Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision
Flagship Airlines Hangar Site

Town of Wappinger, Dutchess County
New York
Site Number 3-14-101

March 2003

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Flagship Airlines Hangar Inactive Hazardous Waste Disposal Site

Town of Wappinger, Dutchess County, New York
Site No. 3-14-101

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Flagship Airlines Hangar site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Flagship Airlines Hangar inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Flagship Airlines Hangar site and the criteria identified for evaluation of alternatives, the NYSDEC has selected enhancement of the existing AS/SVE system. The selected remedy seeks to increase the zone of influence by installing additional air-sparge points to deeper depths at locations where the residual concentrations have shown persistence.

The elements of the NYSDEC's selected remedy are as follows:

- Installation of deeper additional air-sparging points to enhance the air-sparging/existing soil vapor extraction system (AS/SVE).
- Modification to the SVE system if deemed necessary during the design stage.
- Continued operation of the enhanced AS/SVE system.

- Removal of the gravel bed/french drain, that served as a drainage system for the overflow from the former wash-water underground storage tank.

- Sampling and analysis of soils surrounding the french drain, and evaluation of data and removal of any soil that has contaminant concentrations exceeding the NYSDEC soil cleanup objectives.

- Preparation of an operation, maintenance and monitoring plan to track the implementation of the remedy and its effectiveness.

- An institutional control would be imposed, in such form as the NYSDEC may approve, that would prevent the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Dutchess County Health Department.

- The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

- The property owner will complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls put in place, pursuant to the Record of Decision, are still in place, have not been altered, and are still effective.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

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Date	Dale A. Desnoyers, Director Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Flagship Airlines Hangar site. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, the operation at the site resulted in the disposal of hazardous wastes, including volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC). Some of the wastes migrated from the site to surrounding areas, including the adjacent property to the northwest where a hangar formally had been used by IBM for maintenance and storage of their company aircraft. These wastes have contaminated the groundwater at the site, and have resulted in:

- a significant threat to human health associated with potential exposure to groundwater; and

- environmental threat to groundwater.

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy:

- Installation of deeper additional air-sparging points to enhance the existing air-sparging/soil vapor extraction system (AS/SVE).

- Modification to the SVE system if deemed appropriate during the design stage.

- Continued operation of the enhanced AS/SVE system.

- Removal of the gravel bed/french drain, that served as a drainage system for the overflow from a former wash-water tank.

- Sampling and analysis of soils surrounding the french drain, and removal of soil to meet NYSDEC soil cleanup objectives.

- Preparation of the operation, maintenance and monitoring plan to track the implementation of the remedy and its effectiveness.
- An institutional control to prevent the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Dutchess County Health Department.

- The operation of the components of the remedy would continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

- Annual certification by the property owner to the NYSDEC that the site is in compliance with the institutional controls outlined in this PRAP.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6, in conformity with applicable standards, criteria , and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The site is located on the southeastern portion of the Dutchess County Airport in the Town of Wappinger, Dutchess County, approximately 3.5 miles east of the Hudson River and three miles south of the City of Poughkeepsie (See Figure 1). The site is approximately 2 acres in area. The site is occupied by a single building of approximately 15,000 square feet, which is used as an aircraft hangar (See Figure 2).

The facility is mostly bordered by concrete or asphalt pavement. Areas to the southeast and southwest are used for vehicle parking and the area to the northeast is unpaved and grass-covered. Ramp and runway access for the airport is located southwest of the hangar. The site is bounded on the northeast by a service road; on the southeast by the airport fire department, a hangar, and Dutchess County maintenance garage; and on the northwest by an active hangar facility formerly occupied by IBM but presently occupied by Associated Aircraft Group. The former IBM site is also on the Registry of Inactive Hazardous Waste Disposal Sites as a Class 4 site under a monitoring program. (Site Number 3-14-078)

The site is more than half a mile away from any surface water such as a river, lake or pond. The closest surface water downgradient of the site is the Wappinger Creek at a distance of approximately half a mile.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The facility was used for washing aircraft and maintenance work that required the use of jet fuel, heating oil and solvents. Five underground storage tanks (USTs) and a septic tank were located at the site (Figure 2). The release of contaminants into the ground and the groundwater may have been due to leaking USTs and associated piping. The release may also have been caused by the drainage into the gravel bed/french drain from the former wash-water underground storage tank. As listed in Section 3.2 below, all the storage tanks were removed by 1996.

