ROD File

# Niagara Mohawk Fire Training School

Oswego, Oswego County, New York
Site No. 7-38-030

## PROPOSED REMEDIAL ACTION PLAN

February 1995



Prepared by:

Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation

# PROPOSED REMEDIAL ACTION PLAN

## NIAGARA MOHAWK FIRE TRAINING SCHOOL

**Oswego, Oswego County, New York**
**Site No. 7-38-030**
**February 1995**

### SECTION 1: PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) is proposing the excavation of contaminated surface and subsurface soils, creek sediments and moat surface at the Niagara Mohawk Fire Training School with off-site disposal at a permitted hazardous or solid waste landfill, as appropriate.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the rationale for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments submitted during the public comment period.

This PRAP is issued by the NYSDEC as an integral component of the citizen participation plan responsibilities provided by the New York State Environmental Conservation Law (ECL), 6 NYCRR Part 375. This document is a summary of the information that can be found in greater detail in the Remedial Investigation (RI) and Feasibility Study (FS) reports on file at the document repositories.

The NYSDEC may modify the preferred alternative or select another response action presented in this PRAP and the RI and FS Reports based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

The public is also encouraged to review the documents at the repositories to gain a more comprehensive understanding of the site and the investigations conducted there. The project documents can be reviewed at the following repositories:

**Oswego City Library**
**120 East Second Street**
**Oswego, New York 13126**
**Phone: (315) 341-5867**

**NYSDEC Regional Headquarters**
**615 Erie Boulevard West**
**Syracuse, New York 13204-2400**
**Contact: Mr. Charles Branagh**
**Phone: (315) 426-7400**

**NYSDEC Central Office**
**50 Wolf Road**
**Albany, New York 12233-1070**
**Contact: Mr. David A. Camp**
**Phone: (518) 457-4343**

Written comments on the PRAP can be submitted to Mr. Camp at the above address.

DATES TO REMEMBER:

**February 9 through March 10, 1995.** Public comment period on RI/FS Report, PRAP, and preferred alternative.

**March 2, 1995.** Public meeting from 7:00 p.m. to 9:00 p.m. at the McCrobie Building, 41 Lake Street, Oswego.

## SECTION 2: SITE LOCATION AND DESCRIPTION

The Niagara Mohawk Fire Training School, Site No. 7-38-030, is located on East Seneca Street in the City of Oswego, Oswego County, New York, as shown on Figure 1. The site is situated on property consisting of approximately 20 acres, owned by the Niagara Mohawk Power Corporation (NMPC). A 4 acre area of the property is utilized for fire training activities. The "Fire Training Area" is the fenced area of the site where training activities take place as shown on the site map included as Figure 2. A bermed moat located outside of the fenced area borders the training area to the east, south and west to collect water runoff from the training activities. The moat and the location of physical features at the site are also presented on Figure 2.

The area surrounding the site is sparsely populated. White Creek is located in the western portion of the property along with a NYSDEC regulated wetland. Lake Ontario is located approximately one half mile north of the site. The site is bordered on the west and southwest by the East Seneca Street Landfill which is an active construction and demolition debris landfill operated by Oswego County. The Pollution Abatement Services (PAS) site, a class 2 inactive hazardous waste disposal site (Site No. 7-38-001), is located northwest of the site across East Seneca Street.

## SECTION 3: SITE HISTORY

### 3.1: Operational/Disposal History

The Niagara Mohawk Fire Training School is an active facility used to train personnel from NMPC and other organizations in techniques for fighting electrical fires. Fire training activities were initiated in 1957. During training demonstrations at the facility, oils were placed on or over training props (i.e. various electrical equipment) and set on fire to simulate electrical fire-fighting conditions. During the training exercises, some of the oils were reported to have spilled on the ground.

Some of the oils used at the facility between 1957 and 1977 contained concentrations of polychlorinated biphenyls (PCBs) greater than 50 parts per million (ppm) which classifies them as a hazardous waste. PCBs were detected in storage tanks, soils, sediments, surface water, and groundwater at the site during a 1978 investigation conducted by O'Brien & Gere Engineers, Inc. PCBs were detected in soils at levels exceeding 50 ppm.

In the mid-1970s, NMPC documented discharges of oil from the training facility to White Creek, later determined to be the result of storm water runoff from oil-saturated soils on the facility. NMPC constructed a bermed moat around the facility to intercept the storm water runoff from the training grounds. Water and oil collected by the moat is treated and discharged to White Creek under a NYSDEC SPDES permit.

### 3.2: Remedial History

Based on a Preliminary Site Assessment, performed for the NYSDEC by URS Consultants, Inc. during 1991, the NYSDEC designated the training school as a Class 2 Inactive Hazardous Waste Site. An additional investigation was conducted by Stearns and Wheler Engineers and Scientists, Inc. for NMPC in 1992. Based on the

results of these investigations NMPC has restricted access to the southern portion of the fire training area since June 1992. In December 1992 NMPC entered into a consent order with the NYSDEC (index no. A7-0288-92-10) to address the presence of PCBs and other chemical constituents that may be present in environmental media at the site.

## SECTION 4: CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant threat to human health and the environment, the NMPC has recently completed a Remedial Investigation/Feasibility Study (RI/FS).

### 4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of contamination resulting from previous activities at the site.

The RI was conducted in two phases. The first phase was conducted between August 1993 and December 1993 and the second phase between July 1994 and September 1994. A report entitled *Remedial Investigation Report: Niagara Mohawk Fire Training School*, dated February 1995 has been prepared describing the field activities and findings of the RI in detail.

The RI activities consisted of the following:

- Collection and analysis of surface and subsurface soil, sediments and surface water samples to define the presence and extent of site-related contaminants in these media.
- Installation of soil borings and monitoring wells for chemical analysis of subsurface soils and groundwater and to assess physical properties of soil and hydrogeologic conditions.
- Geotechnical and chemical analysis of the moat.
- Completion of a Fish and Wildlife Impact Analysis to evaluate potential site impacts to fish and wildlife.
- Performance of a Human Health Risk Assessment to evaluate potential risks to human health associated with the identified chemical contamination currently present at the site.

