compound
TCE	Trichloroethene
USAEC	U.S. Army Environmental Center
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USDA	U.S. Department of Agriculture
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

This report presents the results of the Community Environmental Response Facilitation Act (CERFA) investigation conducted by Environmental Resources Management (ERM) at the Army Materials Technology Laboratory (AMTL), a U.S. Government property selected for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. Under CERFA (Public Law 102-426), Federal agencies are required to identify expeditiously real property that can be immediately reused and redeveloped. Satisfying this objective requires the identification of real property where no hazardous substances or petroleum products, regulated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), were stored for one year or more, known to have been released, or disposed.

AMTL is a 47.5 acre site located in Watertown, Massachusetts, approximately five miles west of downtown Boston. The facility was established in 1816 and has been used throughout the years for a variety of missions, including storage, repair and issue of small arms and ordnance supplies; material testing, arms manufacturing; and home of the Army's first materials research nuclear reactor (deactivated in 1970). Current AMTL operations occupy 36.5 acres which are used for materials testing and development.

ERM reviewed existing investigation documents; U.S. Environmental Protection Agency, State, and county regulatory records; environmental data bases; and title documents pertaining to AMTL during this investigation. In addition, ERM conducted interviews and visual inspections of AMTL as well as visual inspections of and data base searches for the surrounding properties.

Information in this CERFA report was current as of March 1994. This information was used to categorize the installation into one category of parcels: a CERFA Disqualified Parcel.

The total BRAC property acreage at AMTL is 47.5 acres. Areas of the facility that have no history of CERCLA-regulated hazardous substance or petroleum product release, disposal, or storage for one year or more; and no history of other environmental hazards (such as asbestos, radon gas, lead-based paint, unexploded ordnance, radionuclides, or not in-use equipment containing polychlorinated biphenyls), are categorized as CERFA Parcels. No CERFA Parcels were identified.

Areas of the facility that had no evidence of CERCLA-regulated hazardous substance or petroleum product release, disposal, or storage for one year or more, but contained other environmental hazards (such as asbestos, radon gas, lead-based paint, unexploded ordnance, radionuclides, or not in-use equipment containing polychlorinated biphenyls) were categorized as CERFA Qualified Parcels. No CERFA Qualified Parcels were identified.

Areas of the facility, for which there is a history of release, disposal, or storage for one year or more of CERCLA-regulated hazardous substances or petroleum products or had a release of the other environmental hazards identified above were categorized as CERFA Disqualified Parcels. One 47.5-acre Disqualified Parcel was identified.

Areas on the facility that will be retained by the Federal Government or that have already been transferred by deed are categorized as CERFA-Excluded Parcels. No CERFA-Excluded Parcel was identified.

The primary objective of CERFA is satisfied by the identification of CERFA Parcels and CERFA Qualified Parcels. As a result, concurrence has been sought from the regulatory agencies on these two categories of parcels. This CERFA Report has been reviewed by the U.S. Army Environmental Center (USAEC), Region I, U.S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection. Comments received from regulatory agencies and USAEC's response to those comments are located in the Appendix.

This report contains maps that summarize the categorization of AMTL on the basis of the above definitions. This Executive Summary should be read only in conjunction with the complete CERFA Report for this installation. The CERFA Report provides the relevant environmental history to substantiate the parcel categorization. This report does not address other property transfer requirements that may be applicable under the National Environmental Policy Act (NEPA), nor does it address natural resource considerations such as the threat to plant or animal life.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

Public Laws 100-526 and 101-510 designated more than 100 Department of Army facilities for closure and realignment. As a result, it became necessary to expedite the environmental investigation and cleanup process, as necessary, prior to the release and reuse of Army Base Realignment and Closure (BRAC) property. The BRAC environmental restoration program was established in 1989 with the first round (BRAC 88) of base closures and continued with subsequent rounds (BRAC 91, BRAC 93, etc.). The BRAC program is patterned after the Army's Installation Restoration Program (IRP), except that it has been expanded to include such categories of contamination as asbestos, radon, polychlorinated biphenyls (PCBs), and others that are not normally addressed under the Army IRP.

The BRAC environmental restoration program normally begins by conducting enhanced Preliminary Assessments (PAs). This was not true in the case of AMTL. The RI/FS program at AMTL was begun as part of the Installation Restoration Program (IRP) prior to the site being included on the BRAC I list. This meant the PA prepared did not address some of the porperty transfer issues that are normally included in the BRAC enhanced PAs. The AMTL PA inlcudes reviews of existing installation documents, regulatory records, and aerial photographs; a site visit and visual inspection; and employee interviews. To address the environmental requirements of property transfer, the RI/FS and other environmental documentation have been expanded beyond their normal requirements.

In October 1992, Public Law 102-426, the Community Environmental Response Facilitation Act (CERFA) amended Section 120 (h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and established new requirements with respect to contamination assessment, cleanup, and regulatory agency notification/concurrence for federal facility closures. CERFA requires the federal government, before termination of federal activities on real property owned, to identify property where no hazardous substances were stored, released, or disposed of. Also, the designation must be concurred with by the appropriate regulatory agency (U.S. Environmental Protection Agency for National Priority List (NPL) bases and state for non-NPL bases). These requirements retroactively affect the Army BRAC 88 and BRAC 91 environmental restoration activities, and are being

implemented at BRAC 93 sites. The primary CERFA objective is for federal agencies to expeditiously identify real property offering the greatest opportunity for immediate reuse and redevelopment. Although CERFA does not mandate the Army transfer real property so identified, the first step in satisfying the objective is the requirement to identify real property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed.

ERM was awarded the task to identify real property where no CERCLA-regulated hazardous substances or petroleum products were stored, released, or disposed at twelve BRAC 88 sites. Under this task, an Execution Plan was developed to describe the process in satisfying the CERFA task objective. The purpose of this report is to present the findings for AMTL, Watertown, Massachusetts.

1.2 *DEFINITION OF TERMS*

The following definitions are used in this report:

CERFA Parcel - A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. CERFA parcels include areas where PCB containing equipment is in operation, but there is no evidence of release. CERFA parcels also include any portion of the installation which once contained related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, stored (not-in-use) PCB containing equipment, asbestos contained within building materials, radionuclides contained within products being used for their intended purposes, and lead-based paint applied to building material surfaces, but which have since been fully remediated or removed.

CERFA Qualified Parcel - A portion of the installation real property for which investigation reveals no evidence of storage for one year or more, release, or disposal of CERCLA hazardous substances, petroleum, or petroleum derivatives and no evidence of being threatened by migration of such substances. Parcel does however contain related environmental, hazard, or safety issues including unexploded ordnance (UXO) located on firing ranges or impact areas, radon, radionuclides contained within products being used for their intended purposes, asbestos contained within building materials, lead-based paint applied to building material surfaces, or stored (not-in-use) PCB containing equipment.

CERFA Disqualified Parcel - A portion of the installation real property for which investigation reveals evidence of a release, disposal, or storage for more than one year of a CERCLA hazardous substance, petroleum, or petroleum derivative; or a portion of the installation threatened by such a release or disposal. CERFA Disqualified Parcels also include any portion of the installation where PCB, asbestos containing material, lead-based paint residue, radionuclides, or any ordnance has been disposed of, and any locations where chemical ordnance has been stored. Additionally, CERFA Disqualified Parcels include any areas in which CERCLA hazardous substances or petroleum products have been released or disposed of and subsequently fully remediated.

CERFA Excluded Parcel - A portion of the installation real property retained by the Department of Defense, and therefore, explicitly investigated for CERFA. CERFA Excluded Parcels also include any portions of the installation which have already been transferred by deed to a party outside the federal government, or by transfer assembly to another federal agency.

The following labels are used in conjunction with the identified parcels. Each parcel is given a unique number to which the appropriate labels are attached.

- P = CERFA Parcel
- Q = CERFA Qualified Parcel
- D = CERFA Disqualified Parcel
- E = CERFA Excluded Parcel

EXAMPLE: 4P indicates that the fourth parcel is in the CERFA Parcel category.

The presence of related environmental, hazard, and safety issues, responsible for placing a parcel in the CERFA Qualified Parcel category, is indicated by the following labels:

- A = Asbestos
- L = Lead-Based Paint
- P = PCB
- R = Radon
- X = Unexploded Ordnance (UXO)
- RD = Radionuclides

EXAMPLE: 5Q-L indicated that the fifth parcel is in the CERFA Qualified Parcel category because of the presence of lead-based paint.

The following designations are used to indicate the type of contamination or storage present in a parcel. Conditions responsible for placing a parcel in the CERFA Disqualified category are indicated by the following:

- PR = Petroleum Release
- PS = Petroleum Storage
- HR = Hazardous Release
- HS = Hazardous Storage

EXAMPLE: 12D-HR indicates that the twelfth parcel is in the CERFA Disqualified category because of evidence of hazardous release.

For all parcels, (P) [i.e., P with parentheses around it] is used to indicate that the presence of the contamination is possible, but that data is unavailable for verification.

EXAMPLE: 9Q-A(P) indicates that the ninth parcel is in the CERFA Qualified Parcel category because of the possible presence (unverified) of ACM.

OTHER EXAMPLES:

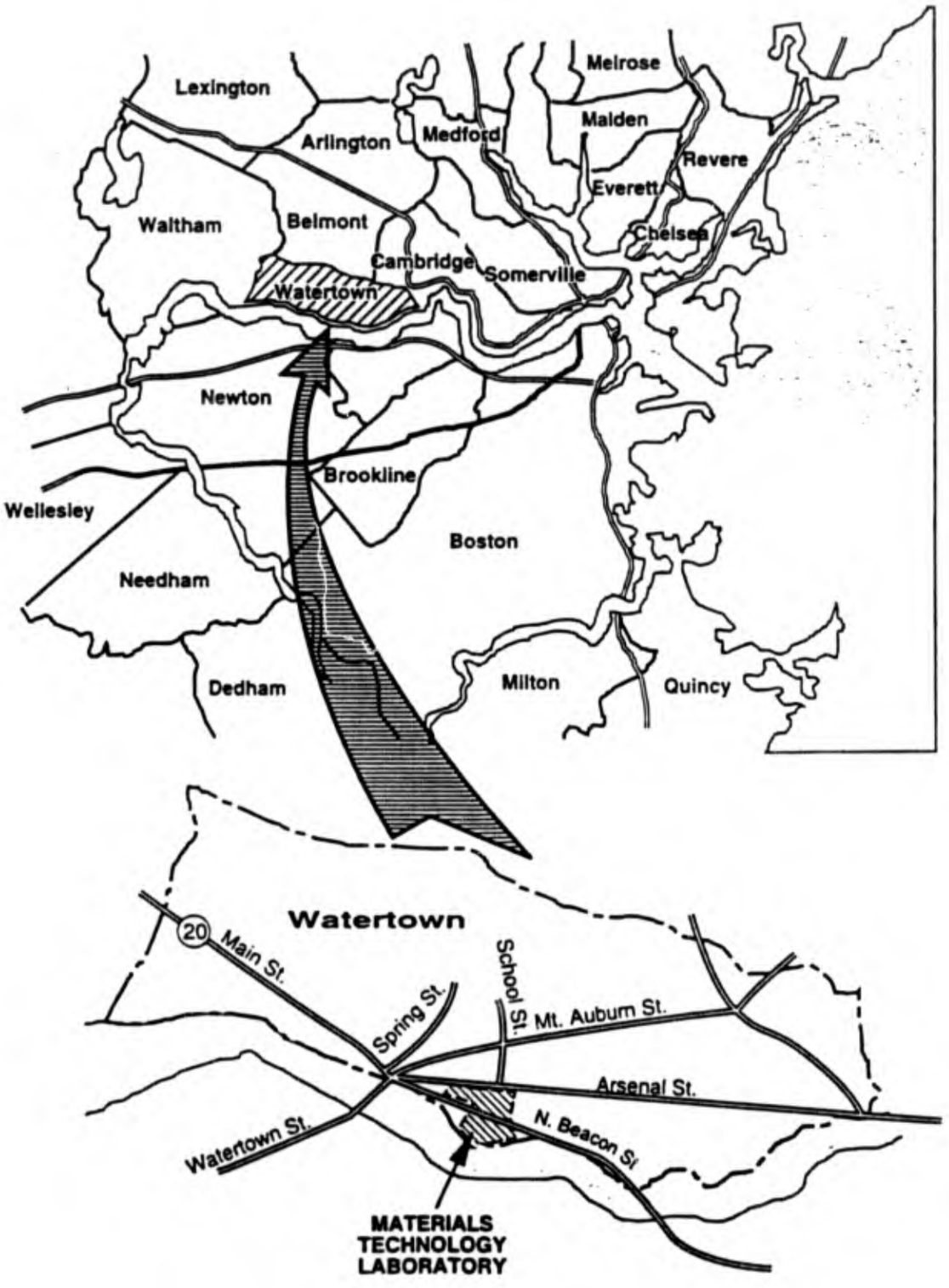
Parcel label 15D-HR/PS/A(P) indicates that the 15th parcel is in the CERFA Disqualified category based on evidence of a hazardous substance release and petroleum storage. It also contains possible ACM.

Parcel label 8Q-X/R indicates that the eighth parcel is in the CERFA Qualified Parcel category because of the presence of unexploded ordnance and radon.

1.3 *GEOGRAPHICAL/ENVIRONMENTAL SETTING*

The site under CERFA investigation consists of 47.5 acres which is located in Watertown, Massachusetts, on the north bank of the Charles River, approximately five miles west of downtown Boston (Figure 1.3-1). Of the 47.5 acres, AMTL occupies 36.5 acres which is bounded to the north by Arsenal Street, on the south by North Beacon Street, on the east by Talcott Avenue, and on the west by the Veterans of Foreign Wars, USA, Burnham Manning Post No. 105 and private property. The remaining 11 acre plot between North Beacon Street and the Charles River has been conveyed to the Commonwealth of Massachusetts for road and park purposes and

Figure 1.3-1
Location of Army Materials Technology Laboratory
Watertown, Massachusetts



Source: "Phase 2 Feasibility Study Report (Indoor) - Army Materials Technology Laboratory" R.F. Weston, Inc., November 1992.

presently consists of a park and marina (see Figure 1.3-2). The Army in its deed has reserved the right to make such use of the riverfront and lands comprised of the right of way as the Secretary of War may deem necessary for the uses of the Arsenal.

The site and surrounding area are generally flat, decreasing in elevation from approximately 36 feet above mean sea level (MSL) along the northern boundary to approximately 2.4 feet above MSL at the edge of the Charles River. The original, glacially formed land surface has been extensively filled with sand, gravel, and construction debris to level the northern portion of the site for construction of buildings and parking lots.

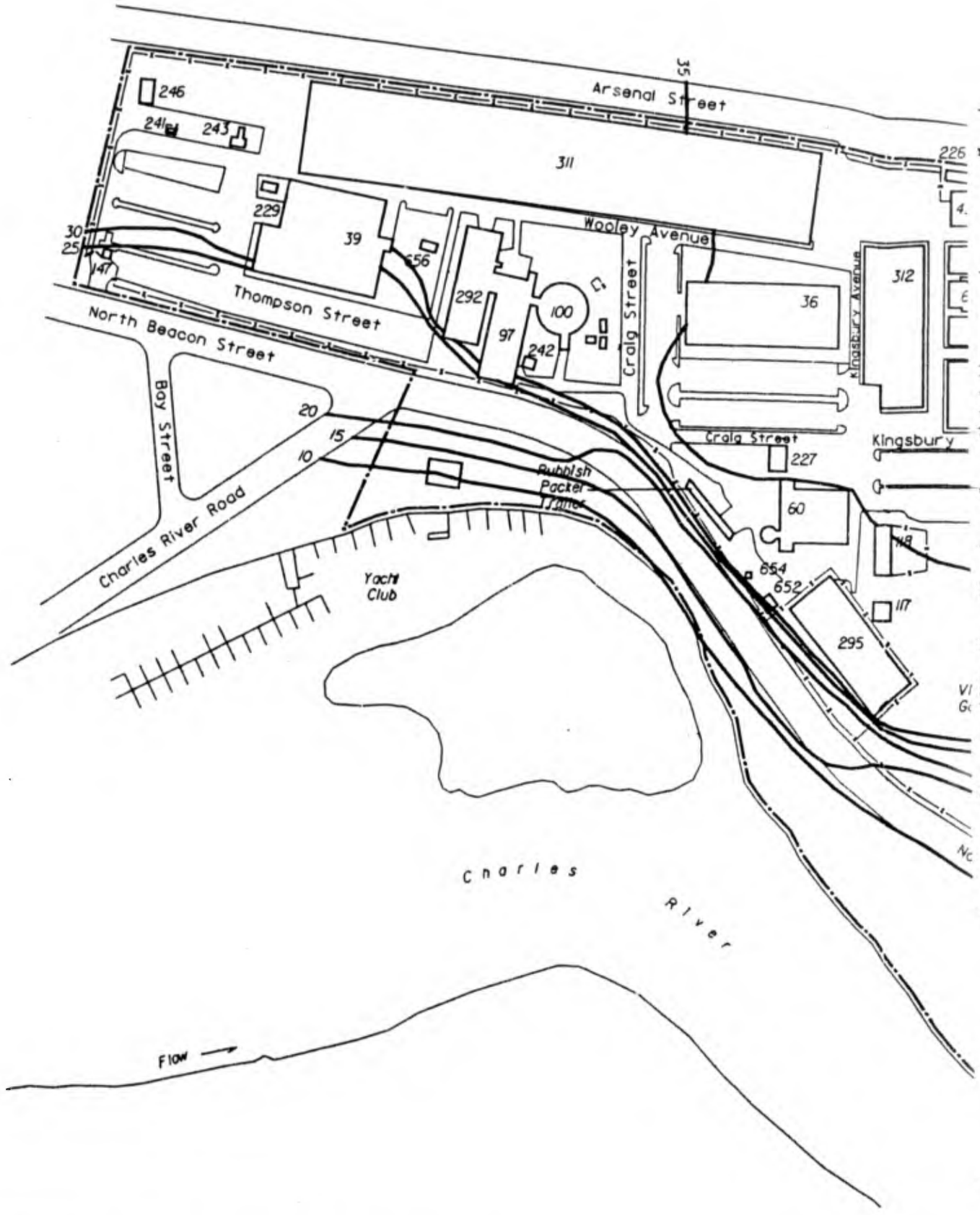
Climatic conditions at the meteorological station at Logan International Airport, eight miles east of the site, show a mean temperature of 72.7 degrees Fahrenheit (°F) for July and 28.6°F for January. The mean annual precipitation is 41.6 inches. Prevailing winds are either from the southwest or northwest, depending on the time of year. Average annual wind speed is approximately 12 miles per hour.