3.2: Remedial History

In 1988, a leak in a fuel oil tank (Figure 2) was reported to the NYSDEC Spills Section, and the following actions were undertaken:

- The fuel oil tank was removed in 1988.
- The contents of the septic tank were removed in 1991. The tank was then cleaned.
- In 1992, 1,020 gallons of water were pumped out from two 2 monitoring wells (MW-9 and MW-10) near the gravel bed (suspected to be a french drain) that served as the overflow drainage system to the wash water tank that was later removed.
- 1 wash-water underground storage tank was removed in 1995.
- 1 aircraft lavatory waste holding tank was removed in 1996.
- 2 Jet-A fuel tanks were removed in 1996.

Also in 1988, a soil vapor extraction (SVE) system was installed as an interim remedial measure (IRM) to reduce the elevated levels of benzene, toluene, ethylbenzene and xylene (BTEX) in the unsaturated soil in the vicinity of the petroleum tanks that were removed. A phased RI conducted concurrently indicated that the residual contamination in the groundwater was significant.

In 1989, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

A series of investigations was conducted at the site from 1990 to 1996 to determine the nature and extent of the contamination.

The following activities were conducted during these investigations:

- A soil-gas survey to locate VOC contaminated soils and possible vapor exposure pathways;

- Excavation of seven test pits to locate underground drainage/leach fields;

- Installation of 62 soil borings and installing 22 monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions;

- Collection of groundwater samples from 22 new and existing monitoring wells;

- Collection of two hydropunch GW samples using a direct push technique;

- A survey of public and private water supply wells in the area around the site and

- Collection of four sludge samples from the septic tank at the site.

The field activities and findings of the investigations were compiled in the August 1997 "Phased Remedial Investigation Report" (the RI Report) prepared for the PRP.

SECTION 4: 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 PRPs for the site, documented to date, include American Eagle Airlines.

The NYSDEC and American Eagle Airlines, Inc. entered into a Consent OrderW3-0837-98-12 on 03/30/99. The Order obligates the responsible parties to implement a full remedial program.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

In June 1999, an interim remedial measure (IRM) work plan was submitted to the NYSDEC.

In November 1999, as part of the remediation process and in compliance with the Order on Consent, American Eagle Airlines prepared a Feasibility Study.

In May 2000, the IRM work plan was approved by NYSDEC on the basis of the evaluation of remedial alternatives performed in the feasibility study.

In August 2000, the IRM, comprising of an air-sparging/soil vapor extraction (AS/SVE) system, commenced operation.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. All of the investigative work was done prior to the March 30, 1999 Order on Consent. Section 3 above outlines the activities undertaken to characterize the contamination at the site. To determine whether the soil, groundwater, and sediment contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Soil SCGs, based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

- Groundwater, drinking water, and surface water SCGs, based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

5.1.1: Site Geology and Hydrogeology

The Former Flagship Airlines Hanger is located approximately 3.5 miles east of the Hudson River and three miles southeast of the City of Poughkeepsie, about 3,000 feet southeast of Wappinger Creek. The airport is located in an area of relatively flat topography at an approximate elevation of 150 to 160 feet above mean sea level.

The region has undergone repeated glaciation. Glacial deposits found in the area include sands and gravels, underlain by a highly hardened glacial till. This till is a mixture of clay, silt, sand, gravel, cobbles, and boulders, generally of very low hydraulic conductivity, directly overlying bedrock. The average thickness of the unconsolidated sediments in the area is approximately 75 feet. Bedrock in the area consists of graywackes, shales, argillites, limestones and dolomites. The bedrock units trend generally to the north and are transected by north northeasterly trending faults and fracture systems.

