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# INSTALLATION RESTORATION PROGRAM

## FURTHER ACTION DECISION DOCUMENT FOR SITE 1 FINAL



MICHIGAN AIR NATIONAL GUARD  
ALPENA COMBAT READINESS TRAINING CENTER  
ALPENA, MICHIGAN

September 1997

Air National Guard  
Andrews AFB, Maryland

19971203 163

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## ACRONYM LIST

ANGRC	Air National Guard Readiness Center
ASTs	aboveground storage tanks
ARARs	Applicable or Relevant and Appropriate Requirements
BRA	Baseline Risk Assessment
COCs	chemicals of concern
CRTC	Combat Readiness Training Center
DOD	Department of Defense
FS	Feasibility Study
GSI	Groundwater/Surface Water Interface
HQ	hazard quotient
IRP	Installation Restoration Program
MDEQ	Michigan Department of Environmental Quality
MERA	Michigan Environmental Response Act
MIANG	Michigan Air National Guard
POL	Petroleum, Oil, and Lubricant
RAOs	remedial action objectives
RI	remedial investigation
SI	site investigation
VOCs	volatile organic compounds

## 1.0 INTRODUCTION

This final decision document presents the rationale for the limited action response proposed for the Michigan Air National Guard's (MIANG's) Alpena Combat Readiness Training Center (CRTC) Site 1, Petroleum, Oil, and Lubricants (POL) area. The draft final decision document was reviewed by the Michigan Department of Environmental Quality (MDEQ) and approved in the August 19, 1997 letter provided in Appendix A. This document is part of the U.S. Department of Defense's (DOD's) Installation Restoration Program (IRP).

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## 2.0 SITE DESCRIPTION AND HISTORY

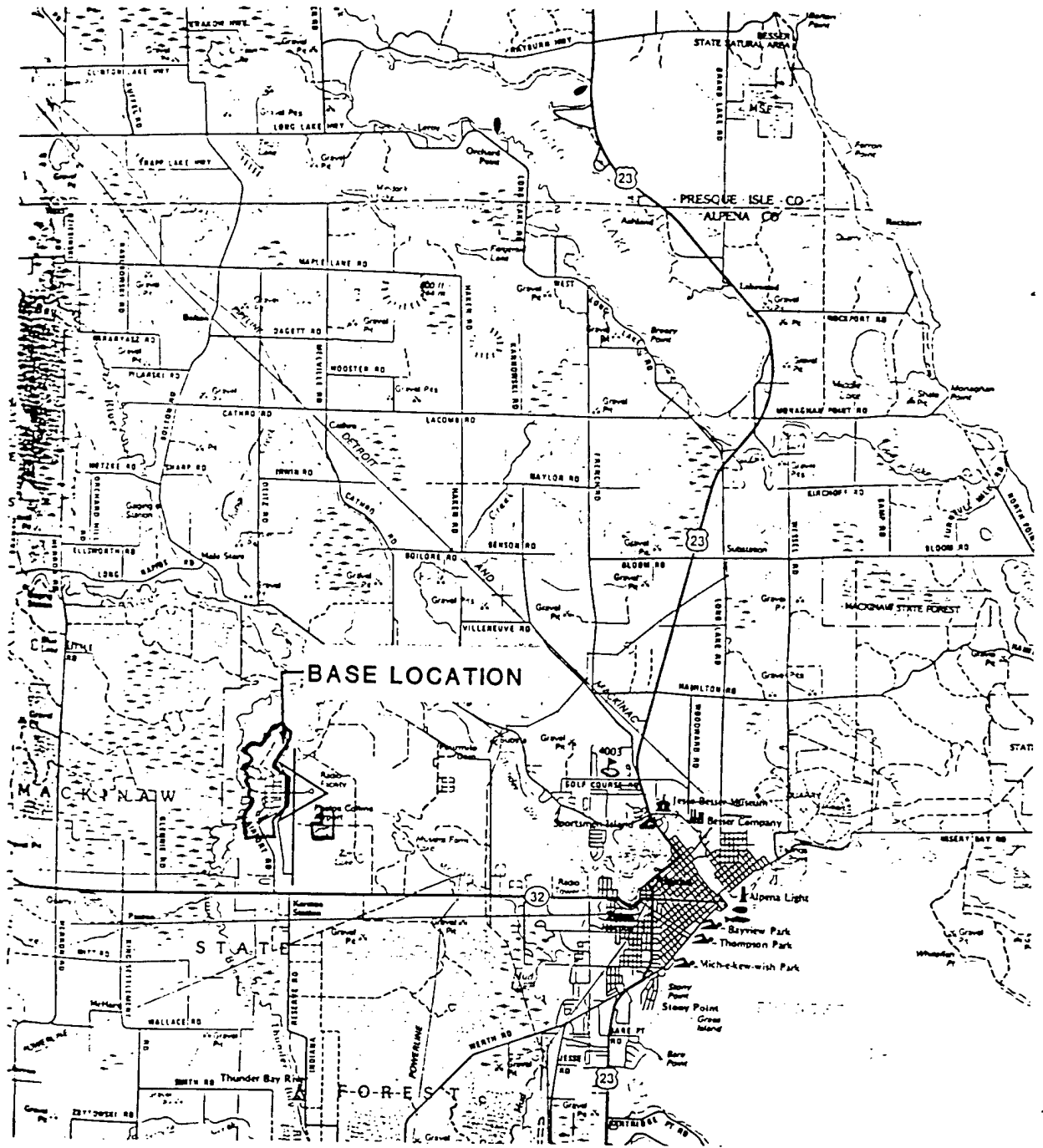
The MIANG Alpena CRTC is located at the Alpena County Regional Airport, approximately 5 miles west of the city of Alpena (Figure 1). The Alpena County Airport occupies approximately 3,000 acres of land. MIANG leases and has exclusive rights to approximately 600 acres of that property for the Alpena CRTC.