The site slopes approximately 20 feet from the northern to the southern boundary. Surface drainage is therefore north to south, across the site. Major segments of the stormwater collection system follow this pattern and discharge to the Charles River in a series of outfalls.

Bedrock is a minimum of 50 feet below ground surface in the western portion of the site and a maximum of about 100 feet in the southeast region. Bedrock is identified as Pennsylvanian-age Cambridge Agrillite. The Cambridge Agrillite is typically a varied (rhythmically layered) siltstone. Beds range in thickness from 0.1 to 8 cm and vary from dark-gray clay and silt-rich layers to light-gray fine and very fine-grained sand layers.

Overburden deposits consist of (in ascending order) basal glacial till directly overlying bedrock, silty clay with some fine sand and gravel, interlayered outwash deposits of sand and gravel with some fine materials, and finally, more recent deposits and fill near the surface.

Previous investigations indicate that regional ground water flows away from topographic high areas toward the Charles River. Generally, ground water flows south-southeast. For shallow ground water, flow velocity varies from 0.3 ft/day to 1.8 ft/day. Depth to ground water varies from five feet along the southeastern boundary to approximately 30 feet along the eastern boundary, where the ground surface reaches its maximum elevation and coarse-grained deposits allow rapid soil drainage.



Source: "Phase 2 Remedial Investigation Report - Army Materials Technology Laboratory" R.F. Weston, Inc., October 1992.

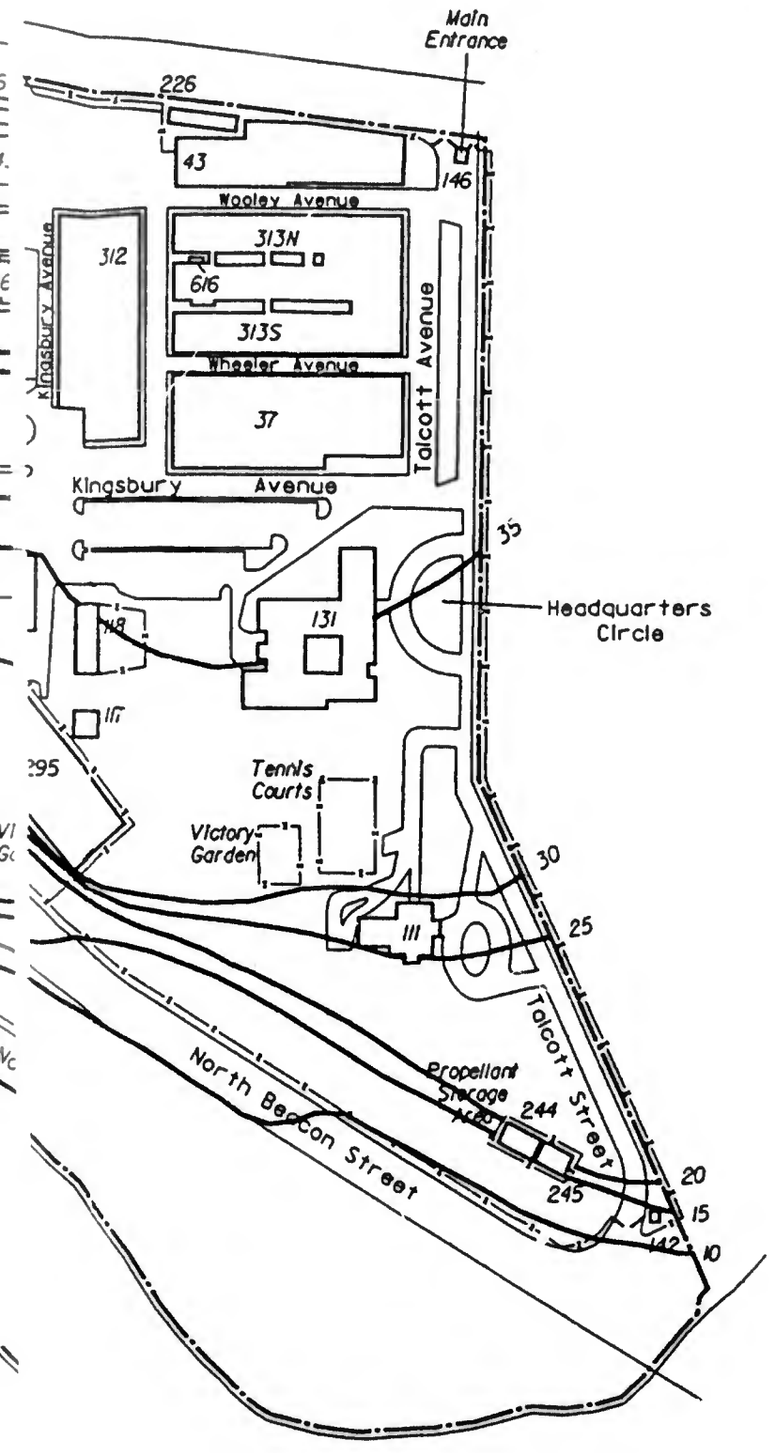
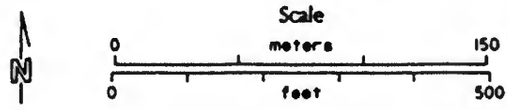


Figure 1.3-2
Topographic Profile
Army Materials Technology Laboratory
Watertown, Massachusetts

Elevation In Feet
(Above Mean Sea Level)



2.0 SCOPE OF INVESTIGATION

The scope of the CERFA investigation includes:

- Review of previous environmental investigations, assessments, reports, etc.
- Review of applicable government regulatory records: federal, state, and local (where applicable and available).
- Interviews with representatives from the installation (or command responsible for the installation), other federal agencies, regulatory officials, and others.
- Review of maps and aerial photographs (see Section 2.1, Source 15).
- Inspection of adjacent property that potentially could contaminate the BRAC property.
- Detailed site inspection (the scope of these site inspections was determined principally by the review of previous investigations and assessments).
- Review of recorded chain of title documents.

These seven activities are specifically included within the statutory scope of CERFA. All seven activities were conducted during the CERFA investigation at AMTL.

2.1 EXISTING INVESTIGATION DOCUMENTS

Extensive documentation on environmental conditions at AMTL has been compiled within the past decade. Documents describing the environmental conditions or the results of previous or current investigations at locations either within or adjacent to AMTL were used as primary sources throughout the CERFA investigation. These sources are listed below.

1. *Former Watertown Arsenal, Preliminary Assessment*, ABB Environmental Services, October 1993.
2. *Army Materials Technology Laboratory, Facility Decommissioning Project, Final Survey Report*, Volume 1 and 2, July 1993.
3. *Phase 2 Feasibility Study Report (Outdoor), Army Materials Technology Laboratory, Task Order 1: Remedial Investigation/Feasibility Study*, Volumes 1&2, Roy F. Weston, Inc., December 1992 (Draft).

4. *Phase 2 Feasibility Study Report (Indoor), Army Materials Technology Laboratory, Task Order 1: Remedial Investigation/Feasibility Study,* Volumes 1&2, Roy F. Weston, Inc., November 1992 (Draft).

5. *Mixed Waste Management Guide, Army Materials Technology Laboratory, Task Order 13,* Roy F. Weston, Inc., November 1992.

6. *Phase 2 Remedial Investigation Report, Army Materials Technology Laboratory, Task Order 1: Remedial Investigation/Feasibility Study,* Volumes 1-5, Roy F. Weston, Inc., December 1993.

7. *Task Order 1, Phase 2 Remedial Investigation for Base Closure, Army Materials Technology Laboratory, Radiological Field Survey Report,* Volumes 1-3, Roy F. Weston, Inc., May 1992 (Final).

8. *Army Materials Technology Laboratory, Facility Decommissioning Plan,* Roy F. Weston, Inc., February 1992.

9. *Demolition and Reclamation Plan for Building 100 at the U.S. Army Materials Technology Laboratory at Watertown, Massachusetts,* EG&G Idaho, Inc., January 1992.

10. *Decommissioning Plan for U.S. Army Materials Technology Laboratory Research Reactor, Revision 1,* EG&G Idaho, Inc., October 1991.

11. *Phase 1 Remedial Investigation Report, Army Materials Technology Laboratory,* April 1991 (Draft Final).

12. *U.S. Army Materials Technology Laboratory Engineering Report,* Volume 1, EG&G Idaho, Inc., June 1990 (Draft).

13. *Installation Assessment of United States Army Material and Mechanics Research Center, Report No. 169,* April 1980.

14. *A History of the Watertown Arsenal, 1816 - 1967,* 1967.

15. *Installation Assessment of the Army Materials Technology Laboratory,* March 1988.

2.2 *GOVERNMENT REGULATORY RECORDS*

Federal Records

ERM reviewed the current Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list dated 13 October 1993 available at the EPA Region I Office in Boston, Massachusetts. The AMTL site was on the CERCLIS list; no other sites within a one-half mile radius were on the CERCLIS list. The final Hazard Ranking System (HRS) Score for the AMTL site is 48.6 based on the threat posed by surface water at the site. An HRS score above 28.5 qualifies a

site for listing on the National Priorities List, which contains sites considered a priority for corrective action under the CERCLA program.

Information collected from EPA corroborated the information obtained from the documents listed in Section 2.1 above and the CERFA site visit. No new information regarding releases or the potential for environmental contamination of the site was uncovered.

A search of the EPA's Emergency Response Notification System (ERNS) database during the period 30 January - 2 February 1994 identified no report of release of oil or hazardous substances at AMTL since the inception of the database in 1986.

NRC Records

ERM personnel obtained information regarding use of radioactive material licensed by the Nuclear Regulatory Commission (NRC) from the Massachusetts Department of Environmental Protection (MA DEP) in Boston, Massachusetts on 26 October 1993 and from an interview with Peter Cornetta, the AMTL Radiation Protection Officer on 15 October 1993. Information regarding NRC licenses and affected processes may also be found in the AMTL Preliminary Assessment.

NRC licenses for AMTL are as follows:

1. *License SUB-238*

NRC license SUB-238, Docket No. 040-02253, is a source material license. The source materials covered under the license are uranium and thorium isotopes used to calibrate measurement devices.

License SUB-238 was originally issued on May 9, 1961. License SUB-238 is still an active license held by AMTL.

2. *License SNM-244*

License SNM-244, Docket No. 070-00263, is a special material license. The license was issued to AMTL on September 29, 1958 and authorized the use of materials associated with the nuclear research reactor, specifically, plutonium-239 and uranium-235.

License SNM-244 is currently active, however, AMTL is in the process of terminating the license.

3. *License 20-1010-04*

License 20-1010-04, Docket No. 20-04593, is a by-product material license. The license was issued to AMTL on September 29, 1958. By-product material refers to radioactive material and isotopes with atomic weights between 3 and 83 generated by the production or use of special nuclear materials and includes uranium and thorium mill tailings.

License 20-1010-04 is currently active, however, AMTL is in the process of terminating the license.

4. *License R-65*

License R-65 is the reactor license. The license was issued to AMTL in the late 1950s or early 1960s.

License R-65 has been terminated by AMTL.

5. *Other Licenses*

Listed below are additional license numbers that have expired, and for which no additional information was available.

License SNM-539 expired on June 8, 1967.
License 20-01010-01 expired August 31, 1957.
License 20-01010-02 expired September 30, 1959.
License 20-0100-103059 expired March 31, 1959.

In addition, AMTL has one copy of a Department of the Army Radioactive Material Authorization (DARA) for radium-226 and accelerator-produced material, and a memorandum on safety for the californium-252 facility. The californium-252 facility has been dismantled and the californium-252 is currently being held in a small container.

AEHA Records

A record search conducted by the Army Environmental Hygiene Agency (AEHA) did not reveal any information of concern to the CERFA investigation.

State Records

ERM personnel obtained information from the MA DEP Northeast Regional Office in Woburn, Massachusetts on 29 September 1993. Files reviewed included the 1993 List of Confirmed Disposal Sites and

Locations to be Investigated (LTBI), and the Miscellaneous Spills files for the AMTL site and properties located within a one-half mile radius.

Only one site reviewed, a spill of 2,000 gallons of transformer oil, appears to have the potential to impact conditions at AMTL. This spill occurred on 3 February 1985 on property belonging to Boston Edison, which is located approximately 1,500 feet to the northeast of AMTL. Additional description of conditions on property adjacent to AMTL may be found in Section 4.3.

State records also indicated that two spills had occurred at AMTL within the last decade. The first recorded spill occurred on 24 April 1984, when an unknown quantity of a "white liquid" was spilled near the Charles River Road. The second reported incident occurred on 24 November 1986, when four pounds of sodium cyanide were released. The records did not contain exact locations of these reported spills, and site personnel were not aware of the reported incidents. Therefore, insufficient information was available to proceed further with the CERFA investigation of these spills.

Local Records

A review of local records revealed no evidence of contamination not previously identified in existing investigation documents.

2.3 *INTERVIEWS*

Table 2.3-1 provides a summary for those individuals interviewed during the CERFA investigation.

2.4 *VISUAL INSPECTIONS*

ERM conducted a site visit of AMTL on 27 and 28 September 1993. A site walk-over was performed during the site visit and the interiors of most of the buildings were examined. The adjacent properties were inspected using a combination of walking and driving. The site visit encompassed the entire installation and also included a review of aerial photographs and interviews with site officials.

2.5 *TITLE DOCUMENTS*

ERM conducted a review of tract maps and transfer documents to identify the prior property owners of the BRAC portion of AMTL at the time of its transfer to the Army. The purpose of this review was to collect additional

Table 2.3-1
List of Interviewees for AMTL CERFA Assessment

Interview No.	Date	Name	Telephone	Organization/Position	Length of Service
I-1	9/93 to 3/94	Mark Mahoney	(410) 671-3261	U. S. Army Environmental Center AMTL CERFA Project Officer	3 Years
I-2	9/93	Fran Donovan	(617) 647-8111	U. S. Army Corps of Engineers AMTL Project Engineer	1 Year
I-3	9/93	Carol Burns	(617) 924-7251	CBB Inc. USACOE Subcontractor	1 Year
I-4	9/93	Samual Gilfix	(617) 923-5158	AMTL Environmental Coordinator	14 Years
I-5	9/93	Carmine Aceto	(617) 923-5158	AMTL Safety Inspector	7 Years
I-6	9/93	David Gerety	(617) 923-5158	AMTL Facilities Engineer	7 Years
I-7	9/93	Peter Cornetta	(617) 923-5225	AMTL Radiation Protection Officer	8 Years
I-8	10/93	Albe Simenas	(617) 292-5500	Massachusetts DEP Project Manager-MTL	3 Years
I-9	1/4/94	Thomas Bower	(301) 394-3446	U.S. Army Research Laboratory Chief, Infrastructure Management	19 Years
I-10	1/20/94	Silvio Graziadei	(617) 923-5194	AMTL Environmental Coordinator	3 Years
I-11	3/7/94	Meghan Cassidy	(617) 573-5785	EPA Region I, Superfund Section Remedial Project Manager	
I-12	2/10/94	Jay Naparstek	(617) 292-5500	Massachusetts DEP Federal Sites Section Chief	
I-13	9/1/93	Robert Chase	(617) 923-5158	AMTL Risk Management Officer	7 Years

information concerning the property's prior use and environmental condition at the time of its transfer to the Army. Based on this review, no additional information was collected. Previous ownership and the dates of transfer to the Army are indicated on Figure 5.2-1.

3.0 *PROPERTY BACKGROUND INFORMATION*

This Section provides a descripton of the BRAC property, a discussion of its operational history (see Section 3.1), and a description of any change sto environmental conditions since the most recent environmental investigation (see Section 3.2).

3.1 *PROPERTY DESCRIPTION AND OPERATIONAL HISTORY*

The 47.5 acre site is located in the greater Boston metropolitan area, in an urbanized section of Watertown, MA. The active AMTL facility covers approximately 36.5 acres and is bordered by Arsenal Street to the north, North Beacon Street to the south, commercial property to the west, and a condominium and small park to the east. An 11 acre plot between North Beacon Street and the Charles River has conveyed to the Commonwealth of Massachusetts for road and park purposes and presently consists of a park and marina. The Army in its deed has reserved the right to make such use of the river front and lands comprised of the right of way as the Secretary of War may deem necessary for the uses of the Arsenal.

AMTL is zoned for open space/conservancy. This zoning reflects the classification to which the property would revert if sold to a nonfederal agency. The Commander's Quarters on AMTL is on the National Register of Historic Places, and the facility itself has been declared an historic district.

The facility was established as the Watertown Arsenal in 1816 by President James Madison and was originally used for the storage, cleaning, repair, and issue of small arms and ordnance supplies. During the 1800s, this mission was expanded to include ammunition and pyrotechnics production; materials testing and experimentation with paint, lubricants, and cartridges; and manufacture of breech-loading steel guns and cartridges for field and siege guns. The mission, staff, and facilities continued to expand until after World War II, at which time the facility encompassed 131 acres, including 53 buildings and structures, and employed approximately 10,000 people. Arms manufacturing continued until an operational phasedown was initiated in 1967. In 1960, the Army's first materials research nuclear reactor was completed at AMTL. The reactor was used actively in molecular and atomic structure research activities until 1970 when it was deactivated.

At the time of the phasedown, much of the Watertown Arsenal property was transferred to the General Services Administration (GSA) and in 1968, approximately 55 acres were sold to the town of Watertown and subsequently developed. Of the 47.5 acres retained by the Army, 36.5 became the Army Materials and Mechanics Research Center (AMMRC), which was designated a historical landmark by the American Society of Metals in 1983. In 1985, the AMMRC was redesignated as AMTL. AMTL currently employs approximately 400 people and contains 15 buildings and structures. The current mission of AMTL is materials development, structural integrity testing, solid mechanics, lightweight armor development, and manufacturing testing technology.

In October 1988, Congress passed the Defense Authorization Amendments and Base Realignments and Closure Act. In December 1988, the Secretary of Defense's ad hoc Commission on Base Realignment and Closure (BRAC) issued its final report that included a recommendation, subsequently approved by Congress, for the closure of 81 Department of Defense installations, including AMTL. A closure program at AMTL was initiated by USAEC [(formerly the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA)] which consists of three stages: preliminary assessment/site inspection (PA/SI), remedial investigation/feasibility study (RI/FS), and remedial actions. The PA/SI was conducted in 1987. The RI was begun in 1988 however, because chemical analyses were not performed in accordance with the USATHAMA Quality Assurance (QA) Program (January 1990), the report was never sent to a state or federal agency and remains an internal draft. Resampling was conducted in 1990 and intended to duplicate the 1988 sampling program. In some cases, however this was not possible because of a lack of flow at sample locations. A draft final RI report was provided to regulators on November 1992.