To determine which media (soil, groundwater, etc.) contains contamination at levels of concern, the analytical data obtained from the RI was compared to environmental Standards, Criteria, and Guidance (SCGs) . Groundwater, drinking water and surface water SCGs identified for the Niagara Mohawk Fire Training School site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For the evaluation and interpretation of soil analytical results, NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals. Sediment analytical results were evaluated against NYSDEC sediment criteria and background levels in the stream.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site require remediation. These are summarized below. More complete information can be found in the RI and FS Reports.

Chemical concentrations are reported in parts per billion (ppb) or parts per million (ppm). All sample locations are shown on Figure 3.

## Soil

PCBs are the primary contaminant of concern identified in site soils. In surface soils, PCBs were detected throughout the fire training area, but levels above the NYSDEC cleanup goal of 1 ppm were detected most frequently in samples collected from the eastern and southern portions of the fire training area, where visual oil staining was highest. The highest PCB level detected in surface soil is 100 ppm. Fifteen of forty surface soil samples collected within the active fire training area exceeded 1 ppm PCBs. Sample locations are presented on Figure 3 and samples exceeding 1 ppm are presented on Figure 4.

In subsurface soils, PCBs above the 10 ppm cleanup goal were detected in six of nine samples collected from the southeastern portion of the fire training area and one sample collected west of the fire building. The highest PCB level detected in subsurface soils was 70 ppm. However, during the test pit excavations, pockets of oil and oil saturated soils were encountered throughout the top six feet of the subsurface soils in the southeast portion of the fire training area. This oil is likely the source of the light non-aqueous phase liquid (LNAPL) identified and discussed in the groundwater section below, which contain PCBs at concentrations from 210 ppm to 500 ppm. Many of these samples also contain elevated levels of tentatively identified Semi-volatile organic compounds (SVOC-TICs), with the highest detection at 618 ppm in sample TP-9. Soil sampling locations where PCBs were detected above 1 ppm in surface soils and 10 ppm in subsurface soils are presented on Figure 4, and the extent of contaminated soils is shown on Figure 5.

Polynuclear aromatic hydrocarbons (PAHs) were detected in several surface soils near the fire building. Elevated levels of lead were detected in two surface soil samples (1460 ppm and 1530 ppm) collected from the southeast corner of the fire training area.

## Sediments

PCBs were the only contaminant of concern detected in sediment samples collected within White Creek and the adjacent wetland. Detections in the vicinity of the drainage ditch, which leads from the site's SPDES discharge point, ranged from 0.1 ppm to 1.4 ppm. All samples collected in the vicinity of the SPDES discharge point exceed the NYSDEC sediment criteria for protection from wildlife bioaccumulation and one sample exceeds the criteria for benthic aquatic life.

Levels of PCBs above background and NYSDEC sediment criteria were also detected in several samples collected in White Creek and the adjacent wetland, upstream of the site. These detections represent an upstream source of PCBs possibly attributed to an area of buried debris and municipal waste from the East Seneca Street landfill which encroaches on the southwest corner of NMPC's property, as shown on Figure 3.

## Groundwater

An overburden groundwater mound was observed in the center of the fire training area which creates radial groundwater flow. White Creek is gaining groundwater in the vicinity of the site. Groundwater flow from the southwest converges with groundwater migrating through the fire school at White Creek.

LNAPL was observed on the top of the groundwater table at P-4 and MW-6S located in the southeast corner of the fire training area. PCBs were detected in the LNAPL at these location at 210 ppm and 500 ppm, respectively. PCBs were also detected in the groundwater at these locations at concentrations up to 30 ppb, but these results may be due to potential cross contamination with the LNAPL during sample collection. Several volatile organic compounds (VOCs) were detected above groundwater standards in monitoring wells MW-6S and MW-8S, located within the fire training area.

Groundwater contamination, including the LNAPL, appears to be confined to the fire training area, within the moat boundaries.

**Surface Water**

Iron was the only constituent detected above the NYSDEC class D surface water standard in the eight water samples collected in White Creek and the site drainage ditches. Samples were analyzed for VOCs, SVOCs, PCBs, and metals. The iron appears to be either naturally occurring or from background sources, but not site related.

**Moat**

PCBs were detected in all four samples collected from the 0"-6" zone of the moat bottom. Detections were 3.5 ppm, 4.3 ppm, 7 ppm and 11 ppm. The surface of the moat is saturated with oil.

## 4.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

Because of the presence of LNAPL on the groundwater table in the southeast corner of the fire training area, an IRM is being implemented which involves the periodic removal of any LNAPL encountered in the wells and piezometers by hand bailing. The LNAPL collected will be temporarily stored on site and then treated and/or disposed at an off site hazardous waste disposal facility, as appropriate.

## 4.3 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present health risks to persons at or around the site. A more detailed discussion of health risks can be found in Section 5.0 of the RI Report.

An exposure pathway is the process by which an individual is exposed to a contaminant. An exposure pathway may be based on past, present, or future events. Complete pathways which are known to or might exist in the future at the site include:

- Dermal contact with, inhalation or ingestion of contaminants in soils and moat sediments by on-site workers.
- Dermal contact with surface water or sediments in White Creek by recreationists.
- Dermal contact with and ingestion of contaminants in groundwater as well as inhalation of volatile compounds associated with household water use by hypothetical off-site residents.

Access to the fire training area portion of the site is restricted by a chain link fence. Therefore, the receptor group with the highest probable exposure to on site soils is the fire training school staff. On-site workers may also be exposed to moat sediments during maintenance activities. For soils and sediments PCBs are the primary contaminant of concern. PAHs are also a concern for on-site surface soils.

There are no current groundwater receptors since groundwater contamination is limited to the fire training area, and residents near the site obtain their water from a municipal water supply. However, since the groundwater within the fire training area is not contained there is the possibility of a future impact on human receptors if future development near the site were to occur. PCBs and VOCs are the primary contaminants of concern for groundwater.