The Alpena CRTC has a long history of military and training use. Since 1952, the Alpena CRTC has primarily been used as a training facility. Training takes place year-round with the greatest influx of personnel occurring during the months of April through September. The Alpena CRTC has had no assigned aircraft since the mid-1950s, except for a period between 1964 and 1972, when a detachment of aircraft and personnel were on 24-hour intercept alert.

The Site 1 Petroleum, Oil, and Lubricants (POL) area was once a fuel storage area which consisted of various aboveground storage tanks (ASTs) associated distribution lines, and dispensers. The POL area was used for fuel storage from 1952 until 1987. At that time, the Site 1 POL area was dismantled and a new POL area was put into use. Figure 2 shows the layout of Site 1. Fuels stored and dispensed at the Site 1 POL area included JP-4 jet fuel, motor gasoline, and No. 2 fuel oil.

Currently, Site 1 lies within a fenced area inside the Alpena CRTC. Most of Site 1 is now a gravel covered parking lot, used for parking large vehicles. Most equipment and structures associated with Site 1 POL area were dismantled in 1987. Buildings 15 and 34 were not dismantled. In addition, a pole barn (Building 38) was constructed in 1991 to store equipment for the road and ground personnel.

Site 1 is the planned future location of the Alpena CRTC headquarters. The construction requirements of the headquarters are accounted for in the evaluation of the remedial alternative for this site.

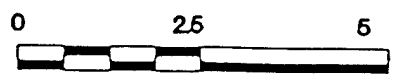


MICHIGAN

QUADRANGLE LOCATION

**NOTE**

BASE MAP DEVELOPED FROM THE MICHIGAN ATLAS AND GAZETTEER PAGE 84, FOURTH EDITION SECOND PRINTING.