AMTL is considered a large quantity generator of hazardous wastes. Management of radiological and hazardous waste at AMTL is handled by the Environmental Coordinator and the Radiation Protection Officer. Samuel Gilfix, the Environmental Coordinator, handles the disposal of hazardous waste. Since 1980, according to Mr. Gilfix, hazardous waste has been collected and stored at satellite accumulation points in each building which generates hazardous waste. Hazardous wastes consist of laboratory wastes such as acids, bases, reactives, waste oils, and lubricants. Every 90 days, the hazardous waste is picked up by a licensed hazardous waste hauler. Mr. Gilfix indicated that he did not have any records indicating hazardous waste disposal prior to 1980. Also, no historical records of pesticide mixing or storage exists at the installation. A pest management contractor was hired on an as-needed basis.

Radiological wastes are handled by the Radiation Protection Officer. Currently, according to Mr. Peter Cornetta, radiological wastes are drummed and stored in Building 241. These wastes are processed by a licensed radiological waste contractor on an as-needed basis. Previously, radiological wastes, primarily depleted uranium (DU), were oxidized in an incinerator located in Building 43 in accordance with AMTL's NRC license. The oxidized uranium was drummed and stored in Building 241 where it was processed by a licensed radiological waste contractor on an as-needed basis.

Sampling activities conducted by Roy F. Weston, Inc. in connection with the RI/FS indicate hazardous chemicals, including solvents, petroleum products, and metal-bearing waste, and radiological wastes were disposed of in drain lines. This pattern of contamination was consistent with the historical use of the site. Hazardous compounds were detected in sediments in cisterns, tanks, sumps, catch basins and dry wells throughout the site.

In addition, sampling activities by Weston indicated DU contamination in drain lines from Buildings 39, 292, 311, 312, and 313 which is consistent with past uses of these buildings.

3.2 *CHANGES TO REAL PROPERTY ENVIRONMENTAL CONDITIONS SINCE MOST RECENT ENVIRONMENTAL INVESTIGATION*

The primary change to the property since the last environmental investigation is that an extensive radiological decontamination program was initiated and has been completed in several buildings. Currently, no low level radioactive waste remains on the site; only mixed wastes are located at the installation. Mixed waste treatment is ongoing and at the time of this report it has not been determined when this mixed waste will be removed from the installation.

In addition, one underground storage tank (UST) and two large aboveground storage tanks (ASTs) were removed from the property. Both of these changes are discussed in Section 4.0.

4.0 *INVESTIGATION RESULTS*

This section describes the results of the CERFA investigation by identifying area of environmental concern, both of those previously identified in prior investigations and those uncovered as a result of the CERFA site visit. In addition, Section 4 identifies parcels in accordance with the parcel definitions contained in Secion 1.2.

4.1 *PREVIOUSLY IDENTIFIED AREAS REQUIRING ENVIRONMENTAL EVALUATION (AREES)*

The investigations and documents described above have confirmed the presence of environmental contamination at a number of locations throughout AMTL. The sites of concern under CERFA are listed below in the order corresponding to the site map, Figure 5.1-1, and the accompanying map table. Although the sites as described below are listed individually, it should be understood that under CERFA the entire AMTL installation will be considered a Disqualified Parcel based on the identification of ground water contamination beneath the site. Therefore, all sites on the map and map table are located within CERFA Disqualified Parcel 1. The description of Disqualified Parcel 1 also includes the CERFA identifying labels that provide the basis for classification.

Unless otherwise specified, general property and past use descriptions and analytical results for the sites described below may be found in the installation RI/FS (Reference 6, Section 2.1). In addition, for soils and indoor contamination, comparisons have been made to background. In these cases, background levels were determined in the risk assessment, Chapter 6 of the RI.

1. *Ground water Contamination Throughout AMTL [Parcel 1D-HS/HR/PS/PR/A/L/R]*

Groundwater sampling was performed to assess the effects of building operations on groundwater quality at the site. Between 10 December and 16 December 1991, ground water sampling of 31 wells was completed as part of the RI/FS. Ground water samples were collected from 26 on-site monitor wells at the facility and five off-site upgradient wells.

According to the Preliminary Assessment, the samples were analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), pesticides/PCBs, metals, cyanide, sulfide , and the radiological parameters of gross alpha, gross beta, and uranium isotopes U-234, U-235

and U-238. Results from this ground water sampling and analysis effort were used to identify hazardous substance and probable petroleum releases. The risk assessment report prepared by Life Systems Inc., dated December 1993, determined that since no route of human exposure to groundwater exists or is likely to exist at the site, there is no human health risks via this media. Based on monitoring well location, wells are grouped in the following zones:

- Upgradient wells north of the site;
- Wells located at the western end of the site;
- Wells located in the central portion of the site; and
- Wells located at the southeastern end of the site.

Furthermore, groundwater beneath AMTL is hydraulically downgradient of numerous industrial and commercial operations, located along and north of Arsenal Street, that could impact the quality of groundwater flowing onto the AMTL site. Existing operations that could affect groundwater quality include an automobile gasoline station, an electronics manufacturer, an auto body shop, an ironworks, and a steel fabrication shop. Past operations include the Hood Rubber Company and the Water Proof and Varnish Company.

Upgradient Wells

The upgradient wells at the northern end of the site were MW-9, MW-10, MW-13, MW-16, MW-16A, MW-22, MW-23 and MW-24.

With the exception of MW-9, detectable quantities of VOCs were found in all upgradient monitoring wells. The following VOCs exceeded the Massachusetts Contingency Plan (MCP) Method 1 groundwater standards in upgradient wells:

- 1,1-Dichloroethylene in MW-22 at 27 µg/L.
- Carbon Tetrachloride in MW-22 at 23 µg/L.
- Benzene in MW-22 greater than 3000 µg/L.

The following chemicals exceeded the Massachusetts Groundwater Quality Standards (MAGW):

- Benzene in MW-22.

- Ethylbenzene in MW-23.
- Tetrachloroethylene in MW-13 and MW-16.
- Trichloroethylene in MW-16A.
- Xylenes in MW-23.
- Toluene in MW-23.

Aromatic compounds and SVOCs typically associated with petroleum products were detected in MW-23 which is located adjacent to a service station off post on the opposite side of Arsenal Street.

The following inorganics exceeded MAGW standards:

- Iron in MW-23.
- Manganese in MW-16A and MW-23.
- Nitrite/nitrate in MW-16A and MW-23.
- Sodium in MW-09, MW-10, MW-13, and MW-23.

Western Wells

Groundwater from eight monitoring wells located at the western end of the site was sampled to assess the effects of Laboratory Buildings 39 and 292, hazardous materials storage buildings, and machine shops.

The western wells were MW-1, MW-2, MW-14, MW-15, MW-15A, MW-17, MW17A and MW-21. The following VOCs exceeded MAGW standards:

- Tetrachlorethylene in MW-15, MW-15A, MW-17A, and MW-21.
- Trichlorethylene in MW-15, MW-17A, and MW-21.

Lead in MW-15A at a concentration of 45 µg/L exceeded the MCP groundwater standards. The following inorganic compounds exceeded MAGW standards:

- Cadmium in MW-2.
- Chromium in MW-2.

- Lead in MW-17.

- Manganese in MW-1, MW-2, MW-14, MW-15, MW-15A, MW-17A and MW-21.

Central Wells

Groundwater from nine monitoring wells located in the central portion of the site was sampled to assess the effects of Buildings 43 (foundry and DU incineration) 313 (metal plating),and 312 (metal plating, DU and beryllium machine shops).

The central monitoring wells were C-2, MW-3, MW-4, MW-8, MW-12, MW-19, MW-19A, MW-19B and MW-20.

The following VOCs exceeded MAGW standards:

- Benzene in C-2.

- Ethylbenzene in C-2.

- Tetrachloroethylene in MW-8, MW-19A, and MW-20.

- Trichloroethylene in MW-8 and MW-19B.

- Xylenes in C-2.

- Toluene in C-2.

Benzo[a]anthracene, in MW-19A and MW-20, was the only SVOC exceeding MCP groundwater standards.

VOCs, SVOCs and inorganics were reported in monitoring well C-2. The organic contamination is indicative of fuel-related compounds which suggest a small fuel leak or spill although, according to the Preliminary Assessment, no tank or fuel lines are known to be located in the area.

Selenium in MW-19B was the only inorganic exceeding MCP groundwater standards. The following inorganics exceeded the MAGW standards:

- Iron in C-2.

- Manganese in C-2, MW-3, MW-8, MW-19A, MW-19B and MW-20.

- Nitrite/nitrate in MW-20.

- Sodium in C-2, MW-3, MW-4, MW-8, MW-12, MW-19, MW-19A, MW-19B and MW-20.

Southeastern Wells

The southeastern wells are located downgradient of the commander's quarters, the propellant storage area, the oil-tank farm, and operations in the central portion of the site. The southeastern wells include C-3, MW-5, MW-6, MW-7, MW-11 and MW-18.

The following inorganics exceeded the MAGW standards:

- Iron in MW-6.
- Lead in MW-6.
- Manganese in MW-5, MW-6, MW-11, and MW-18.
- Nitrite/nitrate in C-3.
- Sodium in C-3, MW-6, MW-11, and MW-18.

Building 36

Building 36, which measures 110 feet by 275 feet, was constructed in 1900. This building was previously used for manufacturing shells, gun carriages and storage of rubber and other materials. The building is now used for a library, cafeteria, auditorium, photographic laboratory and offices. The nature of operations in this building and discussions with site personnel indicate that it is likely that hazardous material, such as chemical fixing solutions for the photographic laboratory and materials used in ordnance manufacture, have been stored at this site.

Areas of indoor surface contamination which are indicative of a hazardous substance release have also been identified. The auditorium, basement, and Room 102 contained chemicals of concern [primarily metals and polychlorinated biphenyls (PCBs)] at concentrations exceeding background tolerance limits and calculated guidelines.

Some but not all of the Asbestos Containing Material (ACM) identified in this building has been removed. Due to the age of the building, lead-based paint (LBP), which is a CERFA Qualifier, is presumed present.

Building 37

Building 37 is a two-story brick building constructed in 1851 which has housed operations including a machine shop, an iron and brass foundry, an automotive repair shop, a paint shop and storage areas. The building was used as a motor pool at one time. Hydraulic lifts were removed in November 1993 and confirmatory laboratory soil sampling was not performed. Oil, solvents, paint, and other maintenance/manufacturing materials were stored in the building.

Areas of indoor surface contamination which are indicative of a hazardous substance release have been identified. Eighteen sampling areas contained chemicals of concern [primarily metals, with some pesticides, PCBs, and polynuclear aromatic hydrocarbons (PAHs)] at concentrations exceeding background tolerance limits and calculated guidelines.

SVOCs and metals such as chromium and copper have also been detected in the soil immediately outside of Building 37. The nature of the contamination indicates that both hazardous substances and petroleum products have been released to the environment.

Radon has been detected above action levels near openings in the floor and in a manhole outside the building.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Minor radiological contamination which had been detected in Building 37 was remediated as part of the facility decommissioning program. The final survey is complete. Only general decontamination activities were required.

Building 39

Building 39 is a five-story building constructed in 1922 as a private piano factory. The Army acquired the building in 1941 and has used it for a variety of purposes including laboratory and office space. In the 1950s, DU was melted and machined on the first and second floors.

Areas of indoor surface contamination which are indicative of a hazardous substance release have been identified. A total of 52 rooms contained chemicals of concern at concentrations exceeding background tolerance limits and calculated guidelines. The contaminants were primarily metals, with some SVOCs. Di-isopropylmethyl-phosphonate (DIMP), which

simulates a chemical agent, was detected in one wipe sample from Room 531.

Due to the hazardous materials releases and the nature of operations in this building as a laboratory and machine shop, hazardous materials storage is presumed.

Petroleum was stored in a 500-gallon UST on the east side of the building. The UST was removed in 1991. Also, a 3,000 gallon quench oil UST which was located northwest of Building 39 was removed in 1991. Confirmatory soil sampling and analysis of the excavation were not performed.

The CERFA site visit determined that a 500-gallon AST containing JP-5 was installed in November 1991. This tank is located outside Building 39 on the northeast corner of the building.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Radiological contamination which had been detected in Building 39 was remediated as part of the facility decommissioning program performed by the U. S. Army Corps of Engineers (USACE). Remediation activities included removing a sink, drain lines and tile from a laboratory on the fifth floor, gutting a room where DU was melted and removing a large sump and associated piping on the ground floor.

Following an asbestos survey, asbestos abatement (total removal of ACM) was performed on areas identified as having ACM. The complete removal of ACM indicates that this building should no longer be considered CERFA Qualified for asbestos.

Two transformers with 500 parts per million (ppm) of PCBs are in use on the roof of Building 39. They are scheduled to be retrofitted during FY 1994. Under CERFA guidelines, PCB-containing instruments that are in use are not considered either CERFA Qualifiers or CERFA Disqualifiers. Should these instruments be taken out of use and stored at the site, however, the site would then be considered Qualified for PCBs. Should a release occur, the site would be immediately Disqualified.

A PCB containing switch located in the electrical vault in the northeast corner of Building 39 was purged, remediated, and taken out of service in 1993.

Building 43

Building 43 is a large, high-bay, one story brick and steel building constructed in 1862. This building originally housed a blacksmith shop and later housed a DU foundry and a DU incinerator.

Areas of indoor surface contamination which are indicative of a hazardous substance release have been identified. The storage room contained chemicals of concern (primarily arsenic and other metals) at concentrations exceeding background tolerance limits and calculated guidelines.

In addition, mixed waste (waste that is both radioactive and hazardous) was stored in the building. During the CERFA site visit, site personnel stated that hazardous compounds were found below the concrete floor during the decommissioning program. However, the site had not yet been sufficiently characterized to identify the full range of contaminants other than those found in connection with storage room.

A 400-gallon UST containing a light weight oil was discovered during a trenching operation north of Building 43. The UST was apparently abandoned in place and was full of oil. The UST was removed on 27 October 1993. There were no visual signs of contamination. Confirmatory laboratory soil sampling and analysis of the excavation was not performed.

Floor tiles in the building have been identified as containing asbestos. No abatement (removal) activities have been undertaken.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Radiological contamination which had been detected in Building 43 was remediated as part of the facility decommissioning program. The final survey has been completed. Extensive remediation activities took place, including sand-blasting walls, ceilings and floors, removing sections of the concrete floor and excavating contaminated soil from beneath the floor.

A transformer with 6,700 ppm of PCBs is in use at Building 43. Under CERFA guidelines, a PCB-containing transformer in use is not a concern. CERFA is only concerned with PCB-containing transformers if they are in storage or show evidence of failure (releases to the environment).

Building 60

Building 60 was constructed in 1913 as the power plant for the post. The boiler was originally coal-fired, but was later converted to fuel oil

Petroleum storage occurred in three USTs which were located on the east and west sides of the building. On the east side of the building, a 1,000-gallon UST containing No. 2 fuel oil and a 500-gallon diesel fuel UST were removed on 23 October 1991 and 7 November 1991, respectively. These USTs were replaced with a 500-gallon aboveground storage tank containing diesel fuel.

On the west side of the building, a 1,000-gallon UST was removed on 23 October 1991 and was replaced by a 1,000-gallon aboveground storage tank containing No. 2 fuel oil.

Most, but not all, of the ACM in this building has been abated (removed). Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Building 97

Building 97 was constructed in 1920 and served as a locomotive repair shop until the 1950s when it was converted to house operations associated with the reactor.

Due to the nature of the maintenance and repair operations in this building, hazardous materials, such as solvents, and petroleum-based materials, such as lubricating oils and coolants, were used and stored in designated areas.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Radiological contamination which had been identified in this building was remediated as part of the facility decommissioning program. The final survey has been completed. Remediation activities included removing piping, a drain and a sump which was contaminated.

Building 111

Building 111 is a three-story, 12,000 square foot home, which was constructed of brick in 1865.

Areas of indoor surface contamination which are indicative of a possible hazardous substance release have been identified. Rooms 0.1, 2.1, and 3.1 contained arsenic, zinc, and lindane at concentrations exceeding background tolerance limits and calculated guidelines. The presence of lindane, a commonly used pesticide, most probably is the result of routine pesticide application.

According to David W. Gertey, a 275-gallon No. 2 heating fuel oil tank is located in the building. The tank is part of an auxiliary heating system and is checked twice annually.

This building contains ACM on several steam lines. Abatement (removal) activities have not yet been undertaken.

Radon has been detected in this building above action levels. Exhaust fans are used in the basement to reduce the radon levels.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Building 117

Building 117 was constructed in 1906 to house cows and horses and has since been converted to provide military housing.

A 550-gallon UST which was used to store No. 2 fuel oil for the building has been removed. Confirmatory soil sampling and analysis in the excavation was not performed. According to David W. Gertey, a 275-gallon No. 2 heating fuel oil tank is located in the building. The tank is part of an auxiliary heating system and is checked twice annually.

Radon has been detected in this building above action levels. Exhaust fans are used in the basement to reduce the radon levels.

ACM detected in crawl spaces of the building has not yet been remediated.

LBP has been identified in this building. Exterior shingles with LBP have been removed and the most accessible areas inside the building have been remediated. However, some areas of LBP remain in place.

Building 118

Building 118 was constructed in 1851 to house cows and horses and has since been converted to provide military housing.

Areas of indoor surface contamination which are indicative of a possible hazardous substance release have been identified. Room 1 contained lindane at a concentration exceeding background tolerance limits and calculated guidelines. The presence of lindane most probably is the result of routine pesticide application.

According to David W. Gertey, a 275-gallon No. 2 heating fuel oil tank is located in the building. The tank is part of an auxiliary heating system and is checked twice annually.

ACM detected in crawl spaces of the building has not yet been remediated.

Radon has been detected in this building above action levels. Exhaust fans are used in the basement to reduce the radon levels.

LBP has been identified in this building. Exterior shingles with LBP have been removed and the most accessible areas inside the building have been remediated. However, some areas of LBP remain in place.

Building 131

Building 131 is a two-story brick administration building which was constructed in 1900.

Areas of indoor surface contamination which are indicative of a possible hazardous substance release have been identified. Room 2 contained concentrations of lindane, dieldrin and zinc that exceeded background tolerance limits and calculated guidelines. Lindane was also detected in Rooms 3 and 39. The lindane and dieldrin are most probably the result of routine pesticide application.