### 4.4 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The Fish and Wildlife Impact Analysis included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources.

A potential environmental exposure pathway exists for exposure of aquatic biota and wildlife to PCBs associated with the sediments in White Creek and the adjacent wetland, in the vicinity of the site's outfall.

## SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The only PRP for the site, documented to date, is the Niagara Mohawk Power Corporation (NMPC) who is the sole owner and operator of the fire training facility. The NYSDEC and the NMPC entered into an Order on Consent on December 4, 1992. The Order obligates the responsible party to implement a RI/FS. Upon issuance of the Record of Decision the NYSDEC will approach the PRP to implement the selected remedy under an Order on Consent.

## SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. These goals are established under the overall goal of meeting all standards, criteria, and guidance (SCGs) and protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate the contamination present above cleanup levels within the on-site soils, moat materials and creek sediments.
- Mitigate the potential for direct human or animal contact with or ingestion of contaminated soils and creek sediments.
- Mitigate the impacts of contaminated groundwater to the environment.
- Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC).

## SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Niagara Mohawk Fire Training School site were identified, screened and evaluated in a three phase Feasibility Study. This evaluation is presented in the report entitled *Feasibility Study Report, February 1995.* A summary of the detailed analysis follows.

### 7.1: Description of Alternatives

The potential remedies are intended to address the contaminated soils, sediments and groundwater at the site. Four remedial alternatives have been evaluated and are described below.

**No Action**

| | |
|---|---|
| Present Worth: | $ 600,000 |
| Capital Cost: | $ 0 |
| Annual O&M: | $ 38,500 |
| Time to Implement: | 0 months |

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. Under this alternative the site would remain in its present condition and human health and the environment would not be provided any additional protection.

**Capping**

| | |
|---|---|
| Present Worth: | $ 1,650,000 |
| Capital Cost: | $ 749,000 |
| Annual O&M: | $ 58,500 |
| Time to Implement: | 6 months |

In this alternative sediments and moat materials exceeding cleanup objectives would be excavated and placed within the fenced portion of the fire training area. A low permeability cap, consisting of a layer of soil and asphalt, would then be installed within the limits of the fire training area to cover the contaminated soil, sediment and moat material. The excavated areas of sediment will be restored. This remedy may include implementation of groundwater recovery to maintain hydraulic control within the area beneath the cap. LNAPL would also be collected from the groundwater surface in the southeastern portion of the fire training area by the continued implementation of the IRM or this would be replaced by a groundwater/LNAPL recovery system, as appropriate. Long term groundwater quality would be documented using on-site monitoring wells.

**Excavation and Off-site Disposal**

| | |
|---|---|
| Present Worth: | $ 2,150,000 |
| Capital Cost: | $ 2,150,000 |
| Annual O&M: | $ 0 |
| Time to Implement: | 4 months |

In this alternative soils, sediments, and moat materials exceeding cleanup objectives would be excavated and either disposed of at 1) a permitted hazardous waste disposal facility, or 2) should PCB levels be less than 50 ppm and no visible LNAPL is present, the soil could go to a permitted solid waste landfill, if other applicable conditions are also met. LNAPL would be recovered from the open excavation area in the southeastern corner of the fire training area, and disposed of off site. The excavated areas would be restored. After remediation, groundwater monitoring would be performed using on-site monitoring wells to document groundwater quality and verify removal of the LNAPL in the southeastern corner of the fire training area.

**Excavation and On-site Treatment by Low Temperature Thermal Destruction**

| | |
|---|---|
| Present Worth: | $ 4,100,000 |
| Capital Cost: | $ 4,100,000 |
| Annual O&M: | $ 0 |
| Time to Implement: | 6 months |

In this alternative soils, sediments, and moat materials exceeding cleanup objectives would be excavated and treated on-site using a low temperature thermal desorption unit. LNAPL would be recovered from the open excavation area in the southeastern corner of the fire training area, coupled with off-site disposal of the recovered LNAPL. The excavated areas would be backfilled with the thermally treated material. After remediation, groundwater monitoring would be performed using on-site monitoring wells to document groundwater quality and verify removal of the LNAPL in the southeastern corner of the fire training area.

## 7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

*The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.*

**1. Compliance with New York State Standards, Criteria, and Guidance (SCGs).** Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The no action alternative will not meet SCGs since unacceptable levels of contaminants would remain unremediated in soils, sediments, and groundwater.

The capping alternative would not meet groundwater SCGs under the fire training area since contaminants would remain in subsurface soils and could partition into the groundwater. However, groundwater standards would be met off-site by the use of pumping wells, if necessary, in the capped area, preventing groundwater from migrating beyond the limits of the cap.

Off-site disposal and on-site treatment would meet all applicable SCGs and would meet the groundwater standards in a shorter time period than capping. For all of the action alternatives, LNAPL with PCB levels of 500 ppm or greater must be incinerated or treated by using an alternative technology equivalent to incineration.

**2. Protection of Human Health and the Environment.** This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Each of the alternatives, except no action, would be protective of human health and the environment. However, on-site treatment and off-site disposal are considered to be more protective since contaminants would be eliminated from the site. For capping, long term operation and maintenance would be required to insure the cap remains effective.

*The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.*

**3. Short-term Effectiveness.** The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

The no action alternative would have no short term impacts since no remedial construction activities would take place. For the other alternatives potential short term impacts include increased noise, dust and exhaust during activities associated with excavation and transport of contaminated materials. Short term impacts would be slightly greater for on-site treatment and off-site disposal due to the excavation of greater amounts of soils, than for capping greater still due to the additional increased handling of waste materials required for on-site treatment. In addition on-site treatment would require greater environmental controls due to the operation of a thermal treatment process.