SCALE IN MILES



MICHIGAN AIR NATIONAL GUARD  
ALPENA CRTG  
ALPENA, MICHIGAN

BASE LOCATION MAP

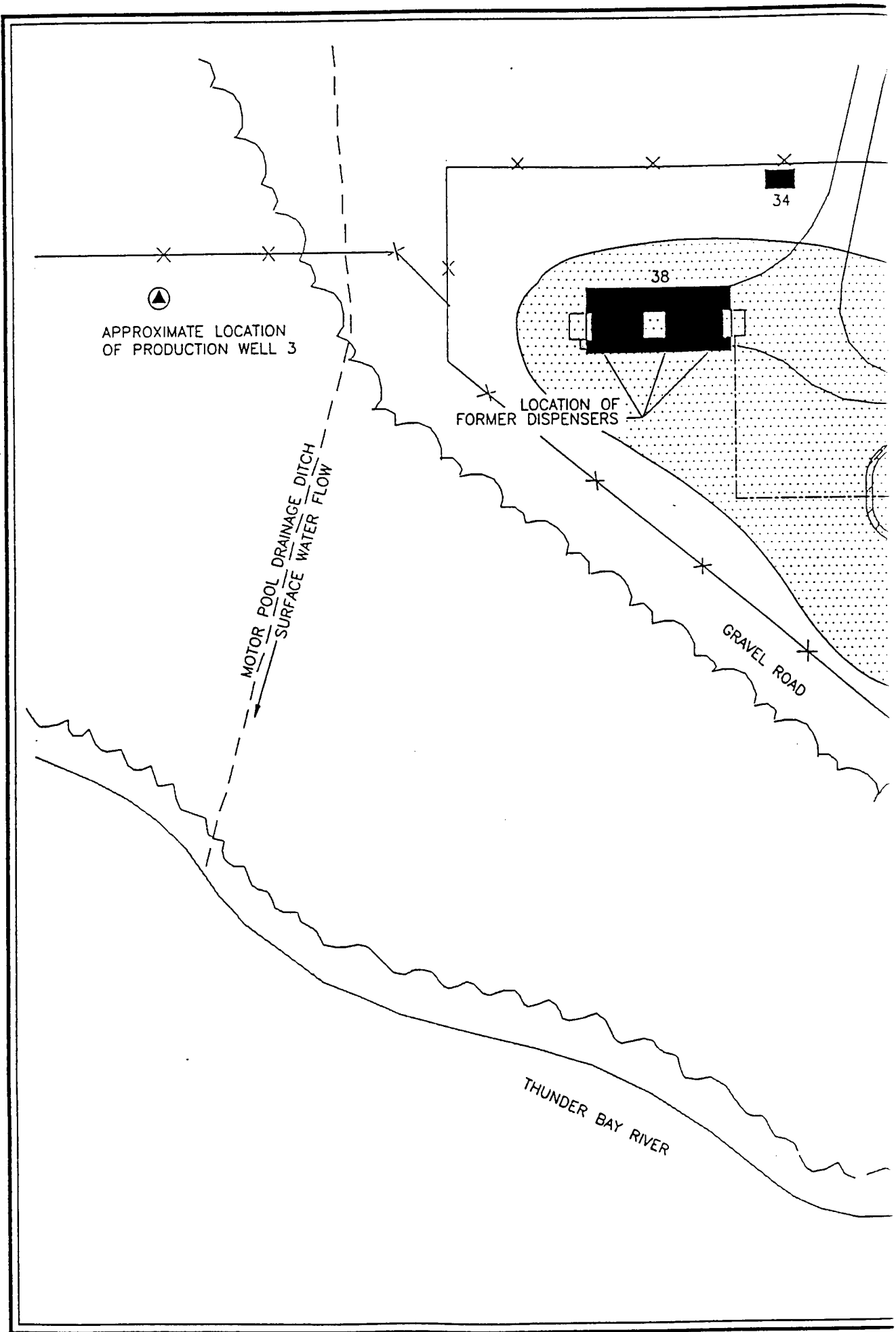
FIGURE 1

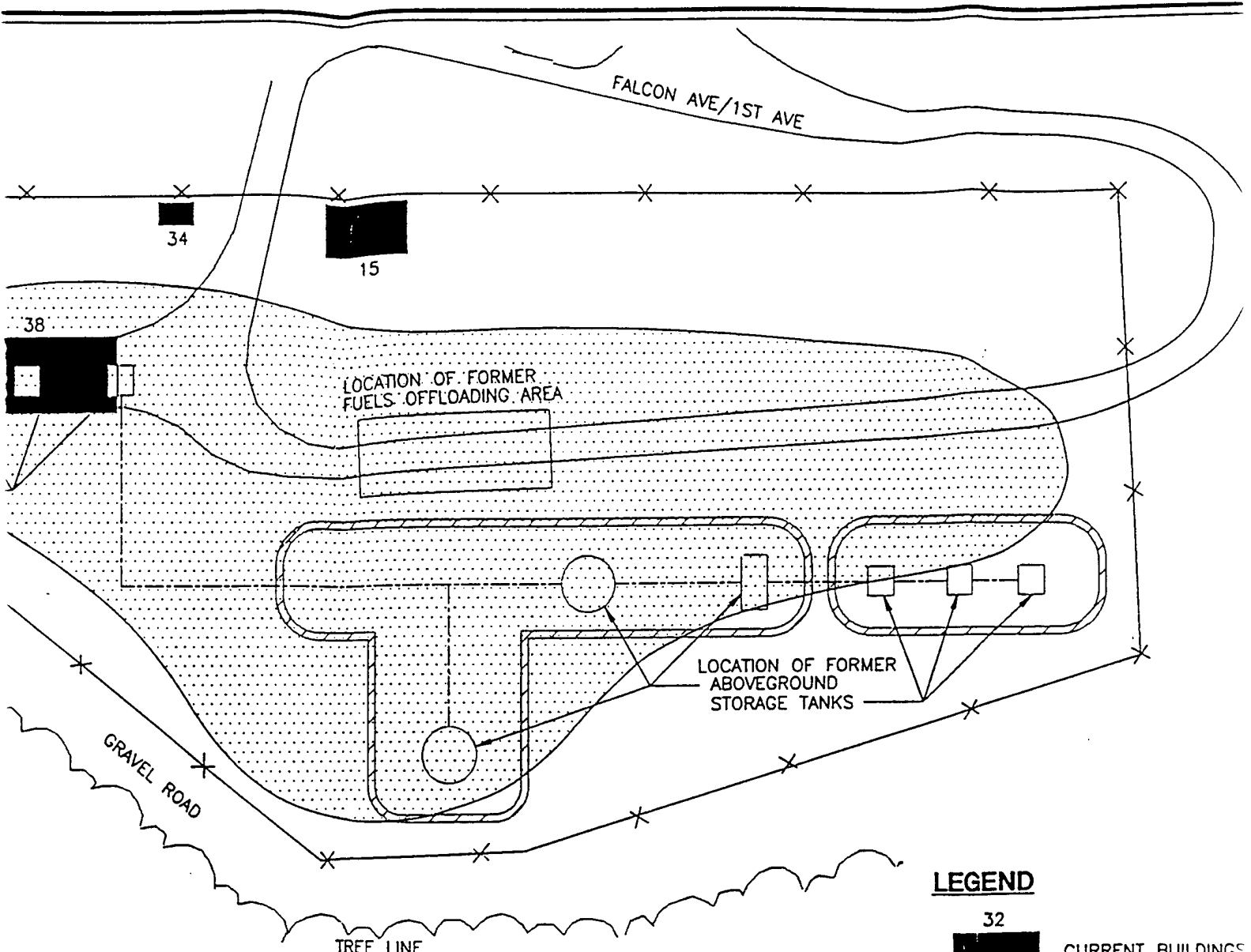


**MONTGOMERY WATSON**


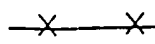
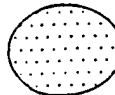
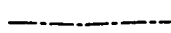

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CURRENT BUILDINGS WITH BUILDING NUM
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STUDY AREA
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PREVIOUS LOCATION DISTRIBUTION LINES
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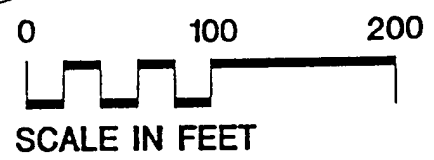
MICHIGAN AIR NATION  
ALPENA CRTG  
ALPENA, MICHIC

**SITE 1 POL STORAC  
SITE FEATURES**

FIGURE 2



**MONTGOME**



FALCON AVE/1ST AVE

LOCATION OF FORMER  
S. OFFLOADING AREA

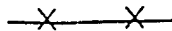
LOCATION OF FORMER  
ABOVEGROUND  
STORAGE TANKS

**LEGEND**

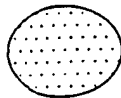
32



CURRENT BUILDINGS  
WITH BUILDING NUMBERS



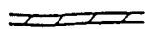
DEER FENCE



STUDY AREA



PREVIOUS LOCATION OF UNDERGROUND FUEL  
DISTRIBUTION LINES (LOCATION APPROXIMATE)