Although personnel interviewed were unaware of a former UST at Building 131, a map of the post dated November 1977 (titled "General Tunnel and Oil Map") indicates that at one time there was a 275-gallon tank used to store No. 2 fuel oil at the building. According to David W. Gertey, the building is heated by steam from the power plant and that the building does not contain any heating oil tanks.

Most, but not all, of the ACM in this building has been abated (removed).

Radon has been detected in this building above action levels. Exhaust fans are used in the basement to reduce the radon levels.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Parking Lot between Buildings 37 and 131

A combination of an aerial photograph, a geophysical investigation and ground water sampling indicate that an underground storage tank could be buried in the parking lot between Buildings 37 and 131. The aerial photo shows what appears to be a gas pump in the vicinity of where a geophysical investigation detected anomalous readings, possibly indicating a buried metal tank. The area containing the anomalous readings is approximately 0.25 acres in size.

Furthermore, VOCs associated with fuel products have been detected in a monitoring well located downslope of this area. Therefore, it is probable that petroleum has been stored in this area and that there has been a release of petroleum. Further investigation of this area is planned by the Corps of Engineers in accordance with appropriate state regulations and with appropriate oversight during the field work.

Structure 226

Two 10,000-gallon No. 6 fuel oil tanks were located inside of a concrete bunker (Structure 226) to the north of Building 43. Both ASTs were removed on 7 September 1993. According to Sam Gilfix, the AMTL Environmental Coordinator, there were no obvious signs of contamination. He added that the tank removal operations were maintained by an officer of the Watertown Fire Department; tanks were intact on removal; there was no visual or olfactory evidence of leakage; soil tests with a portable photo-ionizer were negative.

Structure 227 and Surrounding Area:

Structure 227 is a brick and concrete containment structure housing pumping equipment and two 25,000-gallon No. 6 fuel oil tanks. Areas of indoor surface contamination in the form of extensive staining of floor and walls, indicative of a petroleum release, have been identified.

During the Phase 2 sanitary sewer investigation, personnel from Roy F. Weston, Inc. observed oil flowing through Manhole 113, located near the southwest corner of the tank farm in Structure 295. The oil source was determined to be from a ruptured line on the north side of Structure 227. Petroleum contaminated soils were removed to a depth of 14 feet, at which point the entire north wall of structure 227 and an area 13 feet below the foundation were exposed. Excavation was discontinued because further excavation may have compromised the structural integrity of the building.

Approximately 180 tons of contaminated soil, 25 tons of asphalt, 430 gallons of waste oil, and 1,500 pounds of oily solids were disposed of in accordance with federal and state regulations. The sewer line between Manholes 227 and 76 was cleaned, and the abandoned sewer line running southwest from Structure 227 was cleaned and sealed off. All remediation operations were performed under the supervision of the Massachusetts Department of Environmental Protection.

According to onsite personnel, plans are currently underway for further remediation of the area.

Testing has confirmed the presence of LBP.

Building 229

Building 229 is a 9 foot by 15 foot concrete building constructed in the 1940s to house cooling oil pumping equipment. A 3,000-gallon UST which was used to store coolant oil at the building was removed on 23 October 1991. The CERFA investigation was unable to locate documentation of confirmatory laboratory samples.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Asbestos abatement (total removal) was performed on all areas known to contain ACM.

Building 243

Building 243 is a 600 square foot brick building constructed in the 1950s. Chemicals (including acids and used laboratory chemicals) are stored in the building prior to use or disposal. Areas of indoor surface contamination which are indicative of a hazardous substance release have been identified. Rooms 1, 2, 3, and 4 each contained chemicals of concern (including zinc, arsenic, dieldrin, PCB 1254, and PCB 1260) at concentrations exceeding background tolerance limits and calculated guidelines. The presence of dieldrin most probably is the result of routine pesticide application.

In addition to the storage of hazardous materials described above, this building also contained a storage area for mixed waste.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Structures 244 and 245

Structures 244 and 245 are propellant/explosive storage bunkers located in the southeast corner of the site. The bunkers were used to store explosive material, which is considered a hazardous material for CERFA purposes.

Structure 245 contained 2,4-Dinitrotoluene (2,4-DNT) at a concentration exceeding background tolerance limits and calculated guidelines.

Due to the age of these structures, LBP, which is a CERFA Qualifier, is presumed present.

Building 292

Building 292 is a two-story brick building constructed in 1920 which currently houses offices and laboratories. The nature of the operations in this building require the storage of hazardous laboratory chemicals, such as solvents, acids, and caustics.

Areas of indoor surface contamination which are indicative of a hazardous substance release have been identified. Rooms 133, 134, 125, 128, 106, 132, 244, 245, and 250 contained chemicals of concern at concentrations exceeding background tolerance limits and calculated guidelines. Typical contaminants included PCBs, PAHs [predominantly benzo(b,k)fluoranthene] and metals.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Radiological contamination which had been detected in Building 292 was remediated as part of the facility decommissioning program. The final survey is complete.

Structure 295

Structure 295 consists of a large concrete containment area housing four 100,000-gallon aboveground No. 6 fuel oil storage tanks. The fuel is used by the power plant.

Petroleum releases have occurred in the containment area. In 1977, a release of No. 6 oil leaked through the containment wall and approximately 50 gallons reached the Charles River. The release was remediated shortly after the spill event. In January 1988, a 3,000-gallon oil spill occurred from an overfill accident involving No. 6 oil. The oil was

contained in the containment area and was removed by a qualified, licensed contractor.

Due to the age of the structure, LBP, which is a CERFA Qualifier, is presumed present.

Building 311

Building 311 is a large, high-bay warehouse and machine shop, constructed of brick and steel in 1917, with several later additions. The building has been used to store drums of chemical waste and petroleum products in a variety of locations in the building.

Areas of indoor surface contamination which are indicative of a hazardous substance release have also been identified. Thirty-three rooms/sampling areas contained chemicals of concern at concentrations exceeding background tolerance limits and calculated guidelines. The wide variety of chemicals detected, including metals, PCBs, PAHs, and lindane, is not surprising considering the wide variety of industrial activities in the building. The presence of lindane may be the result of routine pesticide application.

A variety of hazardous substances have also been detected in the soil beneath the concrete floor and immediately outside of Building 311. The solvent compounds trichloroethylene (TCE) and tetrachloroethene (PCE), as well as PAHs and metals such as chromium, arsenic, and barium, were found at elevated levels.

This building contains ACM which has not yet been abated (removed). Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Radiological contamination which had been detected in Building 311 was remediated as part of the facility decommissioning program. The final survey is complete. Remediation activities included cleaning former machining areas, scabbling the concrete and cleaning the walls and floors of storage areas.

Three transformers with concentrations of PCBs ranging from 63 to 500 ppm are in use at Building 311. The one with 500 ppm of PCBs is scheduled to be retrofilled during FY 1994. A switch containing 500 ppm of PCBs is also located at Building 311. This switch is scheduled to be retrofilled in FY 1994. Under CERFA guidelines, PCB-containing instruments that are in operation are not of concern.

Building 312

Building 312 is a three story brick and steel building constructed in 1894. Plating operations which took place on the first floor resulted in the storage of hazardous substances, such as acids and cyanide-bearing solutions. Also, beryllium and DU machining operations took place here, which also indicates the storage of petroleum products such as lubricating oils and coolants.

Areas of indoor surface contamination which are indicative of a hazardous substance release have been identified. Twenty four sampling areas contained chemicals of concern (primarily metals, with some PCBs and PAHs) at concentrations exceeding background tolerance limits and calculated guidelines. Mercury contamination is known to exist in the "Crystal Room".

During building decommissioning, evidence that hazardous substances were released was found below much of the concrete floor. The contaminants detected included those commonly in use at the building.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

Radiological contamination which had been identified in this building was remediated as part of the facility decommissioning program. The final survey has been completed. Extensive remediation activities took place, including removal of the plating vats, removal of most of the concrete floor in the plating and machining areas, replacement of sewer lines and cleaning of the exhaust system for the DU and beryllium machine shops.

Asbestos abatement (total removal of ACM) was performed on all areas known to have contained ACM.

Building 313

Building 313, which currently houses a mixture of shops, laboratories and offices, was constructed in 1862 in the shape of a capital E. This building was used in testing of materials through use of explosives. The nature of the operations in the laboratories indicates that this building was used for storage of hazardous laboratory chemicals, such as solvents, acids, and caustics.

Areas of indoor surface contamination which are indicative of a hazardous substance release have been identified in this building. Several rooms contained chemicals of concern (primarily metals, along with PAHs and

the explosive compound 2,4-DNT) at concentrations exceeding background tolerance limits and calculated guidelines.

Radioactive contamination was present in a large cistern beneath the center wing of the building. Sediment in the cistern contained 40 to 50 picocuries per gram (pCi/g) of uranium in two samples. The cistern was drained and wastewater and sediment were analyzed and disposed of in an appropriate manner. The final survey is complete. Remediation activities included cleaning trenches in shops, removing some equipment and cleaning the vents from the firing range.

In addition, lead is present related to the use of a firing range in the building's basement.

Due to the age of the building, LBP, which is a CERFA Qualifier, is presumed present.

A transformer with 500 ppm of PCBs is in use at Building 313. Fifty capacitors from this building were removed in February and April 1993. PCB-containing instruments in operation are not a concern under CERFA.

Soil Sampling

Throughout the long and varied history of the installation operations at AMTL, various tanks, drum staging areas, and material receiving and unloading areas have contributed to surficial soils contamination throughout the site. Many of the areas described previously in this report have shown evidence of soil contamination. Contaminants present at the site are discussed below. All of the sampling described below originated during Phase I or II of the Remedial Investigation (RI). Chemical and radiological concentrations comparisons to background are made in which background levels were determined in the RI.

One surface soil sample was taken west of Building 243. Low concentrations of pesticides, PCBs and SVOCs were detected above background.

A total of six boring samples from three soil borings near Building 243 were collected. Low concentrations of pesticides, PCBs and/or SVOCs were detected above background in boring 01SB-1 and boring 01SB-2 Mercury was reported above background in boring 01SB-2 and surface sample 04SS-1. Inorganic compounds were also reported in boring 04SB-1

Soil samples from MW-14 and MW-1 indicated that the toxic metal cadmium exceeded background levels.

TCE was detected above background in borings 02SB-4, 03SB-2 and 02SB-3 and PCE exceeded the background concentration in boring 02SB-4.

VOCs, SVOCs, pesticides and/or inorganic compounds were above background in boring 02SB-3, boring 02SB-2, boring 02SB-4, boring 03SB-2, boring 05SB-1, boring GRSB-5, boring 05SB-2, surface sample 06SB-1, surface sample 03SS-1, surface sample 05SS-1, and surface sample 02SS-1.

Benzene and toluene were detected above background level in boring 14SB-1.

VOCs, SVOCs, pesticides and/or inorganic compounds were above background in boring 07SB-1, boring GRSB-7, boring 03SB-2, boring 03SB-2, boring 08SB-2, boring GRSB-10, boring 09SB-1, boring GRSB-15, boring 11SB-1, boring 11SB-4, boring 11SB-3, surface sample 03SS-1, surface sample 03SS-1, surface sample 08SS-1, surface sample 09SS-1and surface sample 09SS-2.

One SVOC, di-N-butyl phthalate was reported above background in boring GRSB-24. Mercury and nitrate/nitrate were reported above background in surface sample 16SS-2.

SVOCs, pesticides and/or inorganic compounds were above background in boring 12SB-1, boring GRSB-13, boring 12SB-2, and boring 12SB-3.

SVOCs, pesticides and/or inorganic compounds were above background in boring 11SB-4, boring GRSB-15, boring 11SB-1, boring 11SB-3, boring 11SB-4, boring GRSB-10, boring 09SB-1, boring GRSB-15, boring 11SB-1, boring 11SB-4, boring 11SB-3 surface sample 03SS-1, surface sample 08SS-1, surface sample 09SS-1, and surface sample 09SS-2.

Benzo(a)pyrene and phenanthrene were detected above background in 17SB-2

The PCB compound Aroclor 1260 was detected in 11SB-1.

The isotope U-238 was reported above background tolerance in boring 08SB-2.

Gross alpha activity was reported above background in boring 05SB-2 and boring GRSB-6. Gross beta activity was reported above background in boring 06SB-4 and boring GRSB-6. U-238 and U-234 were above background in boring 05SB-2, boring 06SB-2, and boring 06SB-4.

Gross alpha activity was reported above background in boring GRSB-15. Gross beta activity was reported above background in boring 09SB-1,

boring GRSB-6, boring 11SB-2 and boring 11SB-3. U-238 and/or U-235 were above background in boring 03SS-1, boring 09SB-1, boring 11SB-1, boring 11SB-2, boring 11SB-3, boring 11SB-4 and boring GRSB-15.

Gross beta activity was reported above background in boring 12SB-2, boring GRSB-15, boring. U-238 and/or U-235 were detected above background in boring 13SB-2 and boring 13SB-3.

Gross alpha activity was reported above background in boring GRSB-15. Gross beta activity was reported above background in boring 11SB-2 and boring 11SB-3. U-238 and/or U-235 were above background in boring 11SB-2, boring 11SB-3, boring 11SB-4 and boring GRSB-15.

Cisterns, Sumps, and Dry Wells

A total of 26 (11 outdoor and 15 indoor) containers were sampled as part of the Phase 2 RI effort. Data from 23 of the 26 containers sampled indicated that one or more metals regulated under the Resource Recovery and Conservation Act (RCRA) were present at concentrations above the established risk assessment background levels.

Results of radiological sampling indicated that containers in or associated with buildings historically engaged in radiological laboratory or manufacturing processes contained radiological contamination. These structures have been decontaminated.

Building 100

Building 100 formerly housed a reactor used for research related to DU and other projects. The demolition of the reactor is currently underway. The decommissioning met the NRC's requirements for unrestricted reuse. The LLRW generated during decommissioning was disposed of in accordance with all applicable regulations.

Because the reactor shell was constructed prior to 1973, lead-based paint, which is a CERFA Qualifier, is presumed present. Building 100 is included in this section because it is located within the larger Disqualified Parcel 1.

Following an asbestos survey, asbestos abatement (total removal) was performed on all areas identified as having ACM. A transformer with 180 ppm of PCBs is not in use at Building 100. However, the transformer continues in operation for other buildings at the site. Based on the total removal of ACM and the operating status of the transformer, this site is not considered CERFA Qualified for asbestos or PCBs.

Tunnels

Steam lines from Building 60 to various buildings on the site are located in underground tunnels. Many of the steam lines are wrapped with ACM insulation and require abatement (removal). Friable asbestos is located between Building 60 and Building 43 and beneath Building 39.

Due to the age of the tunnel system, LBP, which is a CERFA Qualifier, is presumed present. This site is included in this section because it is part of the larger Disqualified Parcel 1.

4.2 *ADDITIONAL AREAS IDENTIFIED*

Several areas of environmental concern, not previously reported, were identified during the CERFA site visit/investigation. Because they are all located within the boundaries of the CERFA Disqualified Parcel, they are discussed in Section 4.1.

One 500-gallon AST containing JP4/5 fuel located outside Building 39.

A 400-gallon UST containing a light weight oil was discovered in October 1993 north of Building 43. It was removed on 27 October 1993.

One 275-gallon #2 fuel oil AST in Building 111.

One 275-gallon #2 fuel oil AST in Building 117.

One 275-gallon #2 fuel oil AST in Building 118.

Two 10,000-gallon fuel oil tanks were removed from inside Structure 226 in September 1993.

Remediated petroleum release from tanks outside Structure 295.

Storage of petroleum in drums in Building 311.

Soil contaminated with TCE, PCE, and metals in Building 311.

Asbestos covering steam lines in tunnels throughout the installation.

4.3 *ADJACENT/SURROUNDING PROPERTIES*

Three sites within the one-half mile radius are listed with the Commonwealth of Massachusetts as disposal sites. They are as follows:

- Former BP Gas Station, which is located 2,500 feet east of AMTL
- Boston Edison, which is located 1,500 feet northeast of AMTL
- Watertown Mall, which borders the AMTL site on the west

Other than the spill of 2,000 gallons of transformer oil at Boston Edison, described in Section 2.2, there are no known activities at these sites that are likely to impact environmental conditions at AMTL.

There are number of other commercial and industrial facilities in close proximity to AMTL. Existing operations in the area that could affect ground water quality include an automobile gasoline station, an electronics manufacturer, an auto body shop, an active railroad spur, an ironworks and a steel fabrication shop. Past operations include Hood Rubber Company and the Water Proof and Varnish Company.

Upgradient monitoring wells located on these properties have reported impacts to ground water quality. Sampling results have indicated the presence of elevated levels of both metals and organics. In addition, monitoring wells located on the northern boundary of the site have similar contaminants as these upgradient wells. These contaminants may be migrating on site from these upgradient properties. See Section 4.1, Disqualified Parcel 1, for a more complete description of ground water monitoring results.

4.4 *RELATED ENVIRONMENTAL, HAZARD, AND SAFETY ISSUES*

Military installations frequently contain issues which the U.S. Army Environmental Center (USAEC) believes fall outside of the provisions of CERFA. For example, while a release of lead-based paint onto the ground may be a CERCLA concern, the application of lead-based paint to a building surface is generally not. However, lead-based paint applied to buildings may represent a safety hazard to young children. Similarly, other substances or material commonly applied to or found in buildings (for example, radon and asbestos) may not be explicitly regulated under CERCLA, but may require a notice to potential transferees and lessees that they exist.

USAEC has sought to balance the statutory requirements of CERFA with the law's intent to identify uncontaminated property to the public which can be expeditiously reused. Notice has been provided for those parcels which appear to be uncontaminated under the definition provided in CERFA, but which may contain environmental, hazard, or safety issues. Buildings which contain asbestos-containing materials, lead-based paint, or naturally occurring radon fall into this category and are identified as "CERFA Qualified Parcels" in this CERFA report. Parcels which contain

stored (not in use) equipment containing 50 parts per million (ppm) or more of polychlorinated biphenyl (PCB) oil, low level radionuclide-containing equipment such as dials and weapon site posts, and unexploded ordnance are also designated "CERFA Qualified Parcels".

In those cases, however, where for example, asbestos or PCBs have been disposed in the environment, the parcel has been identified as "CERFA Disqualified". In this example, the designation indicates that a CERCLA hazard may exist at this location.

In addition to the sites previously identified in Section 4.1, the sanitary sewer serving the AMTL installation was found to contain radiological contamination. This sewer system is not considered to be a CERFA Qualified Parcel. Under CERFA guidelines, discharge to such a system does not represent a release or storage. However, should it be determined in future investigations that releases to the environment had occurred through cracks or breaks in the sewer line, the areas of contamination would fall under the authority of the CERFA process. Therefore, the results of the investigation of this sewer system are discussed briefly below. The storm sewer system was similarly investigated, but the investigation did not identify any radiological contamination.