**4. Long-term Effectiveness and Permanence.** This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1)

the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

The on-site treatment and off-site disposal alternatives would be the most effective in eliminating risks from site related contaminants, since contaminants would be removed from the site. On-site treatment is the only alternative which meets the requirements of a permanent remedy since contaminants would ultimately be destroyed. Capping would mitigate direct exposure to contaminants and migration off-site, but since contaminants would remain on-site, the site would remain on the Registry of Inactive Hazardous Waste Disposal sites, there would be restrictions on the use of the site, and long-term operation and monitoring would be required. The no action alternative would have no long term effectiveness as there would be no controls to prevent exposure to and release of contaminants.

**5. Reduction of Toxicity, Mobility or Volume.** Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

All alternatives, with the exception of no action, would reduce the mobility of the LNAPL portion of the waste on-site, since LNAPL present on the groundwater would be periodically removed and disposed of off-site as part of the continuing IRM. On-site treatment and off-site disposal would reduce the toxicity, mobility, and volumes of contamination at the site since contaminants would no longer be present on site. On-site treatment, however, goes one step further since the contaminants desorbed in the treatment process would be incinerated off site. Capping would only be effective at reducing the mobility of contamination. No action would not reduce the toxicity, mobility or volume of the soil and sediment contamination.

**6. Implementability.** The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

The no action alternative requires no construction or operation and, therefore is easily implementable. All of the action alternatives are readily constructable and commonly used remedial technologies. All would involve the excavation and relocation of contaminated sediments in the creek and moat materials. On-site treatment and off-site disposal would also involve the excavation and backfilling of approximately 1300 cubic yards of subsurface soil as well as surface soils within the fire training area. Capping would only involve recontouring of the fire training area followed by placement of an asphalt cap.

Portable on-site treatment systems are readily available, however, mobilization and operation of a treatment unit requires a greater degree of coordination than containment or off-site disposal. In addition, the subsurface soils at this site contain a significant volume of rock and large boulders which could not be processed by the treatment unit without additional handling to either crush or segregated them from the soils to be dealt with separately. While not precluding the use of this technology, the additional handling does make implementation of the remedy more difficult in this case. Treatment would also require more handling and greater environmental controls.

**7. Cost.** Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 1. On-

site treatment is the most expensive alternative estimated at $4.1 million. Capping is estimated at $1.65 million and off-site disposal at $2.15 million. However, the cost for off-site disposal is a conservative estimate since it assumes all of the excavated soils and sediments would be disposed at a hazardous waste landfill. As previously discussed, soils containing PCBs less than 50 ppm could be disposed at a solid waste landfill which would significantly reduce the disposal cost.

*This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received.*

8. **Community Acceptance** - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan are evaluated. A "Responsiveness Summary" will be prepared that describes public comments received and how the Department will address the concerns raised. If the final remedy selected differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

## SECTION 8: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is proposing excavation and off-site disposal of contaminated soils and sediments as the remedy for this site.

This selection is based upon the following reasoning:

The no action alternative is not protective of human health and the environment and will not meet SCGs and, therefore, is not a viable alternative. The treatment and off-site disposal alternatives meet both of these threshold criteria. Capping is protective of human health and the environment and will meet SCGs outside of the fire training area.

With regard to long term effectiveness, off-site disposal would be more effective then on-site containment since contaminants would be contained in an off-site hazardous or solid waste landfill. This would provide complete containment as well as a leachate collection and treatment system. The on-site capping alternative would not contain wastes as effectively as a hazardous or solid waste landfill and would require permanent on-site operation and, therefore, maintenance to insure the cap remains effective.

On-site treatment would be as effective as off-site disposal, however it would be more difficult to implement. On-site treatment requires the mobilization and operation of a treatment unit on the site, which would involve greater handling of wastes as well as more short term controls. The subsurface soils also contain large boulders which could not be handled by the treatment unit and, therefore, would have to be segregated from the soils and dealt with separately.

In terms of cost, on-site treatment is the most costly alternative followed by off-site disposal and then on-site containment. Because the volume of waste material requiring treatment at this site is relatively small, and off-site disposal would provide equivalent protection of the human health and the environment, the increased cost of mobilizing and operating and treatment unit on-site is not justified.

Although on-site containment would be less costly it would require long term operation and maintenance as well as other controls, such as pumping wells, to insure it is effective. In addition, the site would remain listed in the NYS Registry of Inactive Hazardous Waste Disposal Sites and there would be some long term restrictions on the use of the property, which would be undesirable since this is an active training

facility. Whereas with off-site disposal use of the property would be unrestricted and , once the remedy is implemented and tested to verify its effectiveness, the site could be delisted. Based on the above evaluation off-site disposal is the preferred alternative.

The cost to construct the remedy is estimated to be $ 2,200,000. This is a conservative estimate based on NMPC's preference to assume all excavated soil and sediment would be disposed at a hazardous waste landfill. Since this remedy would eliminate hazardous waste from the site there are no annual operation and maintenance costs associated with this remedy beyond short term groundwater monitoring for effectiveness.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will be resolved.

2. Excavation and off-site disposal of the following contaminated media:

   a) Surface soils containing PCBs above 1 ppm. This would consist of the removal of six inches of gravel and six inches of soil over the entire fire training area, approximately 2,000 cubic yards of material.

   b) Subsurface soils containing PCBs above 10 ppm. This would consist of the removal of approximately 1,300 cubic yards of soil in the southeast portion of the fire training area and west of the fire building.

   c) The top six inches of sediments in White creek and the adjacent wetland which have been impacted by PCBs from the site.

   d) The surface sediments in the moat containing PCBs above 10 ppm.

In addition, any oil-saturated soils, sediments or moat materials encountered during excavation will also be removed and disposed along with the other contaminated media. The approximate limits of the remedial areas are shown in Figure 5.

3. The excavated materials will be disposed in an off-site landfill. If the materials meet the criteria for hazardous waste classification, (i.e they contain PCBs at concentrations greater than 50 ppm) they would be disposed of at a TSCA-and/or RCRA-permitted landfill; materials less than 50 ppm could be disposed of as nonhazardous waste at a solid waste landfill capable of accepting the material.

4. LNAPL recovery from the open excavation area in the southeastern corner of the fire training area, coupled with off-site disposal of the recovered LNAPL.