PREVIOUSLY BERMED AREA

LINE

REE LINE

0 100 200



SCALE IN FEET



MICHIGAN AIR NATIONAL GUARD  
ALPENA CRTG  
ALPENA, MICHIGAN

SITE 1 POL STORAGE AREA  
SITE FEATURES MAP

FIGURE 2



MONTGOMERY WATSON

3

### 3.0 SUMMARY OF SITE ANALYSIS

As part of Phase III activities, we completed a soil gas survey at Site 1 began in 1985. No additional environmental investigations were performed at Site 1 until we initiated the site investigation (SI) in 1992. We conducted SI activities in November 1992 and January 1993, including the collection of soil gas and groundwater screening data, the drilling of three soil borings, and soil sampling, as documented in the SI Report (The Earth Technology Corporation, 1993).

For the remedial investigation (RI) activities at Site 1, we collected and analyzed forty soil (surface and subsurface), sediment, and groundwater samples from borings and wells.

Figures 2-2 and 2-8 of the Final Feasibility Study (FS) (Montgomery Watson, 1996) show the sampling locations for Site 1 soil and groundwater respectively. The SI Report and the RI Report (The Earth Technology Corporation, 1995) include the details on the sampling, including the depth of each sample, contaminant concentrations, the depth of the contamination, and the methods used in collecting and analyzing the samples. The following sections include a discussion of the chemicals of concern (COCs) identified in the FS for groundwater, soil, and sediment at Site 1.

#### 3.1 Groundwater

Constituents in groundwater samples from Site 1 were compared with Applicable or Relevant and Appropriate Requirements (ARARs) to identify COCs. ARARs considered in the FS include:

- Generic Industrial Cleanup Criteria for health based drinking water value (Industrial Drinking Water Values) as outlined in the Michigan Environmental Response Act (MERA), Operational Memorandum #14, Revision 2, June 1995.
- Generic Industrial Groundwater/Surface Water Interface (GSI) as outlined in the MERA, Operational Memorandum #14, Revision 2, June 1995.

Based on samples analyzed from monitoring wells SIMW6 and SIMW11, antimony is present in groundwater at concentrations in excess of Industrial Drinking Water Values. During the investigation, antimony was only observed in the groundwater perched on top of the intermediate subsurface clay layer. The analytical sampling data obtained from SIMW14 indicate that the antimony has not migrated vertically through the clay layer into the lower aquifer. The concentrations of antimony in the groundwater at Site 1 are below GSI values for antimony, indicating that if groundwater is flowing into the river at the boundary of Site 1, it will not impact the river environment.

Based on samples analyzed from monitoring wells SIMW1 and SIMW6, benzene is present in groundwater at concentrations in excess of Industrial Drinking Water Values. Analytical data from the RI Report indicate that the benzene is perched on top of the intermediate subsurface clay layer and that no migration has occurred through the clay into the lower aquifer. Based on the information presented in the RI Report, the benzene is contained on-site. Benzene was not present in concentrations in excess of the Industrial Drinking Water Values in samples taken from downgradient wells SIMW11 or SIMW12.

### **3.2 Soil**

Constituents in soil samples from Site 1 were compared with ARARs to identify COCs. ARARs considered in the FS include:

- Generic Industrial Cleanup Criteria for soil direct contact (Industrial Direct Contact Values) as outlined in the MERA, Operational Memorandum #14, Revision 2, June 1995.
- Generic Industrial Cleanup Criteria for soil considered protective of groundwater as outlined in the MERA, Operational Memorandum #14, Revision 2, June 1995.

The soil samples taken at Site 1 did not contain any contaminants at concentrations in excess of the Industrial Direct Contact Values.

Based on the results of sampling from S1SB1, chlorobenzene and styrene are present at the site at concentrations in excess of 20 times the Industrial Drinking Water Values. However, these contaminants do not appear to be leaching to groundwater because they were not present in the groundwater samples at concentrations in excess Industrial Drinking Water Values.