Sanitary sewers were investigated for radiological contamination during the RI/FS study. DU contamination was present in several manholes. On North Beacon Street, uranium concentrations were found in the sediment in manholes 120, 01, 78, 67, 36, and 35. Radiological decontamination associated with these manholes has been completed. South of Building 312, manhole 74 was replaced as part of the site radiological remediation.

Table 4.4-1 contains a listing of AMTL buildings with CERFA Qualifiers.

4.5 *EXCLUDED AREAS*

No portion of the AMTL installation is considered to be a CERFA Excluded Parcel.

Table 4.4-1
Buildings with CERFA Qualifiers
Army Material Technology Laboratory (AMTL)
Watertown, Massachusetts

Buildings	Qualifiers
36	A/L(P)
37	R/L(P)
39	L(P)
43	A/L(P)
60	A/L(P)
97	L(P)
100	L(P)
111	A/R/L(P)
117	A/R/L
118	A/R/L
131	A/R/L
227	L
229	L(P)
243	L(P)
244/245	L(P)
292	L(P)
295	L(P)
311	A/L(P)
312	L(P)
313	L(P)

A Asbestos-containing material
A(P) Asbestos-containing material (possible)
L Lead-based Paint
L(P) Lead-based paint (possible)
R Radon

5.0 SITE PARCELIZATION

After concluding the review of investigation documents, regulatory records, personnel interviews and visual inspections, ERM identified parcels on the installation as CERFA Parcel, CERFA Qualified Parcels, CERFA Disqualified Parcels, or CERFA Excluded Parcels in accordance with the definitions in Section 1.2. The parcels are delineated on a map of the BRAC portion of the installation using a one-acre square grid for boundary definition.

The Army chose a one-acre grid system to aid in the presentation of data gathered during the CERFA report investigation, and to facilitate use of the document by reuse groups and others. The one-acre grid provided a consistent method to report and locate environmental or other concerns. In the many cases where the concerns are much smaller than one acre, the grid system simplifies the depiction of the concern. Accordingly, the areal extent of many small areas of concern, such as UST sites, are liberally depicted in the CERFA report.

Additionally, the one-acre grid size was chosen as a generally redevelopable parcel size for either industrial or residential uses. However, the grid does not drive reuse nor restrict it. Reuse decisions should be made irrespective of the grid.

The entire one-acre grid square is colored or shaded to indicate the applicable parcel category based on the history of storage or release for any portion of that square. Parcels are labeled according to a system outlined in Section 1.2 of this report to indicate the applicable parcel category and the contaminating circumstances. Parcel labels are connected to the respective parcel boundaries by a line or are located within the parcel boundaries.

Where CERFA Disqualified Parcels and CERFA Qualified Parcels have coincided, the overlapped area has been designated CERFA Disqualified. Labels for any such overlapped parcels also indicate the presence of the qualifying hazards. CERFA Excluded Parcels have been excluded from this investigation of contaminant locations and therefore have no overlapping CERFA Disqualified Parcels or CERFA Qualified Parcels. Structures within CERFA Disqualified Parcels that contain qualifying safety hazards are designated with the applicable qualifying label, where map scale permits this level of detail.

ERM's investigation and subsequent parcelization of AMTL determined that no acres of the facility fall within the CERFA Parcel category. No

acres of the facility are categorized as CERFA Qualified Parcels. The entire facility constitutes a CERFA Disqualified Parcel. There is no CERFA Excluded Parcel.

In determining the applicable parcel categories for the installation property, ERM observed the following guidance provided by the USAEC for specific circumstances:

- Buildings constructed prior to 1978 are assumed to contain lead-based paint. A similar assumption is made for asbestos in buildings constructed prior to 1985.
- Storage of petroleum products, petroleum derivatives and CERCLA regulated hazardous substances will prevent an area from becoming a CERFA Parcel as long as that storage is for one year or greater. The quantity of substances stored is not relevant to determining the applicable parcel category. However, if the operation requiring such substances is in the immediate area, and the storage is in limited quantities for immediate use, the area is not precluded from being a CERFA Parcel.
- Non-leaking equipment containing less than 50 ppm PCBs does not preclude an area from becoming a CERFA Parcel. Non-leaking, out-of-service equipment with greater than 50 ppm PCBs will place an area in the CERFA Qualified Parcel category. An area is designated CERFA Disqualified if there is a known release containing greater than 50 ppm PCBs.
- Areas where there are transport systems or process equipment which handle hazardous material or petroleum products and upon which there have been no release, storage, or disposal are categorized as CERFA Parcels.
- Ordnance disposal locations are designated CERFA Disqualified. This does not include ordnance impact areas which are designated CERFA Qualified Parcels.
- Routine pesticide and herbicide application in accordance with manufacturer's directions and chlorofluorocarbons and halon in operational systems do not preclude an area from becoming a CERFA Parcel.
- Coal storage piles and railroad tracks do not be themselves preclude an area from becoming a CERFA Parcel.

5.1 *CERFA CATEGORY AND DESIGNATION MAP*

Table 5.1-1 and Figure 5.1-1 identify the breakdown of AMTL according to the criteria for parcel identification under CERFA.

Table 5.1-1
AMTL Site
Watertown, MA

PARCEL NUMBER (SIZE)	NAME AND LOCATION	CATEGORY	BASIS	SOURCE OF EVIDENCE	REMEDIATION
1D: PS/PR/HS/ HR/A/L/L(P)/R (47.5 ACRES)	Ground Water Coordinates: Various	Disqualified	VOCs, SVOCs, metals release to ground water detected in wells located throughout site.	Phase II RI (1992)	Addressed in Feasibility Study.
	Bldg. 36 Coordinates: 8,8	Disqualified	Indoor surface chemical contamination w/metals/PCB's use/storage of photo lab chemicals	Phase II RI (1992)	Under investigation in conjunction with MA DEP
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation on-going.
			Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 37 Coordinates: 10,8	Disqualified	Indoor surface chemical contamination w/ metals, PCBs, and PAHs	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			Soil contamination with SVOCs and metals	Phase II RI (1992)	Addressed in Feasibility Study.
		Qualified	Radon	Phase II RI (1992)	Investigation on-going.
			Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 39 Coordinates: 4,9	Disqualified	Indoor surface chemical contamination with metals and SVOCs	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			500 gal. UST for JP4/5 fuel	9/93 Site visit	UST replaced by AST in 1991.
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.

Table 5.1-1
AMTL Site
Watertown, MA

PARCEL NUMBER (SIZE)	NAME AND LOCATION	CATEGORY	BASIS	SOURCE OF EVIDENCE	REMEDIATION
	Bldg. 43 Coordinates: 10,9	Disqualified	Indoor surface chemical contamination with metals	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			Storage of mixed waste in drums	Mixed Waste Management Guide	Decommissioning on-going.
			400 gal. UST for oil	Teleconference with Samuel Gilfix	Removed 10/27/93. No samples taken
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation is on-going.
			Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 60 Coordinates: 8,7	Disqualified	Petroleum storage in tanks	Phase II RI (1992)	USTs replaced by ASTs.
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation on-going.
			Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 97 Coordinates: 5,8	Disqualified	Storage/use of hazardous materials (solvents, oils)	Phase II RI (1992)	
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.

Table 5.1-1
AMTL Site
Watertown, MA

PARCEL NUMBER (SIZE)	NAME AND LOCATION	CATEGORY	BASIS	SOURCE OF EVIDENCE	REMEDIATION
	Bldg. 100 Coordinates: 6,8	Qualified	Lead paint (P)	Phase II RI (1992)	Demolition planned in 1994.
	Bldg. 111 Coordinates: 11,5	Disqualified	Indoor surface chemical contamination with metals and lindane	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			275 gal. tank for #2 fuel	David W. Gerety	
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation on-going.
			Radon	Phase II RI (1992)	Exhaust fans installed in basement.
			Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 117 Coordinates: 9,6	Disqualified	275 gal. AST for #2 fuel (active)	David W. Gerety	
			275 gal. UST for #2 fuel (former)	David W. Gerety	Tank removed.
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation is on-going.
			Radon	Phase II RI (1992)	Exhaust fans installed in basement.
			Lead paint	Phase II RI (1992)	Limited removal completed.

Table 5.1-1
AMTL Site
Watertown, MA

PARCEL NUMBER (SIZE)	NAME AND LOCATION	CATEGORY	BASIS	SOURCE OF EVIDENCE	REMEDIATION
	Bldg. 118 Coordinates: 9,6	Disqualified	Indoor surface chemical contamination with lindane	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			275 gal. tank for #2 fuel (P)	David W. Gerety	
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation on-going.
			Radon	Phase II RI (1992)	Exhaust fans installed in basement.
			Lead paint	Phase II RI (1992)	Limited removal completed.
	Bldg. 131 Coordinates 10,6	Disqualified	Indoor surface chemical contamination with metals	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			275 gal. tank for #2 fuel	Base Map	Tank no longer in place.
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation on-going.
			Radon	Phase II RI (1992)	Investigation on-going.
			Lead paint	Phase II RI (1992)	Future use will determine need for remediation.
	Parking lot near Bldg. 37 & 131 Coordinates: 10,7 Size: 0.25 acres	Disqualified	Petroleum storage in UST	Phase II RI (1992)	Future investigation is planned.
			Petroleum release from UST	Phase II RI (1992)	Future investigation is planned.
	Strct. 226 Coordinates: 9,9	Disqualified	Two 10,000-gal. ASTs for #6 fuel	9/93 Site visit	ASTs removed in 1993.
	Strct. 227 Coordinates: 8,7	Disqualified	Indoor surface chemical contamination with petroleum	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			Petroleum release from pipes	Phase II RI (1992)	Some but not all soil contamination removed. Additional soil

Table 5.1-1
AMTL Site
Watertown, MA

PARCEL NUMBER (SITE)	NAME AND LOCATION	CATEGORY	BASIS	SOURCE OF EVIDENCE	REMEDIATION
					removal planned.
			Two 25,000 gal. tanks for #6 fuel	Phase II RI (1992)	Tanks in-use.
		Qualified	Lead paint	Phase II RI (1992)	Future use will determine need for remediation.
	Strct. 229 Coordinates: 3,9	Disqualified	3,000 gal. UST for coolant oil	Base Map	Tank removed.
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 243 Coordinates: 3,10	Disqualified	Indoor surface chemical contamination with metals and PCBs	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			Storage of laboratory chemicals and mixed waste	Phase II RI (1992)	Under investigation in conjunction with MA DEP
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldgs. 244/245 Coordinates: 11,3	Disqualified	Explosives stored in bunkers (2,4-DNT)	Phase II RI (1992)	
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 292 Coordinates: 5,8	Disqualified	Indoor surface chemical contamination with PCBs, PAHs, metals Storage of laboratory chemicals.	Phase II RI (1992)	Under investigation in conjunction with MA DEP
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.

Table 5.1-1
AMTL Site
Watertown, MA

PARCEL NUMBER (SIZE)	NAME AND LOCATION	CATEGORY	BASIS	SOURCE OF EVIDENCE	REMEDIATION
	Strct. 295 Coordinates: 8,5	Disqualified	Four 100,000 gal. #6 fuel tanks	Phase II RI (1992)	Tanks in use.
			Petroleum release from tanks	9/93 Site visit	Past spills remediated.
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 311 Coordinates: 6,10	Disqualified	Storage of chemical waste	Mixed Waste Management Guide (1992)	Decommissioning completed in 1993.
			Indoor surface chemical contamination with metals, PCBs, PAHs	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			Storage of petroleum in drums	9/93 Site visit	Under investigation in conjunction with MA DEP
			Soil contamination with TCE, PCE, and metals	9/93 Site visit	Under investigation in conjunction with MA DEP
		Qualified	Asbestos	Phase II RI (1992)	Asbestos remediation on-going.
			Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Bldg. 312 Coordinates: 9,8	Disqualified	Indoor surface chemical contamination with metals, PCBs, PAHs	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			Storage of acids, solvents, and oils in drums	Mixed Waste Management Guide (1992)	Decommissioning on-going.
		Qualified	Lead paint	Phase II RI (1992)	Future use will determine need for remediation.

Table 5.1-1
AMTL Site
Watertown, MA

PARCEL NUMBER/ SIZE/	PARCEL AND LOCATION	CATEGORY	BASIS	SOURCE OF EVIDENCE	REMEDIATION
	Bldg. 313 Coordinates: 10,8	Disqualified	Indoor surface chemical contamination with metals, PAHs, 2,4-DNT	Phase II RI (1992)	Under investigation in conjunction with MA DEP
			Storage of laboratory chemicals	Phase II RI (1992)	
		Qualified	Lead paint (P)	Phase II RI (1992)	Future use will determine need for remediation.
	Soil Coordinates: Various	Disqualified	TCE, PCE, mercury, PAH, PCB release to soil detected in soil samples located throughout site.	Phase II RI (1992)	Addressed in Feasibility Study.
	Cisterns, Sumps & Dry Wells Coordinates: Various	Disqualified	Metals release detected in containers located throughout site	Phase II RI (1992)	Addressed in Feasibility Study.
	Steamlines in Tunnels	Qualified	Asbestos	9/93 Site Visit	
	Coordinates: Various	Qualified	Lead paint (P)	9/93 Site Visit	

Parcel Category
D = CERFA Disqualified Parcel
Q = CERFA Qualified Parcel
E = CERFA Excluded Parcel
P = CERFA Parcel

(P) = Possible

Disqualified Designations
PS = Petroleum Storage
PR = Petroleum Release/Disposal
HS = Hazardous Materials Storage
HR = Hazardous Materials Release/Disposal

Qualified Designations
A = Asbestos
L = Lead-Based Paint
P = PCBs (Polychlorinated biphenyls)
R = Radon
X = UXO (unexploded ordnance)
RD = Radionuclides

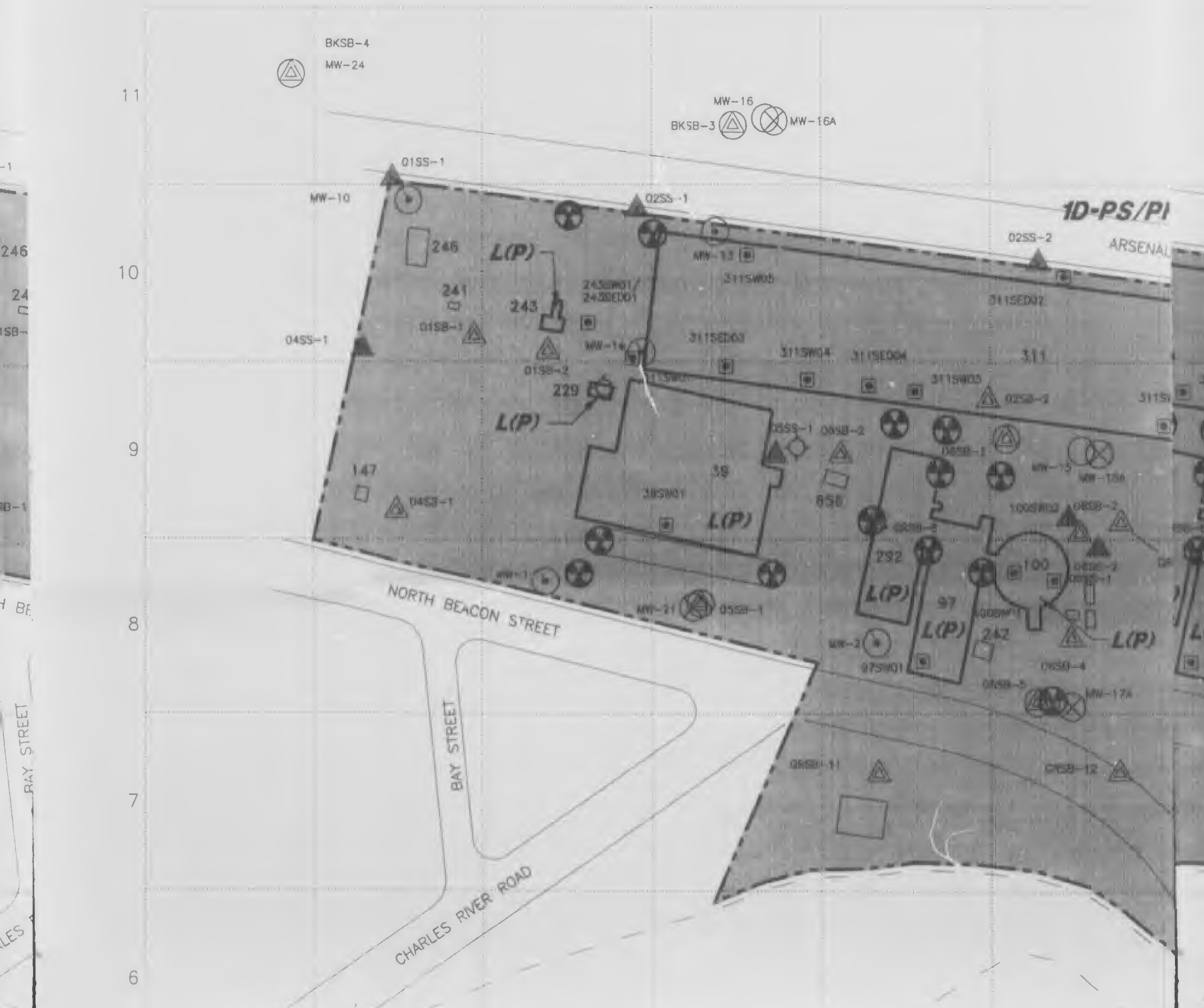
5.2 *CERFA TRACT MAP*

The property boundaries and all property transfers including prior ownership information is shown in Figure 5.2-1.