Four geologic and three hydrogeologic units underlie the site. The geologic units from the ground surface down are: sand/silty sand, silt/clay, glacial till, and shallow bedrock. The corresponding hydrogeologic units are: an overburden water-bearing unit (sand/silty sand), a confining unit (silt/clay and glacial till), and the shallow bedrock aquifer. The confining unit is laterally contiguous throughout the Flagship site, as evidenced by the degree of hydraulic confinement measured in the on-site shallow bedrock wells.

Based upon slug tests and published data, the hydraulic conductivity of the confining unit is significantly lower than that of the overlying water-table aquifer. This is a hydrogeologic setting that promotes horizontal flow through the overburden and minimizes the magnitude of downward flow through the confining layer. As such, the confining unit serves as an effective barrier to significant downward migration of VOCs from the over-burden unit to the bedrock aquifer.

The depth of water table in the overburden varies seasonally, and ranges from approximately 2-6 feet below ground surface. The potentiometric surface in the shallow bedrock aquifer was encountered at depths ranging from 8-12 feet below ground surface. The average potentiometric difference between the overburden and the bedrock is approximately five feet. However, the confining layer overlying the bedrock prevents any significant downward groundwater flow.

5.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater and sediment samples were collected to characterize the nature and extent of contamination. As summarized in Table 1A and 1B, the main categories of contaminants that exceed their SCGs are VOCs and SVOCs. The VOCs of concern in the soil and groundwater are 1,1,1 TCA and PCE. The SVOC of concern in the soil is naphthalene and those in the groundwater are naphthalene, phenol and 4-methylphenol.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

Chemical concentrations in soil and air or soil-gas are reported in parts per million (ppm) and those in groundwater are in parts per billion (ppb).

Table 1A and 1B summarizes the degree of contamination for the contaminants of concern in subsurface soil and groundwater, and compares the data with the SCGs for the site. A summary of the findings of the investigation follows:

Soil-Gas

A soil-gas survey is a technique that is used to obtain an initial assessment of the disposition of volatile contamination in the vadose zone. The locations of probes for the soil-gas survey conducted in 1990 are shown in Figure 3. The results of the survey indicate that 1,1,1 TCA was prevalent under the eastern corner of the hangar (locations C-35 through C38 with concentration range of 21-194 ppm), and near the wash water UST (locations C-1 through C-3 and C-21 with concentration range of 141-784 ppm). The maximum 1,1,1-TCA concentration of 784 ppm was detected at C-3.

Significant concentrations of 1,1 DCA were found at locations C-23, C-24 and C-27 at 33, 23 and 31 ppm, respectively. A nearly linear configuration of lesser concentrations was detected between locations C-5 and C-39 with concentrations ranging from 4.1 ppm to 1.7 ppm.

The maximum concentration of TCE was detected at location C-25 at 7 ppm. Though the TCE detection was widespread, the concentrations were relatively low.

PCE under the building ranged from 0.75 ppm to 8.0 ppm and was at a maximum concentration at location C-37. Concentration near the UST ranged from 1.8 to 7.8 ppm at locations C-1,C-2 and C-21.

Naphthalene, a semi-volatile compound, is not amenable to this technique.

Subsurface Soil

The total number of soil samples collected and analyzed, and the range of concentrations detected for the contaminants of concern (COC) are shown in Table 1A. Principal COCs are 1,1,1 TCA, PCE, and 1,1 DCA, which are VOCs, and napthalene which is a SVOC.