Based on the characteristics of chlorobenzene and styrene, these constituents will likely migrate at a slow rate through soil. It is expected that the constituents will natural attenuate long before reaching groundwater. The field investigation sampling results support this fact, since the constituents were not present in groundwater samples. Therefore, it was concluded that the soil at Site 1 is protective of groundwater.

The RI Report baseline risk assessment (BRA) indicates that the chlorobenzene contamination in the soil (at sample location S1SB1) poses an unacceptable non-cancer risk to future excavation workers. The volume of contaminated soil is estimated to be 1,900 cubic yards.

### **3.3 Sediment**

Sediment samples taken at Site 1 did not have any contamination at levels in excess of ARARs. The RI Report BRA did not find any unacceptable health risks due to contamination in the sediment.

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#### 4.0 CONTAMINATION ASSESSMENT

A BRA was performed during the RI to assess the risks posed to human health and the environment by the contamination at the Alpena CRTC sites. This section summarizes the BRA results for Site 1. The complete BRA analysis for Site 1 is presented in the RI Report.

No current complete exposure pathways were identified in the RI Report for Site 1. The complete future pathways include Thunder Bay River surface water pathways (ingestion, dermal absorption, and fish consumption), and shallow aquifer production well (PW3) pathways (ingestion, dermal adsorption, and inhalation of VOCs). Carcinogenic and non-carcinogenic exposure risks were evaluated for all scenarios presented in the RI Report BRA. The report indicates that no future pathways exceed the Michigan Department of Environmental Quality (MDEQ) established cancer risk guidance level of  $1 \times 10^{-5}$ . Results of hazard quotient (HQ) for Site 1 indicate an HQ greater than 1 for the inhalation pathway from chlorobenzene in the subsurface soil for a future excavation worker. An HQ above 1 indicates an unacceptable non-carcinogenic risk.

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## 5.0 SELECTION OF REMEDIAL ALTERNATIVE

The FS considers several alternatives for remediation of Site 1. The remedial alternatives analyzed for Site 1 include:

- No Action: The No Action Alternative serves as a baseline for comparison with other remedial alternatives. Under this alternative, no remedial actions would be completed at Site 1 to contain or reduce the constituents in the soil and groundwater.
- Limited Action for Soil and Groundwater: Under the Limited Action Alternative the contamination in the soil and groundwater would not be contained or treated, but allowed to naturally attenuate. Monitoring of groundwater and soil on a quarterly basis, with three sampling rounds per year, would provide the necessary data to assess the natural attenuation of the constituent levels. Institutional controls would be implemented to prevent groundwater use and ensure that construction workers are not exposed to the chlorobenzene until sampling results indicate that site contaminant levels meet ARARs and the remedial action objectives (RAOs) established in the FS.
- Limited Action for Soil and Aboveground Groundwater Treatment: Under this alternative, the contaminant in the soil would not be contained or treated, but allowed to naturally attenuate. Sampling of soil would provide the necessary data to assess the natural attenuation of the constituent levels. Institutional controls would be implemented to ensure that construction workers are not exposed to the chlorobenzene until sampling indicates that contaminant levels in the soil meet ARARs and the RAOs. This alternative would include treating the groundwater using an air stripper to remove the benzene and ion exchange to remove the antimony. Institutional controls would be implemented to prevent groundwater use until the groundwater remediation is complete, and the levels of constituents in the groundwater meet groundwater ARARs and RAOs.

- Aboveground Soil Treatment and Aboveground Groundwater Treatment: This alternative would include enhanced volatilization to treat the organic constituents in the soil, and air stripping and ion exchange systems to treat constituents in the groundwater. Institutional controls would be implemented to prevent future use of groundwater until groundwater remediation is complete. Protective clothing would be required for workers excavating contaminated soil to ensure they are not exposed to an unacceptable non-cancer risk.

The Limited Action Alternative is the selected alternative for this site. This alternative will provide the most cost effective solution for soil and groundwater contamination at Site 1, and will provide overall protection of human health and the environment. Institutional controls will provide protection of human health during the natural attenuation of the contamination in the soil and groundwater. Once the natural attenuation of contamination levels has occurred, the site will be protective of human health and the environment without institutional controls. This alternative will meet groundwater and soil RAOs established in the FS, and ARARs identified in the FS.