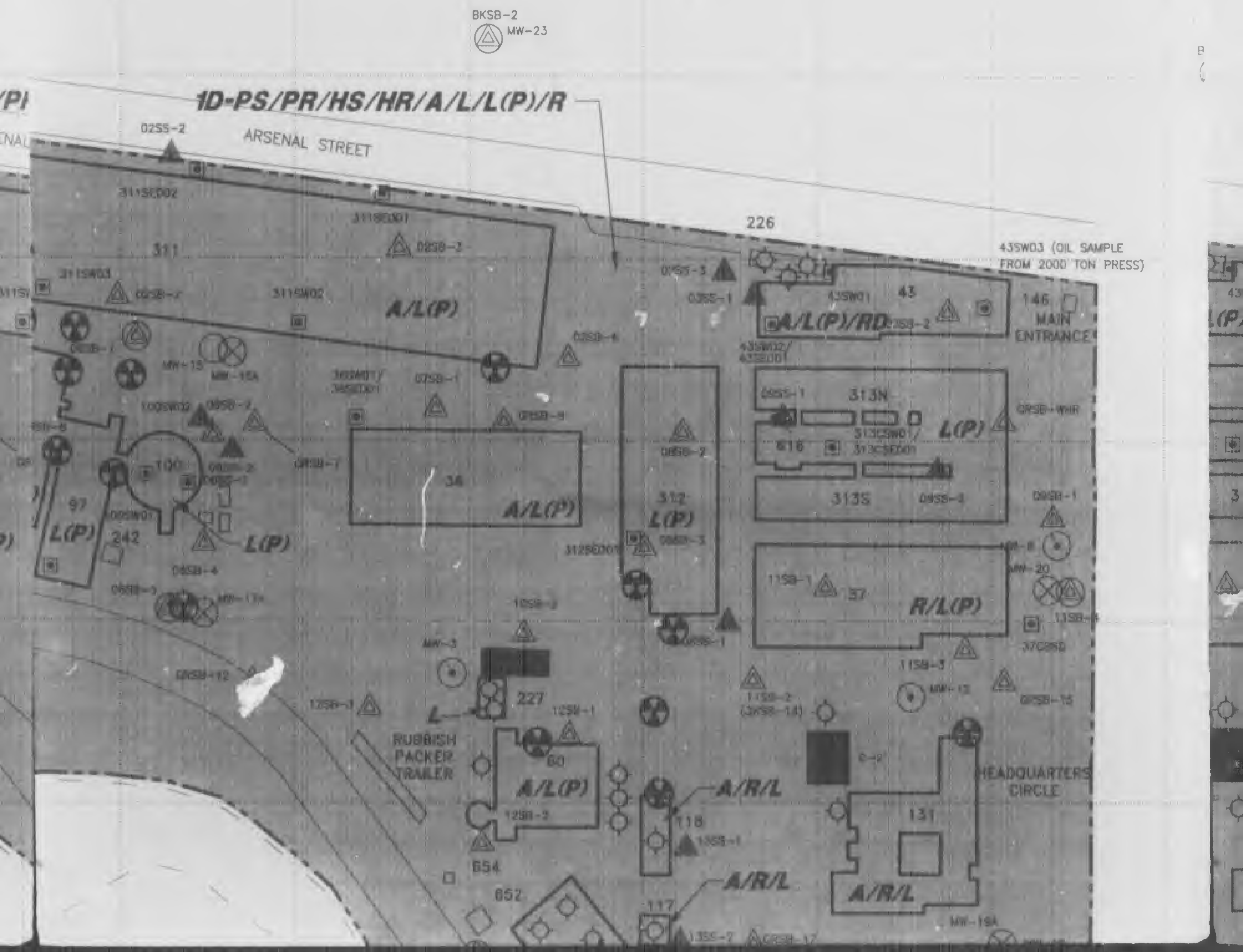
5.3 *CERFA PARCEL DESIGNATORS*

Figure 5.3-1 summarizes the breakdown of AMTL according to the criteria for parcel identification under CERFA.

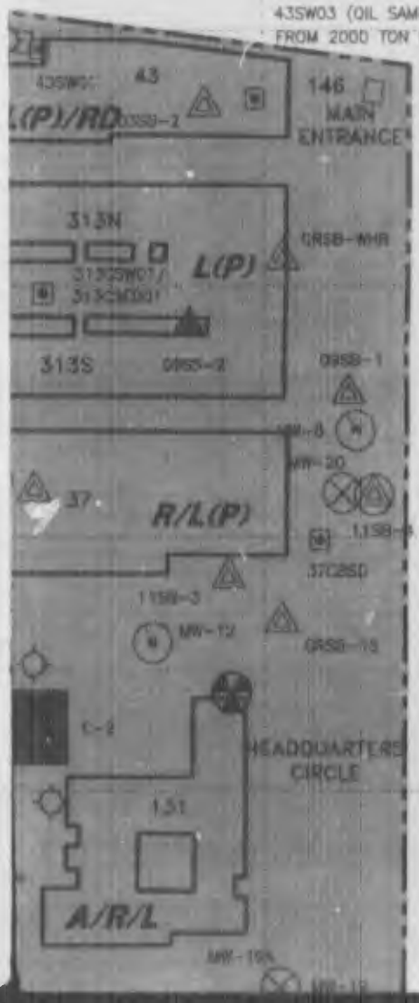

N
BKSB-4
MW-24
11
01SS-1
MW-10
246
10
24
04SS-1
9
147
NORTH BE
8
BAY STREET
7
CHARLES
6



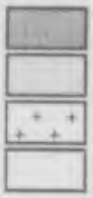
11
10
9
8
7
6
BKSB-4
MW-24
MW-16
BKSB-3
01SS-1
MW-10
02SS-1
02SS-2
1D-PS/PI
ARSENAL
246
241
243
L(P)
01SB-1
01SB-2
04SS-1
229
147
04SB-1
39
L(P)
650
292
97
100
242
NORTH BEACON STREET
BAY STREET
CHARLES RIVER ROAD


BKSB-2
MW-23
1D-PS/PR/HS/HR/A/L/L(P)/R
02SS-2
ARSENAL STREET
311
A/L(P)
226
43SW03 (OIL SAMPLE FROM 2000 TON PRESS)
43
A/L(P)/RD
146
MAIN ENTRANCE
313N
L(P)
616
313S
36
A/L(P)
312
L(P)
37
R/L(P)
100
97
L(P)
242
L(P)
227
RUBBISH PACKER TRAILER
60
A/L(P)
A/R/L
118
117
A/R/L
131
A/R/L
HEADQUARTERS CIRCLE
654
652

BKSB-1
MW-22


43SW03 (OIL SAMPLE
FROM 2000 TON PRESS)
43
146
MAIN
ENTRANCE
313N
L(P)
313S
37
R/L(P)
HEADQUARTERS
CIRCLE
151
A/R/L

LEGEND:



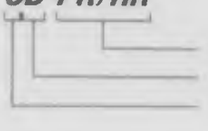
CERFA DISQUALIFIED

CERFA QUALIFIED

CERFA EXCLUDED

CERFA PARCEL

PARCEL LABEL



PARCEL DESIGNATION

PARCEL CATEGORY

PARCEL NUMBER AS NOTED ON DRAWING AND TABLE

PARCEL CATEGORY

LEGEND:

CERFA DISQUALIFIED

CERFA QUALIFIED

CERFA EXCLUDED

CERFA PARCEL

PARCEL LABEL

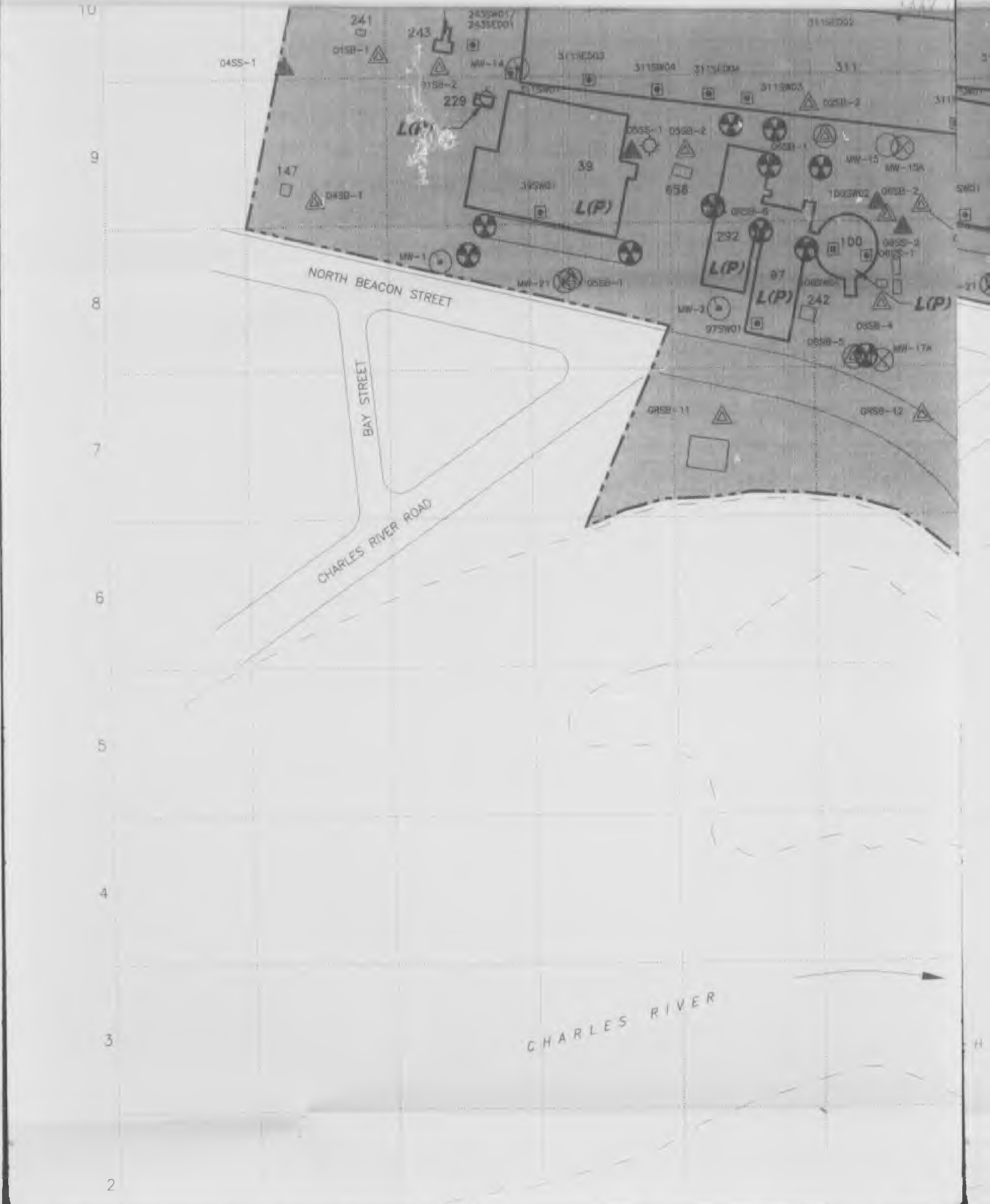
PARCEL DESIGNATION

PARCEL CATEGORY

PARCEL NUMBER AS NOTED ON DRAWING AND TABLE

PARCEL CATEGORY


10
9
8
7
6
5
4
3
2
045S-1
147
045B-1
NORTH
CHARLES

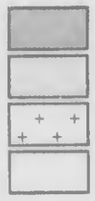


NORTH BEACON STREET
BAY STREET
CHARLES RIVER ROAD
CHARLES RIVER
241
243
229
147
39
39SW01
L(P)
656
292
97
242
100
311
MW-1
MW-21
MW-3
MW-14
MW-15
MW-15A
MW-17A
04SS-1
04SB-1
01SB-1
01SB-2
05SS-1
05SB-1
05SB-2
02SB-2
97SW01
GRSB-11
GRSB-12
10
9
8
7
6
5
4
3
2


226
311
A/L(P)
39
L(P)
656
292
L(P)
97
L(P)
100
242
L(P)
38
A/L(P)
312
L(P)
313N
616
313S
37
R/L
227
RUBBISH
PACKER
TRAILER
60
A/L(P)
654
652
A/R/L
118
A/R/L
117
A/T/L
131
295
L(P)
A/R/L(P)
43
A/L(P)/RD
CHARLES RIVER
NORTH BEACON


226
43SW03 (OIL SAMPLE FROM 2000 TON PRESS)
43
A/L(P)/RD
14E MAIN ENTRANCE
313N
L(P)
313S
312
L(P)
37
R/L(P)
HEADQUARTERS CIRCLE
131
A/R/L
118
A/R/L
117
A/R/L
295
L(P)
A/R/L(P)
111
NORTH BEACON STREET
244
245
L(P)
142

LEGEND:



CERFA DISC

CERFA QUA

CERFA EXC

CERFA PAR

PARCEL LA

5D-PR/HR

PARCEL DE

PARCEL CA

PARCEL NU
ON DRAWI

PARCEL CA

D = CEI
Q = CEI
E = CEI
P = CEI

DISQUALIFIE

PS = PI
PR = P.
HS = H
HR = H

QUALIFIED

A = ASS
L = LEA
P = PC
R = RA
X = UX
RD = RA

(P) POSSIBLE

NON-LEAK
(FORMER

LEAKING U
(FORMER

RELEASE O
OR HAZA

36 BUILDING
IN A DIS

LEGEND:

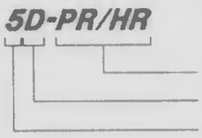
CERFA DISQUALIFIED

CERFA QUALIFIED

CERFA EXCLUDED

CERFA PARCEL

PARCEL LABEL



PARCEL DESIGNATION

PARCEL CATEGORY

PARCEL NUMBER AS NOTED ON DRAWING AND TABLE

PARCEL CATEGORY

D = CERFA DISQUALIFIED PARCEL
Q = CERFA QUALIFIED PARCEL
E = CERFA EXCLUDED PARCEL
P = CERFA PARCEL

DISQUALIFIED DESIGNATIONS

PS = PETROLEUM STORAGE
PR = PETROLEUM RELEASE/DISPOSAL
HS = HAZARDOUS MATERIALS STORAGE
HR = HAZARDOUS MATERIALS RELEASE/DISPOSAL

QUALIFIED DESIGNATIONS

A = ASBESTOS
L = LEAD-BASED PAINT
P = PCBS (POLYCHLORINATED BIPHENYLS
R = RADON
X = UXO (UNEXPLODED ORDNANCE)
RD = RADIONUCLIDE

(P) POSSIBLE DISQUALIFIER/QUALIFIER

NON-LEAKING UST OR AST (FORMER OR ACTIVE)

LEAKING UST OR AST (FORMER OR ACTIVE)

RELEASE OR DISPOSAL OF PETROLEUM OR HAZARDOUS MATERIALS

BUILDING WITH CERFA QUALIFIER(S) IN A DISQUALIFIED PARCEL

[S] DRUM SAMPLE STORAGE OF HAZARDOUS SUBSTANCES

6

5

4

3

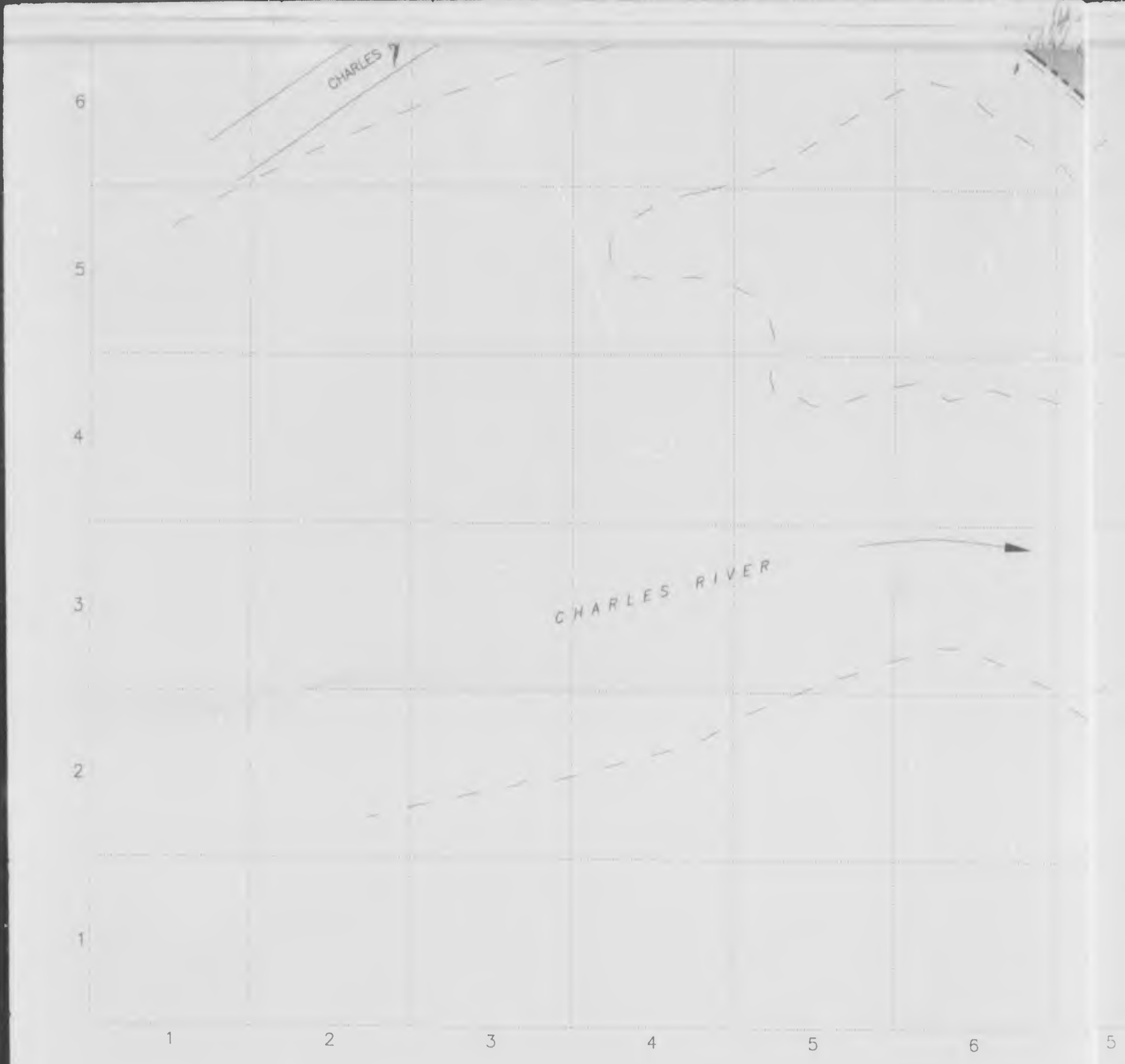
2

1

1 2

CHARLES

NO.	DATE	APP'R	REVISION	NO



REVISION	NO	DATE	APPR	REVISION


A/R/L
A/R/L
654
652
117
295
L(P)
MW-5
13SB-3
A/R/L(P)
111
13SS-5
MW-19
MW-19B
(GRSB-16)
(GRSB-20)
GRSB-19
15SB-1
MW-11
13SB-2
15SB-2
NORTH BEACON STREET
L(P)
244
16SS-1
MW-6
17SB-2
5
6
7
8
9
10
11

REVISION

ONE ACRE GRID SQUARE
COORDINATE LOCATION: 14,1

		CHECKED	DATE	

PARCEL NUMBER AS NOTED
ON DRAWING AND TABLE

PARCEL CATEGORY

D = CERFA DISQUALIFIED PARCEL
Q = CERFA QUALIFIED PARCEL
E = CERFA EXCLUDED PARCEL
P = CERFA PARCEL

DISQUALIFIED DESIGNATIONS

PS = PETROLEUM STORAGE
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HS = HAZARDOUS MATERIALS STORAGE
HR = HAZARDOUS MATERIALS RELEASE/DISPOSAL

QUALIFIED DESIGNATIONS

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P = PCBS (POLYCHLORINATED BIPHENYLS
R = RADON
X = UXO (UNEXPLODED ORDNANCE)
RD = RADIONUCLIDE

(P) POSSIBLE DISQUALIFIER/QUALIFIER

NON-LEAKING UST OR AST
(FORMER OR ACTIVE)

LEAKING UST OR AST
(FORMER OR ACTIVE)

RELEASE OR DISPOSAL OF PETROLEUM
OR HAZARDOUS MATERIALS

36 BUILDING WITH CERFA QUALIFIER(S)
IN A DISQUALIFIED PARCEL

311SW02 DRUM SAMPLE STORAGE OF HAZARDOUS SUBSTANCES
OR PETROLEUM IN DRUMS

13SS-1 SURFACE SOIL SAMPLING LOCATION

02SB-2 SOIL BORING LOCATION

06SB-1 SOIL BORING/MONITORING WELL LOCATION

MW-7 PRE-EXISTING MONITORING WELL LOCATION

MW-19B PHASE 2 MONITORING WELL LOCATION

MW-19 PHASE 2 DEEP MONITORING WELL LOCATION

LOCATION OF RADIOACTIVE READINGS OF 9000 CPM
OR ABOVE (DETERMINED TO BE A CONCERN)

ONE ACRE GRID SQUARE
COORDINATE LOCATION: 14,1

NOTE: ALL DRUM SAMPLES, SOIL SAMPLES, SOIL BORINGS, AND MONITORING WELLS SHOWN, WERE INTERPRETED AS BEING INDICATIVE OF CONTAMINATION.