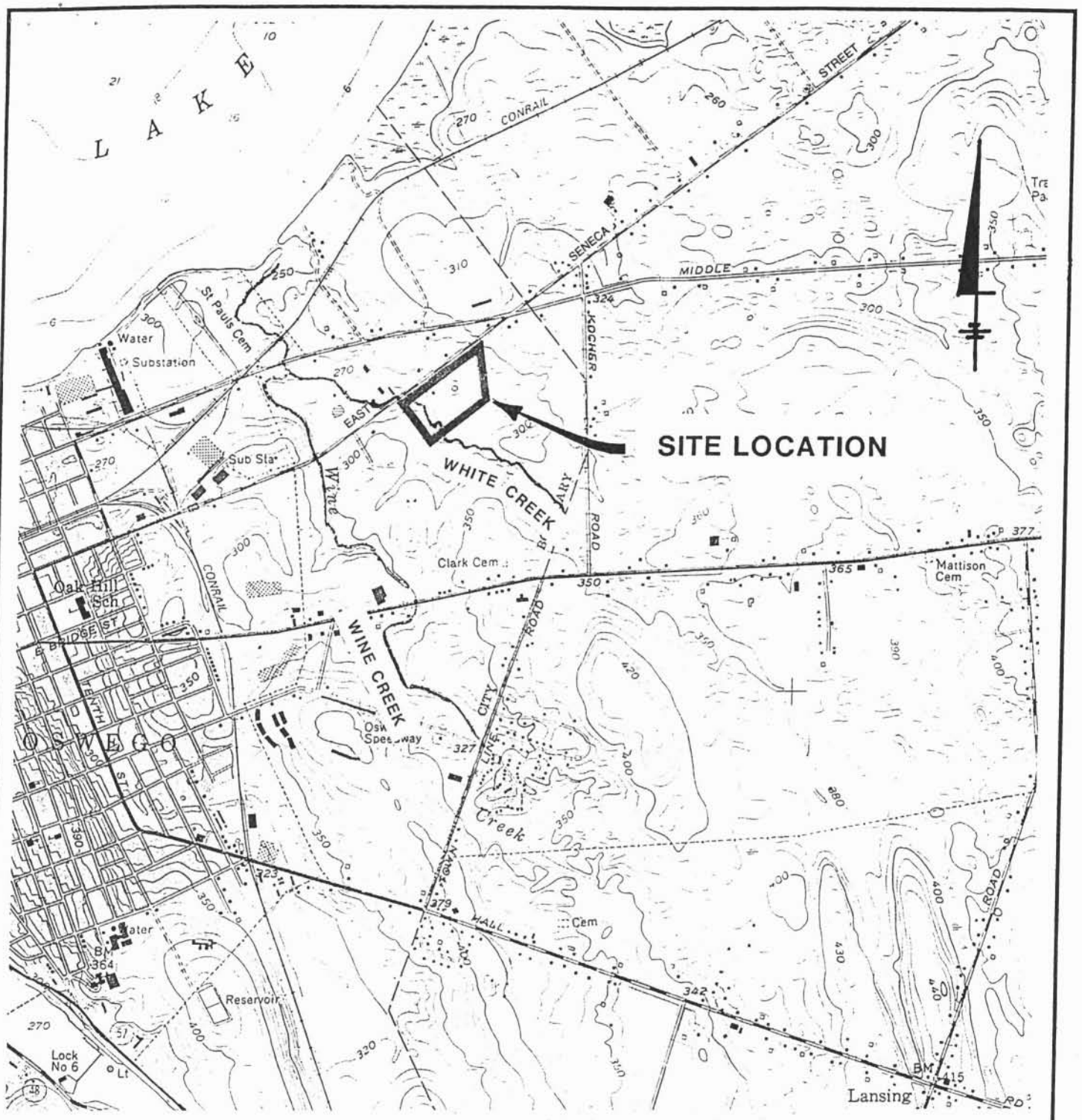
5. Restoration of excavated areas and relining of the moat with appropriate material, if necessary.

6. Groundwater monitoring using on-site monitoring wells to document groundwater quality and verify removal of the LNAPL in the southeastern corner of the fire training area, after the completion of remedial activities. Groundwater remediation activities will be considered if the above activities do not achieve groundwater standards of 0.1 ppb for PCBs, LNAPL removal, or groundwater standards for VOCs and SVOCs.

## TABLE 1 Remedial Alternative Costs

| Alternative | Capital Cost | Annual O&M | Present Worth |
|---|---|---|---|
| Alternative 1: No Action (Monitoring only) | $0 | $38,500 | $600,000 |
| Alternative 2: Capping | $749,000 | $58,500 | $1,650,000 |
| Alternative 3: Excavation and Off-site Disposal | $2,150,000 | $0 | $2,150,000 |
| Alternative 4: Excavation and On-site Treatment | $4,100,000 | $0 | $4,100,000 |

Note: Present Worth based on 30-year period, 5% discount rate.




REFERENCE: OSWEGO EAST, N.Y. USGS QUAD. 1978

2000' 0 2000'

APPROX. SCALE: 1" = 2000'