In March 1991, Flagship conducted a soil investigation near the wash-water UST (a.k.a.concrete waste water UST) (Figure 4). The wash-water UST had been previously identified as a VOC source. Ten hand auger borings were made to depths ranging from 2-7 feet below ground surface (bgs). Detectable levels of contaminants were found in boring B-2. Principal contaminants were 1,1,1 TCA at 8.8 ppm and PCE at 11 ppm at a depth of 6-7 feet. The SCGs for 1,1,1 TCA and PCE are 0.8 ppm and 1.4 ppm respectively.

In April, 1991, ten additional soil borings were conducted to depths 2-7 feet bgs (Figure 5). This soil investigation uncovered the presence of a gravel layer/french drain on the NE side of the concrete wash water UST. Of the five soil borings augured into the gravel layer only one sample from boring (B-5) could be recovered for analysis. PCE at 3.6 ppm in boring B-5 was the only contaminant that exceeded the SCGs.

In April 1994, nine soil samples were collected during installation of six monitoring wells ME-11,12,14,15,17 &18 (Figure 6). Samples were collected at depths of 0-26 feet. Naphthalene at 44.5 ppm in ME-12 at a depth of 5-7 feet was the only contaminant that exceeded its SCG of 13 ppm.

In December 1996, 39 soil samples at various depths were collected from 15 borings in 5 potential areas of environmental concern (AECs) identified in Figure 7. PCE was detected at 4.4 ppm in sample from AOC1.PH-1 at a depth of 8-12 feet and naphthalene was detected at less than 2 ppm (AOC5.PH-2, 4-8 feet).

In December 1996, a site-wide soil investigation was carried out at 50 x 50 feet grid points (Figure 7) with a geo-probe and at depths of 0-12 feet bgs. PCE was detected at 0.2 ppm in GP-9 at a depth of 8-12 feet. Naphthalene was detected at 5.5 ppm at locations GP-17 (4-8 feet) and at GP-19 (4-8 feet). Neither the PCE concentrations nor the naphthalene concentrations exceeded the SCG level.

Groundwater

The monitoring well locations are shown in Figure 8. Over a period from April 1992 to May 2002, fourteen rounds of sampling of some or all of the wells were conducted. For clarity, only a select number of significant results are shown in Table 1B for samples collected in April 1992, December 1996, September 2000 and May 2002.

The maximum concentrations of the VOCs in the April 1992 round of sampling were detected in samples from monitoring wells MW-8 and MW-9 near the wash water underground storage tank. In August 2000, an IRM, as described more fully in Section 5.2 below, was undertaken. The September 2000 and May 2002 data presented in Table 1B reflects the effectiveness of the IRM.

Table 2 shows the relationship between the monitoring wells that exhibited significant contamination and their respective depths. The inference that can be drawn from the data is that a correlation exists between depth and the effectiveness of the IRM. In particular for well A-42S, a 24 feet deep well, the concentrations of contaminants appear to decrease more slowly than in the shallower wells MW-9 & 10 which are only 7 feet deep. There is little attenuation of concentrations of napthalene and vinyl chloride in A-42S over the two year period that the IRM has been in operation.

Vinyl chloride, which has an SCG of 2 ppb, is a degradation product of PCE and was detected at a concentration of 130 ppb in May 2002.

There are five bedrock wells on the site. None have site-related contamination which can be explained by the presence of an overlying layer of glacial till.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

Based on the findings of the RI and the FS report submitted in November 1999, an IRM was undertaken. The IRM consisted of a soil vapor extraction system (SVE) and an air sparging system (AS) (see Figure 8). The system began operation in August 2000.

This IRM included the following tasks:

- Installation of the AS/SVE well network with piping and equipment on the site.

- Startup and operation of the AS/SVE system.

- Periodic monitoring of the system effluent and evaluation of the remedial efficiency.

- Collection of the site-wide baseline and quarterly groundwater samples to determine the efficiency of the remedial method.

- The submittal of quarterly remedial monitoring reports.

The SVE system consists of 2 legs (North Leg and South Leg). All seven SVE wells are horizontally placed due to shallow groundwater conditions. The North Leg wells are EW-3, EW-4 and EW-6. The South Leg wells are EW-1, EW-2, EW-5 and EW-7.