150 75 0 150

Scale in Feet

DATE

DRAWING NO

PARCEL NUMBER AS NOTED
ON DRAWING AND TABLE

PARCEL CATEGORY

D = CERFA DISQUALIFIED PARCEL
Q = CERFA QUALIFIED PARCEL
E = CERFA EXCLUDED PARCEL
P = CERFA PARCEL

DISQUALIFIED DESIGNATIONS

PS = PETROLEUM STORAGE
PR = PETROLEUM RELEASE/DISPOSAL
HS = HAZARDOUS MATERIALS STORAGE
HR = HAZARDOUS MATERIALS RELEASE/DISPOSAL

QUALIFIED DESIGNATIONS

A = ASBESTOS
L = LEAD-BASED PAINT
P = PCBS (POLYCHLORINATED BIPHENYLS
R = RADON
X = UXO (UNEXPLODED ORDNANCE)
RD = RADIONUCLIDE

(P) POSSIBLE DISQUALIFIER/QUALIFIER

NON-LEAKING UST OR AST
(FORMER OR ACTIVE)

LEAKING UST OR AST
(FORMER OR ACTIVE)

RELEASE OR DISPOSAL OF PETROLEUM
OR HAZARDOUS MATERIALS

36 BUILDING WITH CERFA QUALIFIER(S)
IN A DISQUALIFIED PARCEL

311SW02 DRUM SAMPLE STORAGE OF HAZARDOUS SUBSTANCES
OR PETROLEUM IN DRUMS

13SS-1 SURFACE SOIL SAMPLING LOCATION

02SB-2 SOIL BORING LOCATION

06SB-1 SOIL BORING/MONITORING WELL LOCATION

MW-7 PRE-EXISTING MONITORING WELL LOCATION

MW-19B PHASE 2 MONITORING WELL LOCATION

MW-19 PHASE 2 DEEP MONITORING WELL LOCATION

LOCATION OF RADIOACTIVE READINGS OF 9000 CPM
OR ABOVE (DETERMINED TO BE A CONCERN)

SQUARE
LOCATION: 14,1

NOTE: ALL DRUM SAMPLES, SOIL SAMPLES, SOIL BORINGS, AND MONITORING WELLS SHOWN, WERE INTERPRETED AS BEING INDICATIVE OF CONTAMINATION.

150 75 0 150

Scale in Feet

DRAWING NO.

5

4

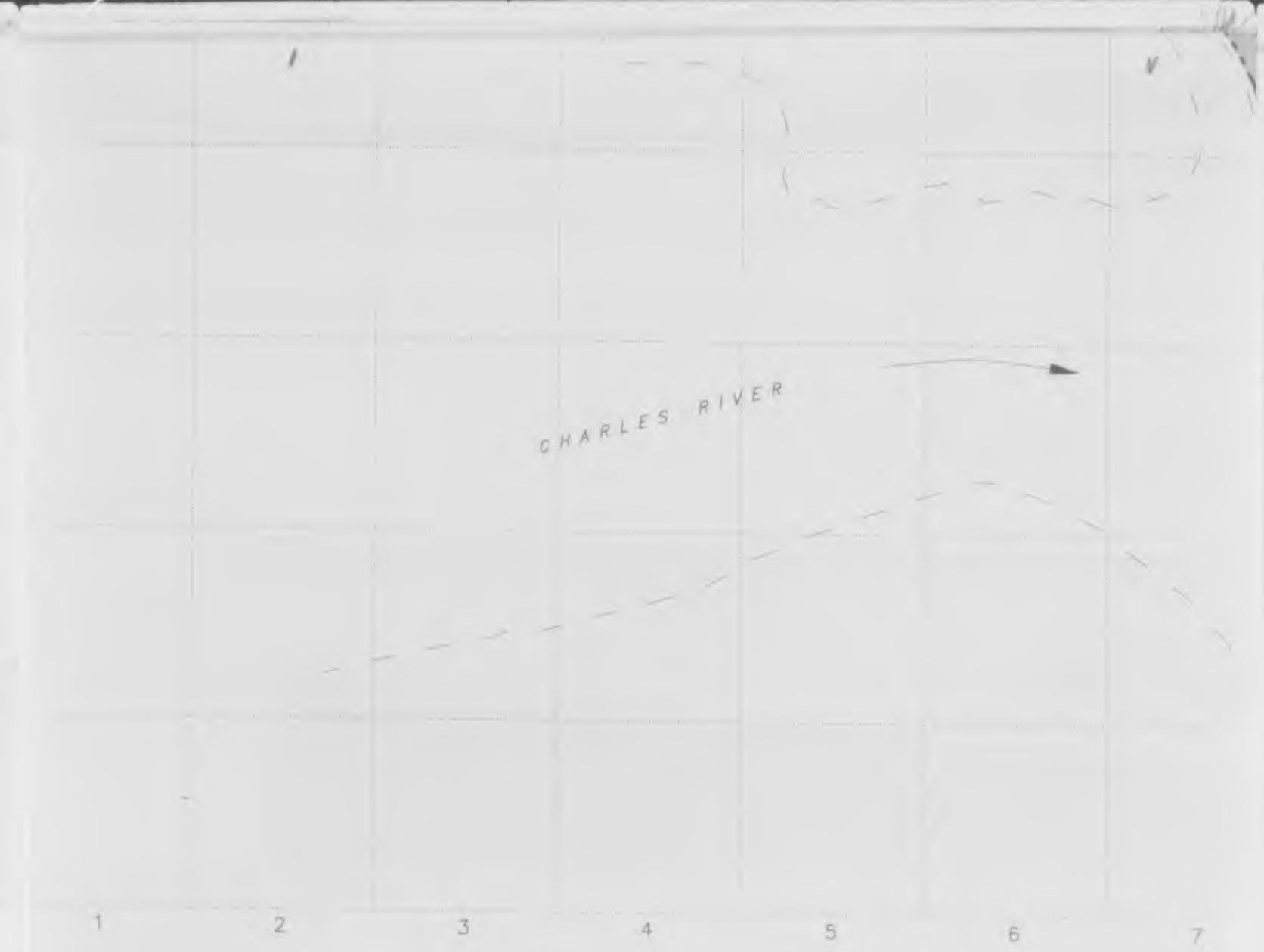
3

2

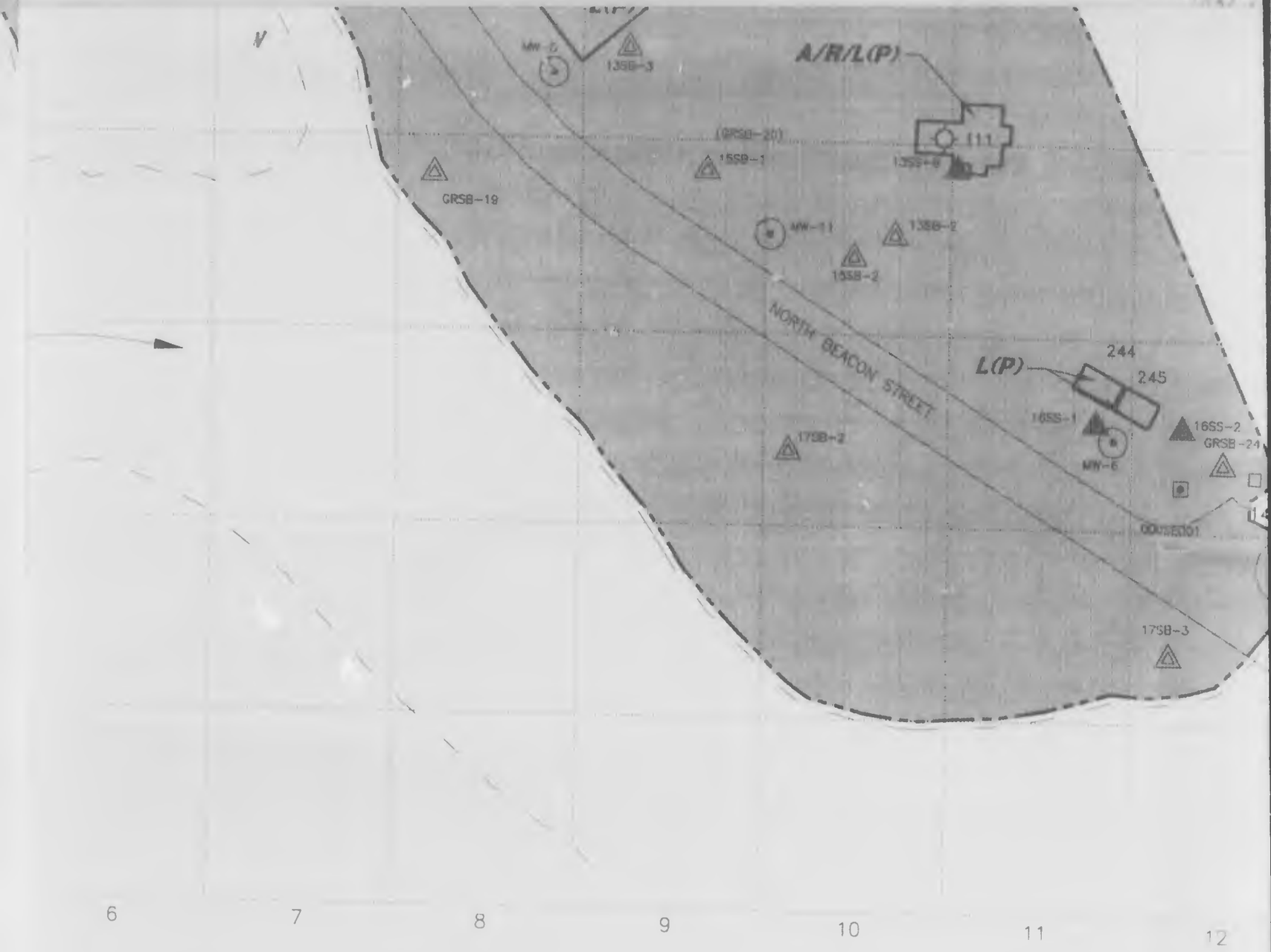
1

1 2

NO.	DATE	APPR	REVISION	NO.



	NO.	DATE	APPR.	REVISION



Army Material Technology Laboratory (AMTL)

Watertown **Massachusetts**

Environmental Resources Management, Inc.

Exton, Pennsylvania 19341 (215) 524-3500

ONE ACRE GRID SQUARE
COORDINATE LOCATION: 14,1

10 11 12 13 14

Laboratory (AMTL)

Massachusetts

ement, Inc.

ERM

CHECKED	DATE
DESIGN ENGINEER	
PROJECT ENGINEER	
PROJECT MANAGER	
APPROVED	
APPROVED	

CERFA

DRAWN: M.K. Bond/CMP

SCALE:

P = CERFA PARCEL

DISQUALIFIED DESIGNATIONS

PS = PETROLEUM STORAGE
PR = PETROLEUM RELEASE/DISPOSAL
HS = HAZARDOUS MATERIALS STORAGE
HR = HAZARDOUS MATERIALS RELEASE/DISPOSAL

QUALIFIED DESIGNATIONS

A = ASBESTOS
L = LEAD-BASED PAINT
P = PCBS (POLYCHLORINATED BIPHENYLS
R = RADON
X = UXO (UNEXPLODED ORDNANCE)
RD = RADIONUCLIDE

(P) POSSIBLE DISQUALIFIER/QUALIFIER

NON-LEAKING UST OR AST (FORMER OR ACTIVE)

LEAKING UST OR AST (FORMER OR ACTIVE)

RELEASE OR DISPOSAL OF PETROLEUM OR HAZARDOUS MATERIALS

36 BUILDING WITH CERFA QUALIFIER(S) IN A DISQUALIFIED PARCEL

311SW02 DRUM SAMPLE STORAGE OF HAZARDOUS SUBSTANCES OR PETROLEUM IN DRUMS

ONE ACRE GRID SQUARE
COORDINATE LOCATION: 14,1

13SS-1 SURFACE SOIL SAMPLING LOCATION

02SB-2 SOIL BORING LOCATION

06SB-1 SOIL BORING/MONITORING WELL LOCATION

MW-7 PRE-EXISTING MONITORING WELL LOCATION

MW-19B PHASE 2 MONITORING WELL LOCATION

MW-19 PHASE 2 DEEP MONITORING WELL LOCATION

LOCATION OF RADIOACTIVE READINGS OF 9000 CPM OR ABOVE (DETERMINED TO BE A CONCERN)

NOTE: ALL DRUM SAMPLES, SOIL SAMPLES, SOIL BORINGS, AND MONITORING WELLS SHOWN, WERE INTERPRETED AS BEING INDICATIVE OF CONTAMINATION.

150 75 0 150

Scale in Feet

DATE

CERFA Category and Designation Map

DRAWING NO.

Figure 5.1-1

DRAWN M.K. Bond/CMP

DATE 10.25.93/04.07.94

DISQUALIFIED DESIGNATIONS

PS = PETROLEUM STORAGE
PR = PETROLEUM RELEASE/DISPOSAL
HS = HAZARDOUS MATERIALS STORAGE
HR = HAZARDOUS MATERIALS RELEASE/DISPOSAL

QUALIFIED DESIGNATIONS

A = ASBESTOS
L = LEAD-BASED PAINT
P = PCBS (POLYCHLORINATED BIPHENYLS
R = RADON
X = UXO (UNEXPLODED ORDNANCE)
RD = RADIONUCLIDE

(P) POSSIBLE DISQUALIFIER/QUALIFIER

NON-LEAKING UST OR AST (FORMER OR ACTIVE)

LEAKING UST OR AST (FORMER OR ACTIVE)

RELEASE OR DISPOSAL OF PETROLEUM OR HAZARDOUS MATERIALS

36 BUILDING WITH CERFA QUALIFIER(S) IN A DISQUALIFIED PARCEL

311SW02 DRUM SAMPLE STORAGE OF HAZARDOUS SUBSTANCES OR PETROLEUM IN DRUMS

13SS-1 SURFACE SOIL SAMPLING LOCATION

GRID SQUARE LOCATION: 14,1

02SB-2 SOIL BORING LOCATION

06SB-1 SOIL BORING/MONITORING WELL LOCATION

MW-7 PRE-EXISTING MONITORING WELL LOCATION

MW-19B PHASE 2 MONITORING WELL LOCATION

MW-19 PHASE 2 DEEP MONITORING WELL LOCATION

LOCATION OF RADIOACTIVE READINGS OF 9000 CPM OR ABOVE (DETERMINED TO BE A CONCERN)

NOTE: ALL DRUM SAMPLES, SOIL SAMPLES, SOIL BORINGS, AND MONITORING WELLS SHOWN, WERE INTERPRETED AS BEING INDICATIVE OF CONTAMINATION.

150 75 0 150

Scale in Feet

CERFA Category and Designation Map

DRAWING NO.

Figure 5.1-1

REV. NO.