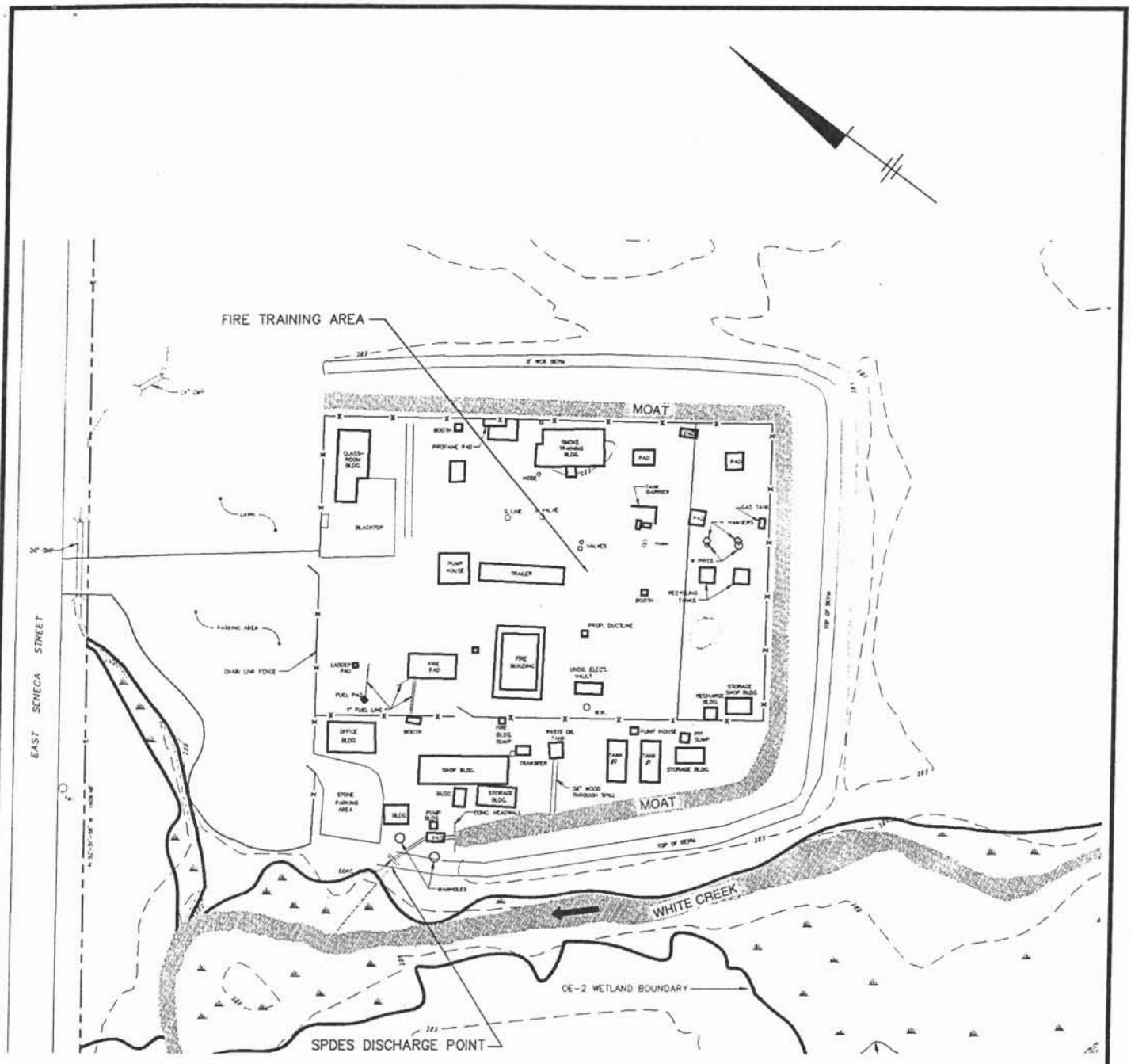
BLASLAND, BOUCK & LEE, INC.
*ENGINEERS & SCIENTISTS*

NIAGARA MOHAWK POWER CORPORATION
OSWEGO FIRE TRAINING SCHOOL
OSWEGO, NEW YORK
FEASIBILITY STUDY

# LOCATION MAP

FIGURE 1

11/94 D54-JVM
3642664/36426N01.CDR




LEGEND

- OE-2 WETLAND BOUNDARY
- DRAINAGE DITCH
- FENCE LINE
- CULVERT

GENERAL NOTES:

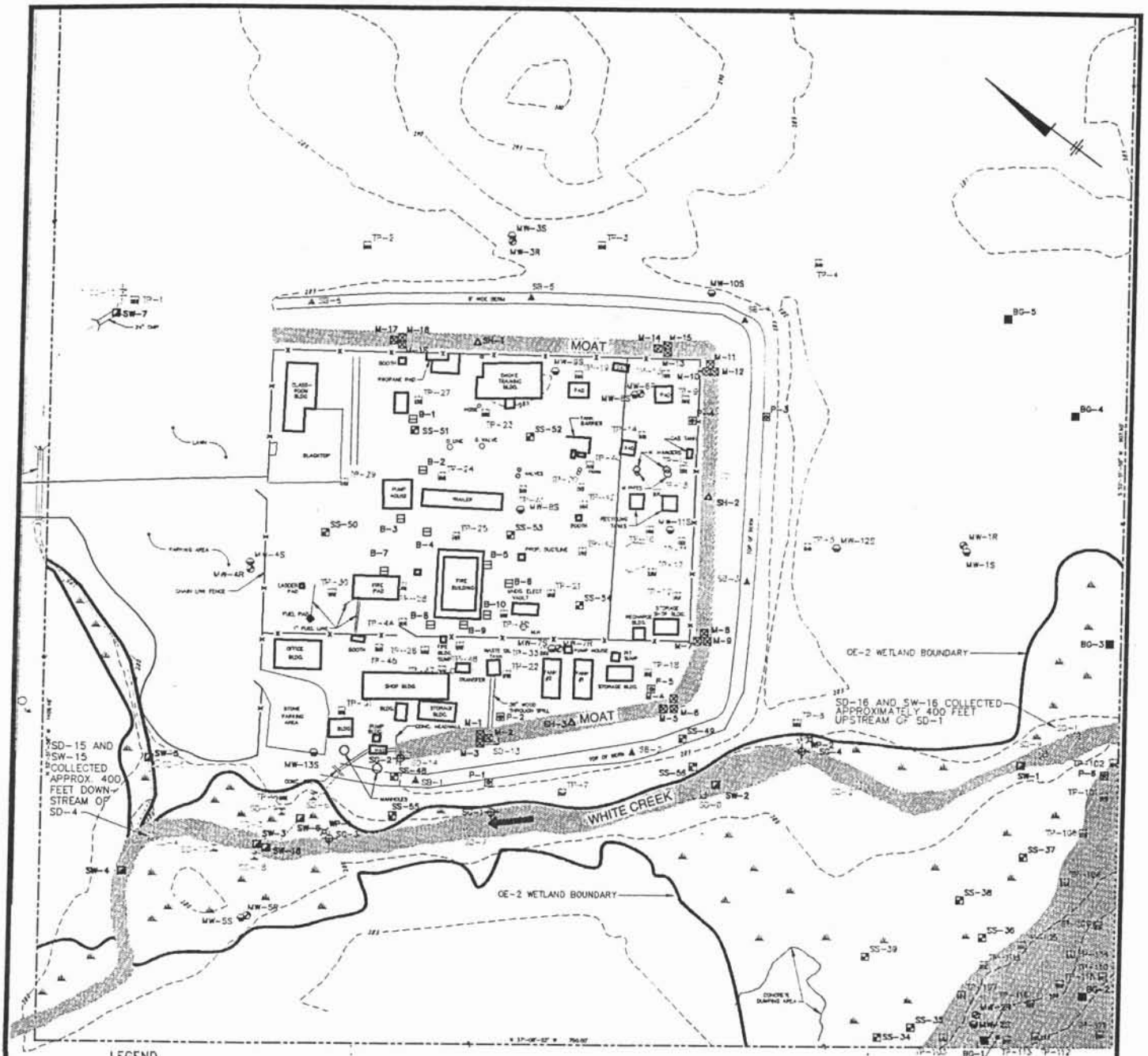
1. BASE MAP PREPARED FROM NIAGARA MOHAWK POWER CORPORATION REFERENCE DRAWING NO. 3111, DATED 11/2/93.
2. ALL BEARING AND COORDINATES ARE BASED ON STATE PLANE COORDINATE SYSTEM OF 1927.
3. NYSDEC DESIGNATED OE-2 WETLAND WAS FIELD DELINEATED IN JULY 1994 BY BLASLAND, BOUCK & LEE, INC. USING VEGETATION, SOIL, AND HYDROLOGIC PARAMETERS. THE WETLAND BOUNDARIES PRESENTED WERE SURVEYED BY NIAGARA MOHAWK POWER CORPORATION IN AUGUST 1994.