The third alternative with limited action for soil and groundwater treatment involves active removal of groundwater contamination and natural attenuation for constituents in the soil. Removal of the groundwater contaminants by the treatment system is expected to take nearly as long as natural attenuation. This alternative would offer the same protection to human health and the environment, and compliance with ARARs and RAOs as the Limited Action Alternative, but at a higher cost.

The fourth alternative with treatment for both soil and groundwater involves active removal of constituents in both groundwater and soil. The groundwater treatment in this alternative is the same as the previous alternative. The enhanced volatilization of soils will remove the non-cancer risk and thus protect human health. Active remediation of soil and groundwater will cost approximately ten times more than the Limited Action Alternative. The cost of active remediation of groundwater and soil is not justified for the relatively low levels of constituents at Site 1.

### **5.1 Selected Alternative: Limited Action Alternative**

Specifically, the Limited Action Alternative will involve sampling soil and groundwater on a quarterly basis, with three rounds per year, to assess the natural attenuation of the contaminant levels. Initially two additional wells will be installed. Once sampling shows that constituent levels have attenuated to below ARARs, a final closure report will be prepared to document sampling activities and results. Sampling activities will only be conducted until results show that constituent levels meet ARARs and RAOs.

While sampling activities are taking place, institutional controls will be implemented by the MIANG to prevent use of groundwater at the site and to prevent activities at the site that would expose workers to the unacceptable non-cancer risk. If construction of the Alpena CRTC headquarters occurs prior to natural attenuation of constituents in the soil, then protective equipment will be necessary to ensure protection of human health. The groundwater at the Alpena CRTC is not currently used as a drinking source, therefore this constraint will not be an issue.

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## 6.0 CONCLUSION

Based on the results of the field investigation, there is contamination in the groundwater and soil at Site 1. Based on sampling, chlorobenzene and styrene are present in the soil in excess of 20 times the Industrial Drinking Water Values. The contaminants do not however appear to be leaching to soil. In addition, the concentration of chlorobenzene in the soil poses an unacceptable non-cancer health risk during potential excavation work at the site. Based on sampling results, antimony and benzene are present in the groundwater in excess of Industrial Drinking Water Values.

No source of the soil and groundwater contamination was identified during field investigation. The likely source is past operations at the site. This site no longer functions as the fuel storage and handling facility, therefore, it is not expected that there will be any additional contamination at the site.


The levels of contamination in the soil and groundwater at Site 1 do not warrant an active remediation alternative. However, the contamination levels do warrant regular sampling to assess the naturally attenuate to the contamination until the levels are shown to be protective of human health and the environment. The main concerns during this time are the prevention of worker exposure to the unacceptable non-cancer risk and the prevention of groundwater use.


The Limited Action Alternative provides institutional controls to protect human health while natural attenuation is occurring at the site. Institutional controls will be implemented by the MIANG to prevent the use of groundwater at the site and to prevent activities at the site that would expose workers to the unacceptable non-cancer risk. If construction activities occur at the site prior to natural attenuation of contamination to acceptable levels, protective equipment will be necessary to ensure the protection of human health. The alternative includes regular sampling of the groundwater and soil (three rounds per year) to monitor the natural attenuation of the constituent levels. Sampling results will provide current information on contamination levels in the soil and groundwater. Once sampling shows that contaminant levels meet the ARARs and the

RAOs established in the Final FS, sampling activities will be concluded and a final closure report will be prepared to document sampling activities and results.

7.0 DECISION

On the basis of the findings at the Alpena CRTS Site 1, there is contamination in the groundwater and soil. No active remediation will be conducted at the site, instead the site will be monitored for natural attenuation of contaminant levels. A final closure report will be prepared once the constituent levels are determined to meet the ARARs and RAOs established in the FS. Following the final closure report, this site will be removed from further consideration in the IRP process and no further investigative or remedial activities will be conducted with regard to the site.