M.K. Bond/CMP	DATE 10.25.93/04.07.94	CLIENT APPROVAL	
1" = 150'	W.O. No. PM307.70.01/A301-1	CHECKED BY DATE	SHEET 1 OF 1

Army Materials Technology Laboratory Previous Owners

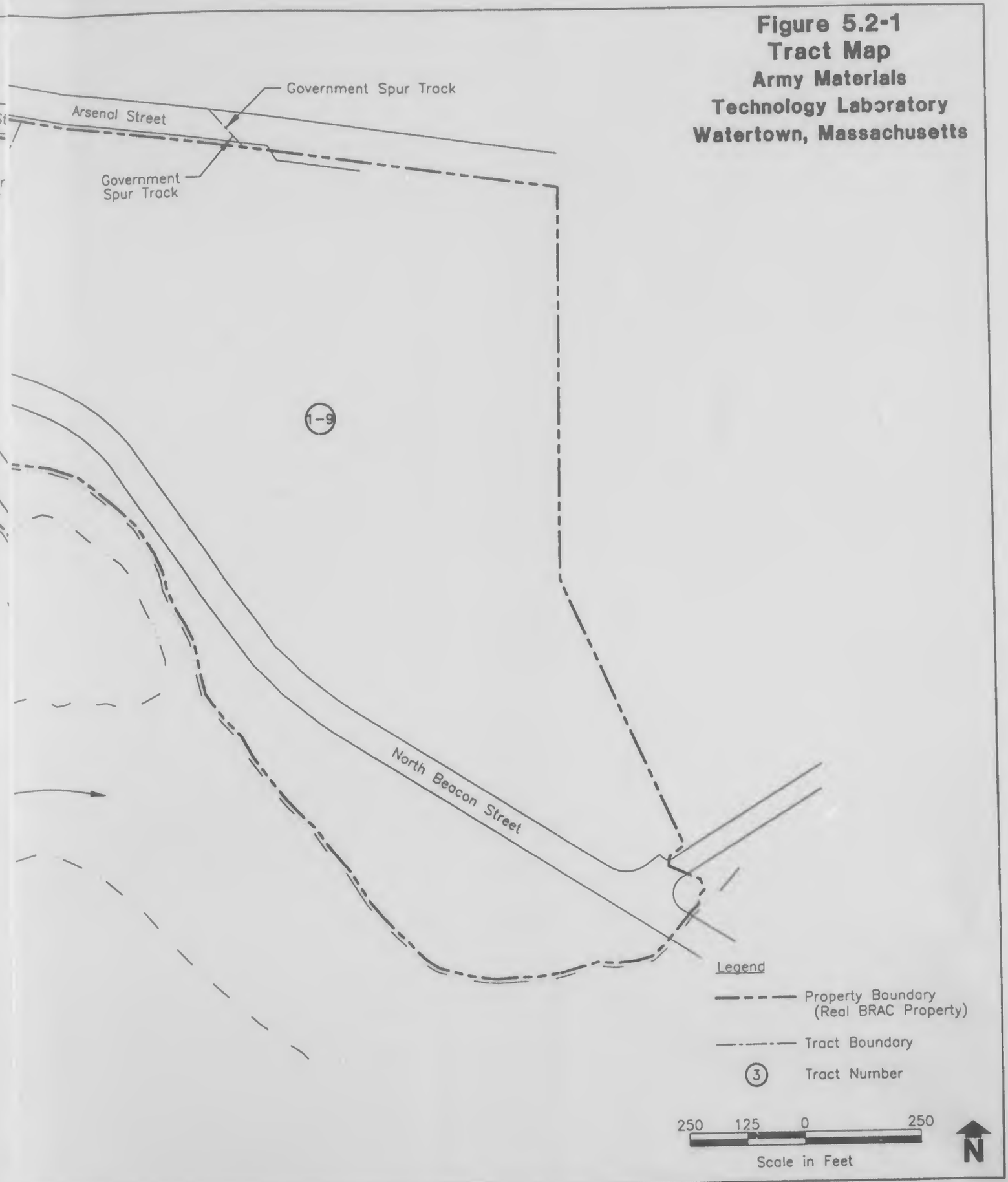
Tract. No.	Name of Previous Owner (Transferrors)	Date of Transfer	Acreage Fee
1•	Thomas Learned	23 September 1816	20.993
2•	Hall Estate	23 October 1816	8.125
3•	David Stone	23 October 1816	0.330
4•	Josiah Learned	23 October 1816	2.030
5•	Isaac Patten	23 October 1816	8.125
6•	John Russell	23 October 1816	6.970
7•	Jonathon Child, et al	18 August 1816	3.830
8•	John Baxter, et al	29 September 1830	0.543
9•	Thomas Learned	22 April 1839	10.330
17	Caroline Lacker	6 December 1941	1.010
18	Edward S. Quirk	6 December 1941	0.520
19	Mary F. Bird	6 December 1941	0.500
20	Simmons Company	31 December 1941	5.100
20A	Simmons Company	Date Unknown	0.430

Notes:

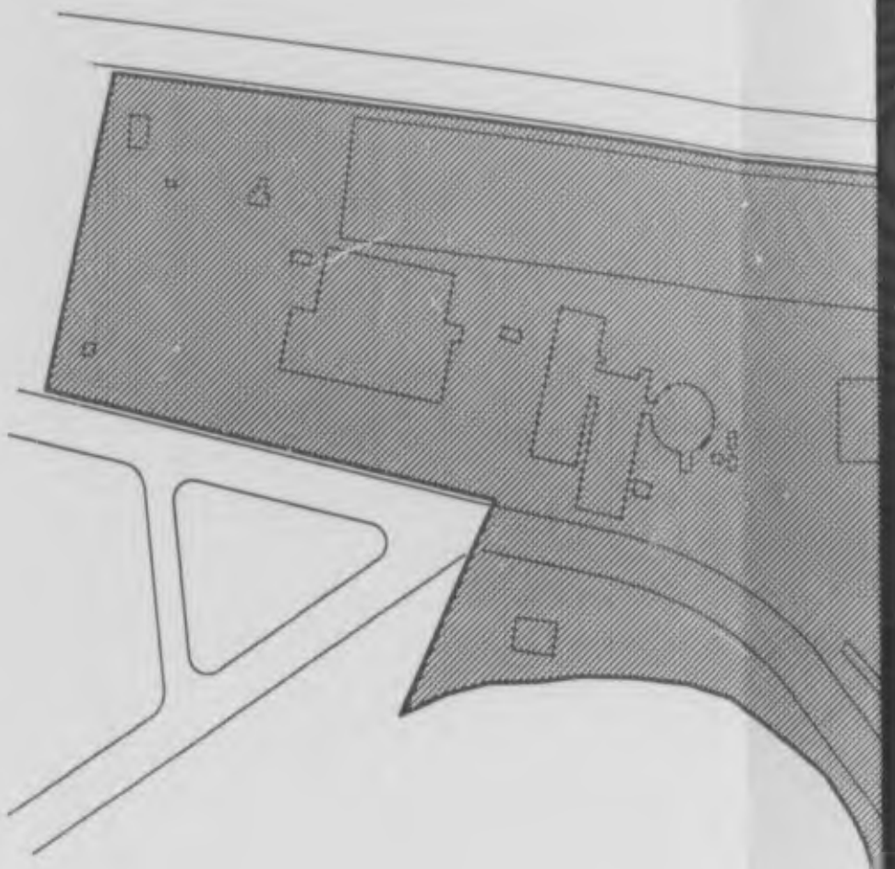
- Tract Number 1–9 represent acquired properties that all or in part make up the BRAC property in question. The original tract map does not distinguish the current eastern border of the site, and the acreage fees (for tract numbers 1–9) include a portion of non-BRAC property located east of the BRAC property presented on this figure. The AMTL BRAC property is approximately 48 acres.

1. The tract numbers are not consecutive in order to stay consistent with historical tract numbers.

Figure 5.2-1
Tract Map
Army Materials
Technology Laboratory
Watertown, Massachusetts

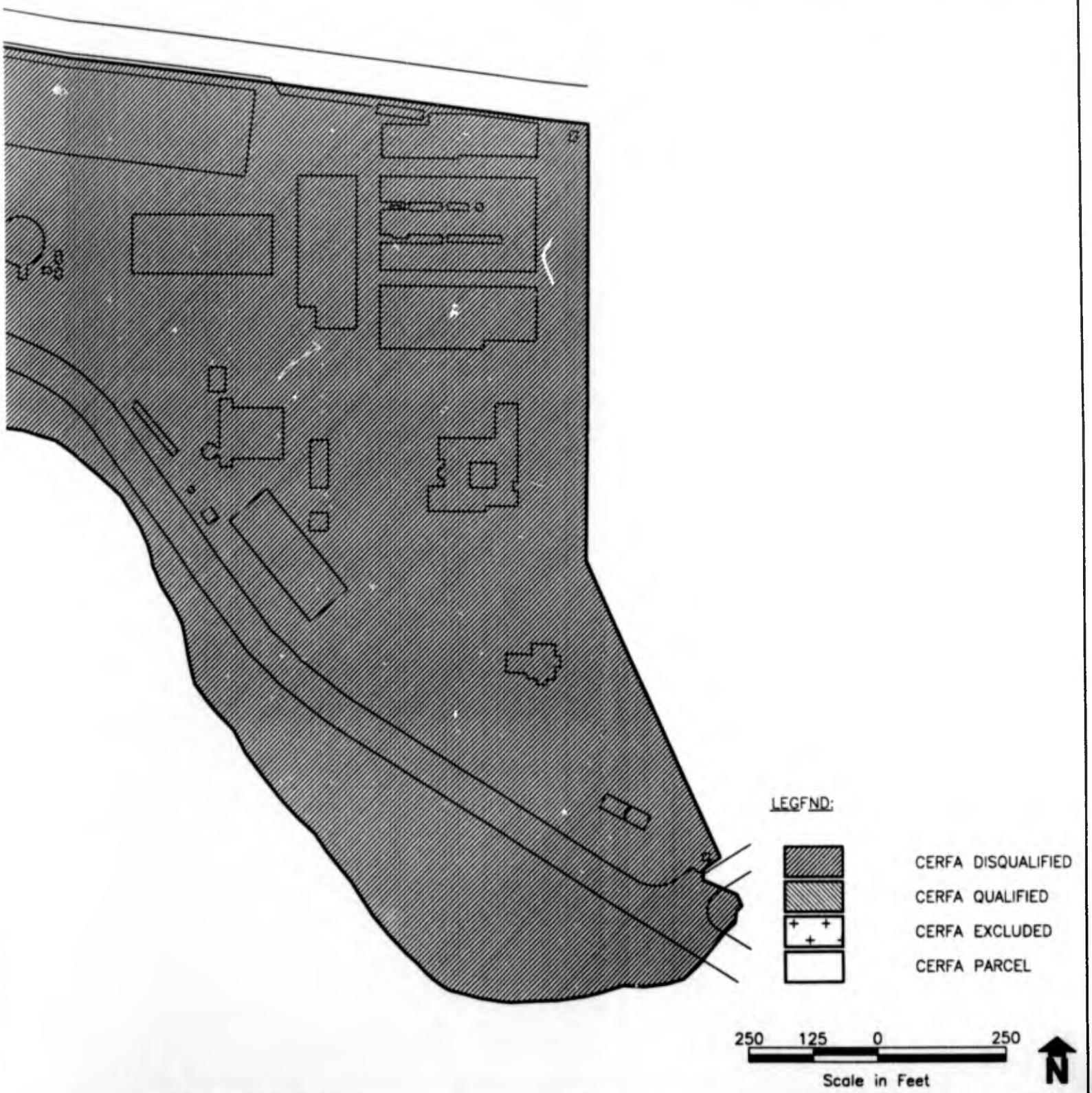


PM307.70.01/09.17.93-MKB/04.07.94-CMP/AMA201



THE ERM GROUP

Figure 5.3-1
CERFA Parcel Designations
Army Materials Technology Laboratory (AMTL)
Watertown, Massachusetts



PM307.70.01/09.17.93-MKB/04.10.94-CMP/AMA201-2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
JOHN F. KENNEDY FEDERAL BUILDING
ONE CONGRESS STREET
BOSTON, MASSACHUSETTS 02203-2211

March 7, 1994

Commander Army Environmental Center
Attn: SFIM-AEC-BCB (Mark Mahoney)
Bldg. 4480
APG-EA, Maryland 21010-5401

Re: Community Environmental Response Facilitation Act (CERFA)

Dear Mr. Mahoney:

EPA has reviewed the latest draft of the Environmental Baseline Survey (EBS) which you have submitted to meet the requirements of CERFA. The Army has not identified any CERFA clean parcels at the Army Materials Technology Laboratory in Watertown, Massachusetts.

EPA's detailed comments on the overall EBS are provided in Attachment I.

Also included is a checklist which we have developed based on CERFA requirements and DoD policy on the implementation of CERFA (September 9, 1993). In your final EBS, please ensure that the information in the checklist is included, or state why it is not applicable.

Please contact me at 617/573-5711 or your RPM, Meghan Cassidy at 617/573-5785 with any questions. We appreciate your cooperation on this effort.

Sincerely,

Mary C. Sanderson

Mary C. Sanderson, Chief
Federal Facilities Superfund Section

cc: Meghan Cassidy/EPA
Bob DiBiccaro/EPA ORC
Linda Rutsch/EPA HQ
Bob Chase/AMTL BEC
Anne Malewicz/MA DEP

Attachments - EBS Comments
EPA EBS Checklist

Attachment I

The following comments pertain to the draft "Community Environmental Response Facilitation Act (CERFA) Report" for the U.S. Army Materials Technology Laboratory (AMTL) in Watertown, Massachusetts.

1. The draft CERFA report does not include an Executive Summary. A generic Executive Summary was forwarded to this office as a supplement to the CERFA report. This generic Executive Summary should be tailored to AMTL and inserted in the final CERFA report.

2. Page 2-1, Section 2.0: A title search is not listed as a component of the CERFA investigation. Was a title search performed? If so, it should be included here. If no title search was completed, one should be completed prior to finalization of the CERFA report.

3. Page 2-1, Section 2.0: The text should indicate the source and location of the aerial photographs.

4. Section 3.1: This section should include a description of pesticide handling practices (i.e., storage/mixing areas, application) at AMTL in the past.

5. Page 3-1, Section 3.1, ¶ 1: The last sentence of this paragraph indicates that an 11 acre plot between North Beacon Street and the Charles River has been out-granted to the Commonwealth of Massachusetts. The text should explain what this term means and how it relates to the conveyance of property under BRAC.

6. Page 3-2, last paragraph: It is EPA's understanding that the radiological cleanup of AMTL is complete. However, this paragraph implies that radiological wastes are still being produced. Please clarify whether this is the case. If radiological waste is still being produced, when will this practice cease and what further cleanup will be necessary?

7. Page 4-1, Section 4.0: The terms "background", "background tolerance limits" and "calculated guidelines" are used throughout this section when assessing chemical concentrations. These terms need to be defined in the text.

8. Page 4-2, Upgradient Wells: According to the text monitoring well MW-23 is adjacent to a service station. Clarify whether this service station is on AMTL property or off-site.

9. Page 4-6, last paragraph: The text indicates that a line in Structure 295 may be leaking. This warrants immediate action. If in fact the line is leaking it should be repaired without delay and an assessment of potential impact to the environment should be conducted.

10. Page 4-7, Building 111, ¶ 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have occurred.

11. Page 4-8, Building 117, ¶ 2: It is not clear why the detection of lindane is considered unconfirmed. This must be explained further.

12. Page 4-8, Building 117, ¶ 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have occurred.

13. Page 4-8, Building 118, ¶ 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have occurred.

14. Page 4-9, Building 131, ¶ 3: The text indicates that a 275-gallon fuel tank may be present at this building. The presence or absence of the tank must be determined. If the tank is present, it should be examined to determine whether it contains any residual materials or if any releases have occurred.

15. Page 4-10, ¶ 2: The text indicates that the State of Massachusetts will be performing work to assess the probable release of petroleum. Isn't the Army performing the work? The text should be clarified.

16. Page 4-17, Building 100, ¶ 2: This paragraph should be rewritten to reflect the fact that demolition of Building 100 is underway. The text should also confirm that the concrete contaminated by cooling water will be removed, cleaned and disposed of properly.

17. Page 4-17, Building 100, ¶ 3: Since Building 100 is currently being demolished, the PCB-containing transformer mentioned here can no longer be considered operational. Revise the text to indicate how the PCB-containing transformer was/will be handled during the demolition process. Also, indicate whether CERFA finding changes based on the fact that the transformer is no longer operational.

18. Page 4-18, Section 4.2: The possible presence of 275-gallon fuel tanks at Buildings 111, 117, 118 and 131 should also be considered as new items of environmental concern and should be identified here.

Commonwe
Executive Off
Depart
Enviro

William F. Weld
Governor
Daniel S. Greenbaum
Commissioner

Mr. Mahoney
Department of the Army
U.S. Army Environmental Center
Aberdeen Proving Ground, Maryland
021010-5401

Re: Army Material Technology Laboratory,
Watertown, Massachusetts

Dear Mr. Mahoney

The Department of Environmental Protection, has received and reviewed the Supplementary Preliminary Assessment Facilitation Act (CERFA PA) document dated December 17th, 1993.

The Departments' major comment as a result of reviewing this report was in reference to past tank excavations. Please clarify in the final report that the Department will require documentation as to the condition of soils. Further analysis may be required if there was evidence of soil contamination during the excavation.

The Department appreciates the opportunity to review this document. We offer the attached comments for your review and consideration. If you should have any questions regarding our comments please do not hesitate to contact Federal Facilities Branch Chief, Anne Malewicz for further assistance.

Very truly yours,

Jay Naparstek

Jay Naparstek
State & Federal Sites
Section Chief

cc:list
attachment

One Winter Street • Boston, Massachusetts 02108 • FAX (617) 556-1049 • Telephone (617) 292-5500

page 4-4 para. 9	Please note that a closeout report will be required documenting the soil condition at the east side of building 39. This is the location where the 500 gallon underground storage tank was removed.
page 4-6 para. 1	Please include this section in the tank closeout report.
page 4-6 para.9	Please clarify whether the line between the aboveground storage tank in Structure 295 is indeed leaking or has leaked. According to 310 CMR 40.0300, if a release has occurred or if there is a threat of release, reporting is required and action should be taken to eliminate the release.
page 4-8 para. 5	The closeout report should include the tank removal near building 117.
page 4-10 para. 2	The statement indicating that the State of Massachusetts is planning to perform the investigation in the parking lot of building 37 and 131 should be clarifed to reflect that the Army contractors' will be performing the actual investigation and the State of Massachusetts will review and advise on the remediation.
page 4-10 para. 3	The status of the confirmatory sampling should be clarified in this section. The report should denote that the Department will require a closeout report to assure that contamination was not present.

cc:

Mr Joseph DiVico
Board of Health
Watertown, Administration Building
Watertown Ma. 02172

Mr. John Airasian
Chairman, Watertown Reuse Committee
Watertown Administration Building
Watertown, Mass. 02172

State Representative, Warren Tolman
State House Rm 146
Boston, Massachusetts 02133

Mr. Jeb Killian
Office of the Honorable Joseph P. Kennedy II
Representative in Congress
Schraft Center, Suite 605
529 Main Street
Charlestown, Mass. 02129

Mr. John Kinneman
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA. 19046-1415

Mr. Mark Mahoney
U.S. Army Environmental Center
CETHA-BC-B
Building 4480
Aberdeen Proving Ground, Maryland 21010-5401

Ms. Megan Cassidy
Environmental Protection Agency
Federal Facilities
1 Congress Street
Boston, Mass. 02108

Mr. Silvio A. Graziadei
Chief, Base Realignment
and Closure Office
Amry Materials Technology Laboratory
Arsenal Street
Watertown, Ma. 02172-0001

Mr. Robert Hallisey
Dept of Public Health
305 South Street, 7th floor
Jamaica Plain, Ma. 02130

Ms. Susan Falkoff
Rab Co-Chair, Environ
Oliver Street
Watertown, Mass 02172

Ms Lorna Bosman
ATSDR
Atlanta Georgia