## NIAGARA MOHAWK FIRE TRAINING SCHOOL

# SITE PLAN

FIGURE 2

XREF: 36426X01
1/95 54-AK,PMC,PGL
36426068/36426G03.DWG

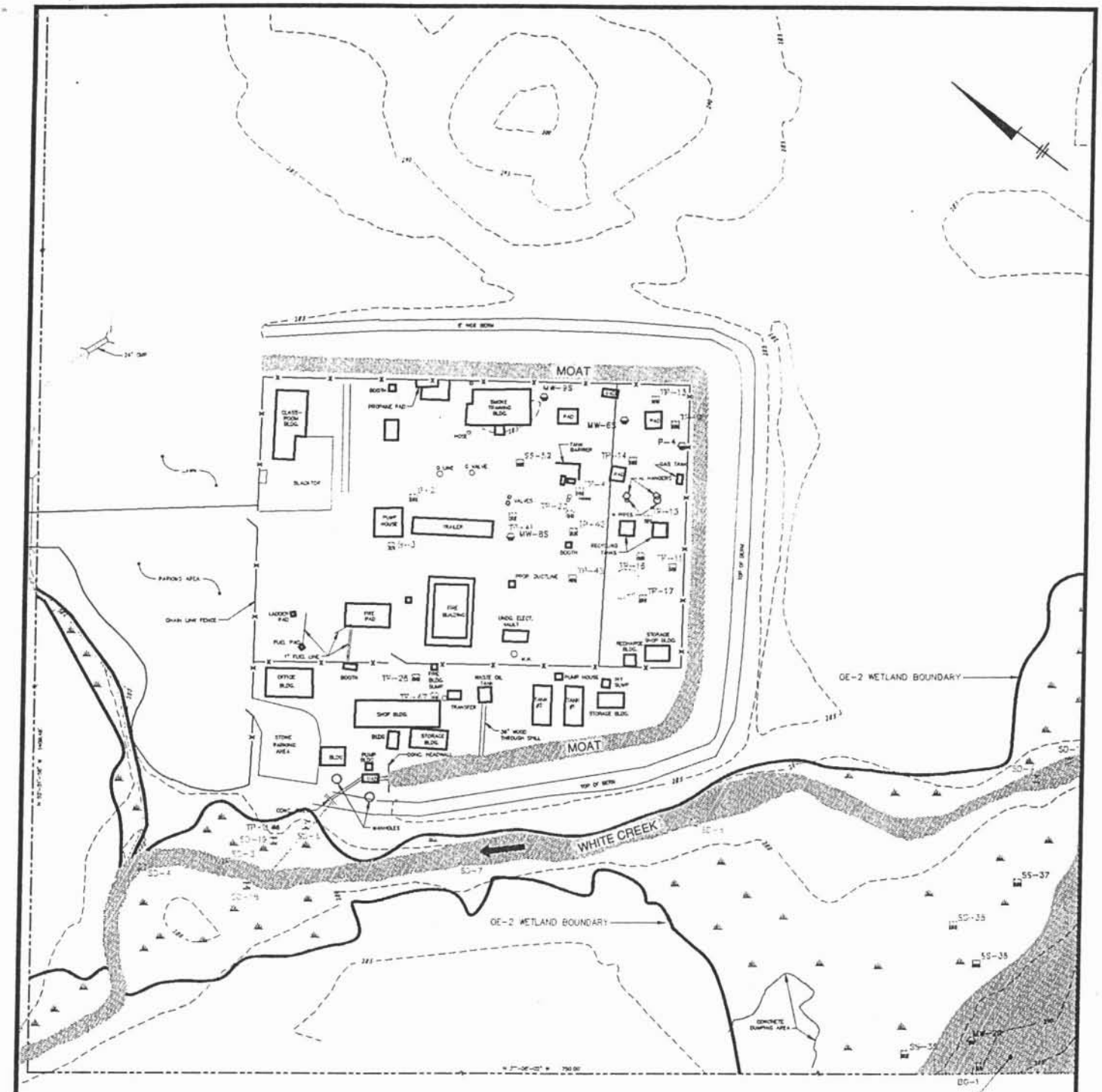



# NIAGARA MOHAWK FIRE TRAINING SCHOOL

## SAMPLING LOCATION MAP

FIGURE 3

L: ON=*; OFF=REF
X: 36426X01.DWG
1/95 54-PGL
36426068/36426G04.DWG




LEGEND

- MW-25 MONITORING WELL OR PIEZOMETER GROUND-WATER SAMPLING LOCATION WHERE PCBs OR VOCs WERE DETECTED ABOVE NYSDEC STANDARDS AND/OR LNAPL WAS PRESENT
- TP-111 SURFACE OR SUBSURFACE SOIL SAMPLING LOCATIONS WHERE PCBs WERE DETECTED ABOVE 1 ppm IN SURFACE SOIL OR PCBs WERE DETECTED ABOVE 10 ppm IN SUBSURFACE SOIL