  
\_\_\_\_\_  
Chief, Environmental Division

  
\_\_\_\_\_  
Date

-----  
Michigan Department of Environmental Quality

Concur

Non-Concur (Please provide reason)

\_\_\_\_\_  
Signature Title Date

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## 8.0 REFERENCES

- Hazardous Materials Technical Center, 1985. *Installation Restoration Program Records Research: Phelps Collins Air National Guard Base, Alpena, Michigan.*
- The Earth Technology Corporation, 1993. *Site Investigation Report, Combat Readiness Training Center, Michigan Air National Guard, Alpena County Regional Airport, Alpena, Michigan.*
- The Earth Technology Corporation, 1995. *Final Remedial Investigation Report, Alpena Combat Readiness Training Center, Alpena County Regional Airport, Michigan Air National Guard, Alpena, Michigan.*
- Montgomery Watson, 1996. *Final Feasibility Study, Alpena Combat Readiness Training Center Alpena, Alpena Michigan.*

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STATE OF MICHIGAN



JOHN ENGLER, Governor

**DEPARTMENT OF ENVIRONMENTAL QUALITY**

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

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RUSSELL J. HARDING, Director

REPLY TO:

ENVIRONMENTAL RESPONSE DIVISION  
KNAPPS CENTRE  
PO BOX 30426  
LANSING MI 48909-7926

August 19, 1997

Mr. Paul Wheeler  
ANGRC/CEVR  
3500 Fetchet Avenue  
Andrews AFB, Maryland 20762-5157

SUBJECT: Phelps Collins ANG, Alpena County

Dear Mr. Wheeler:

Staff from the Michigan Department of Environmental Quality (MDEQ) have reviewed the Installation Restoration Program, Draft Final Decision Documents, dated July 1996, for sites 1, 3, 5, 6, 7, 8, 9, and the Final Decision Documents for sites 11, 14, 15, and 16, which were dated May 1996. Staff have provided the following comments concerning the documents:

A "Limited Action Alternative" is approved for sites 1, 5, 6, 7, and 9 to monitor for exceedances of Groundwater Surfacewater Interface (GSI) criteria. The proposed alternative is to include the installation of wells (per the June 10, 1997 meeting minutes), quarterly sampling and institutional controls to prevent public exposure. Should exceedances of the GSI standard occur, a more aggressive remedial action may be requested for the site.

While the proposed monitoring addresses downgradient GSI concerns regarding the sites, additional sampling to verify that source area soils and groundwater are remediated are still needed prior to closure. It will be necessary to demonstrate that groundwater, in the source area as well as downgradient, does not exceed appropriate standards for a minimum period of one year, prior to closure. Institutional controls on the property will need to take into account all relevant exposure pathways as required under Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, 20118 (6(d(ii))).

The Decision Documents for sites 3 and 8 had proposed no action alternatives for the sites. It was agreed in our June 10, 1997 meeting that a limited amount of sampling will take place to verify previous sampling at the sites. Should the agreed upon sampling indicate that contamination is not present at the proposed locations, a no action alternative will be approved for the sites.

Staff are in concurrence with the "No further Action" decisions reached in the "Final Installation Restoration Program Decision Documents" prepared for sites 11, 14, 15, and 16. Based on the above referenced reports, the levels of contaminants which will remain in soils have been characterized and do not pose an unacceptable risk on the basis of standardized exposure assumptions and acceptable risk levels (Residential Cleanup Criteria), as described in the provisions of R 299.5709 to R299.5715 of the administrative rules of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The sites can be considered closed with regard to these contaminants.

August 19, 1997

In regards to the forthcoming sampling at the Phelps Collins ANG base, it is recommended that the Data Quality Objectives and the level of QA/QC used correspond to Level III (three) Data Quality. It is also recommended that the constituents of concern be expanded to include the reporting of all Method 8260 aromatics, plus dimethylbenzenes and solvents. In those areas where aviation gasoline may have been used, or lost, ethylene dibromide should be included in the analysis. PCB's should be included in at least one sampling event in the dump area. The QAPP should include specific information with regard to the analytical laboratory and procedures to be used.

Please notify MDEQ district staff when the proposed sampling is to take place. If you have any questions or need further information please feel free to contact Mr. Andy Stempky at 517-731-4920, or or you may contact me.

Sincerely,



Dan Schultz, Chief  
Field Operations Section  
Environmental Response Division  
517-241-7706

cc: Kimble, Alpena ANG  
Delaney, MDEQ  
Alford/Stempky/file, MDEQ  
c. file (aps)