- SD-1 SEDIMENT SAMPLING LOCATION WHERE PCBs WERE DETECTED

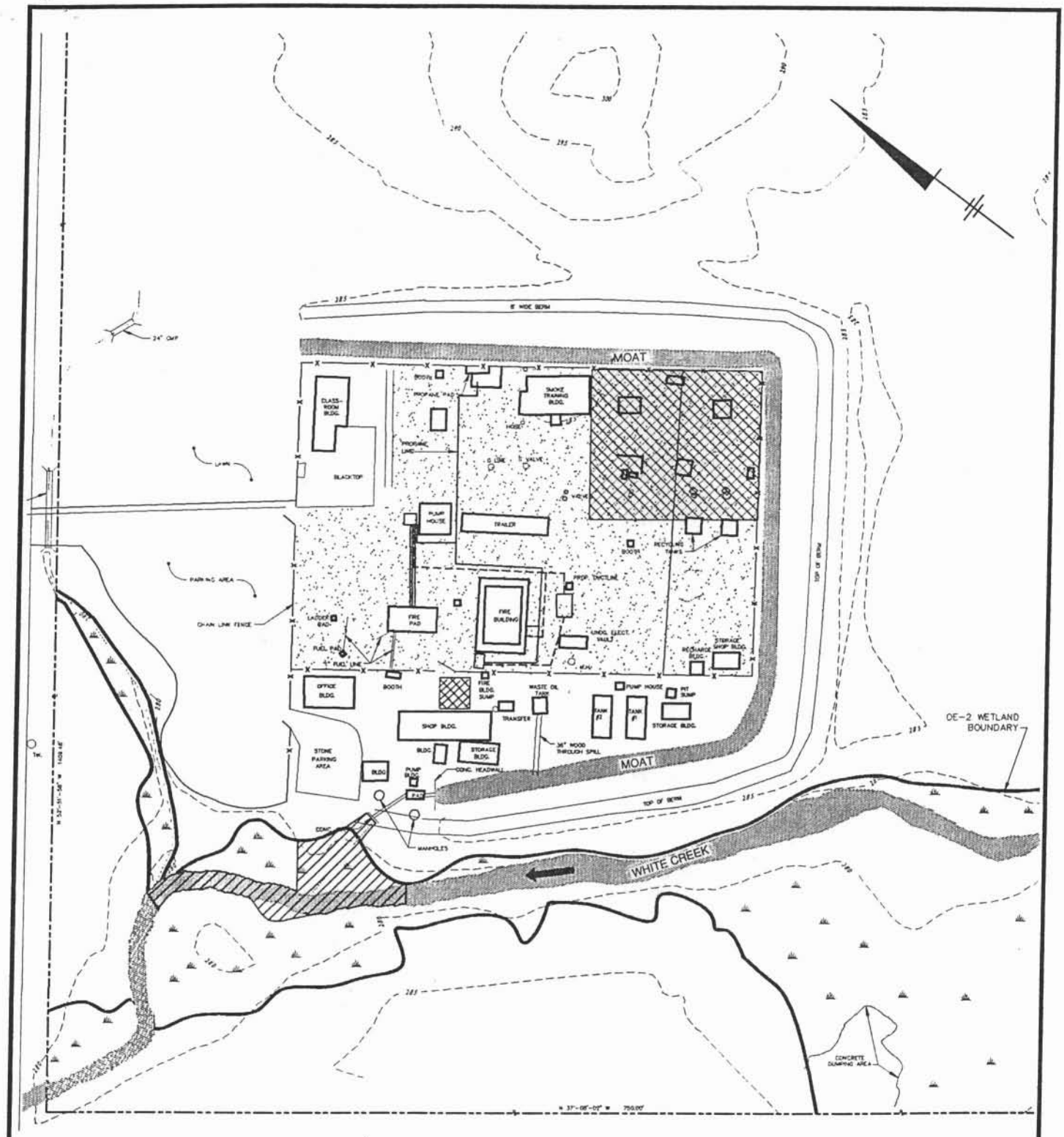
100' 0 100'

## NIAGARA MOHAWK FIRE TRAINING SCHOOL

# SELECT SAMPLING LOCATIONS WHERE PCBs WERE DETECTED

FIGURE 4

L: ON=*; OFF=REF
X: 36426X01.DWG
1/95 54-PGL
36426068/36426G05.DWG




LEGEND

- ESTIMATED LIMITS OF IMPACTED SEDIMENT
- ESTIMATED LIMITS OF IMPACTED SURFACE SOIL
- ESTIMATED LIMITS OF IMPACTED SUBSURFACE SOIL

90' 0 90'

**NIAGARA MOHAWK FIRE TRAINING SCHOOL**

**ESTIMATED AREAS OF IMPACTED SOIL AND SEDIMENT**

FIGURE 5

BLOCK SURFREM,CLEAR,SUBREM,LIMIT,PIPE,ALL L: *REF OFF
X: 36426X1A.DWG © RA 52.857
1/24/95 54-NES,PMC,PGL
36426068/36426G06.DWG