The AS system consists of two legs (The North Leg and the South Leg). The North Leg wells are SP-4, SP-5, SP-6. The South Leg wells are SP-1, SP-2, SP-3, SP-7. Considering the relatively low estimated mass of volatile organic compounds that would be released by the AS system, the SVE system was designed to work in pulsed mode. The recent dry weather lowered the groundwater table and exposed a greater depth of the unsaturated soil. This condition allowed the AS/SVE system to work continuously and extract VOCs more efficiently.

To date nearly five pounds of VOCs have been extracted.

5.3: Summary of Human Exposure Pathways

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 4 of the "Feasibility Study: Groundwater Remediation Alternatives" prepared by Metcalf & Eddy, Inc., November 29, 1999 which can be found at the local document repository and at the NYSDEC address in New Paltz, New York .

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The

receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway are documented. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Groundwater

- Ingestion of contaminated drinking water is a potential pathway in the future if the on-site contaminants migrate off-site.

- Exposures to contaminants in drinking water can occur via ingestion, dermal contact and inhalation from water uses such as showering, bathing, or other household uses. Private wells supply water to nearby residences and business.

The Dutchess County Department of Health sampled nearby private wells. No site related contaminants were detected in any of the private wells. The on-site contaminated groundwater has not migrated off-site and the remedial systems have contained the plume on-site. Exposure to site related contaminants in off-site groundwater is not expected to occur in the future due to the elements of the proposed remedy.

Soil

- Incidental ingestion of on-site soils is a potential pathway for trespassers if access restrictions are not maintained.

- Inhalation of particulates and vapors generated during on-site invasive activities is a potential pathway during the construction phase of the remedy.

Exposure to contaminants in soil can occur via ingestion, inhalation and dermal contact. On-site soil is mostly covered by pavement and access to the site is restricted by a fence. Public exposure to on-site contaminated soil is not expected.

A Community Air Monitoring Plan has been and will be implemented to ensure inhalation of particulates or vapors generated during invasive activities does not occur.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

An identifiable surface water resource in proximity to the site is the Wappinger Creek which lies 3,000 feet northwest of the airport. The groundwater contours at the site indicate that the groundwater flows in a northwesterly direction towards the creek. The nature, extent and concentrations of VOCs and naphthalene, however, do not suggest that the site poses a significant threat to the creek. Volatile organic compounds do not persist in surface water bodies, and naphthalene is biodegraded under aerobic conditions.

Samples from overburden monitoring wells were analyzed and, as indicated in Table 2, residual concentrations of the chemical compounds of concern significantly exceed the respective groundwater standards.

Bedrock monitoring wells were analyzed and the results indicate that the site contamination has not impacted the bedrock aquifer.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the site were identified, screened and evaluated in the FS report.

A summary of the remedial alternatives that were considered for this site are discussed below.

6.1: Description of Remedial Alternatives

The following potential remedies identified in the FS were again considered to address the residual contamination in the groundwater at the site.

Alternative 1: No Further Action

The No Further Action alternative recognizes remediation of the site conducted under the previously completed IRM. The system has effectively reduced the contaminant concentration within its zone of influence. However, as indicated in Table 2, residual concentrations of napthalene and vinyl chloride have shown persistence in the deeper saturated zone, and the existing system would not be efficient in reducing these concentrations without some enhancements.

Alternative 2: Enhanced Natural Attenuation

Enhanced natural attenuation is a faster, more efficient version of the natural degradation of contaminant compounds. Contaminants generally degrade over time, due to the presence of naturally occurring microbes or compounds in the subsurface. However, this natural

attenuation of contaminants may require a long time to reach conclusion. Enhanced natural attenuation is the process of adding microbes, nutrients, or gases, such as oxygen, hydrogen, or methane, to facilitate and augment the degradation of contaminants. Additionally, certain co-contaminants, such as phenol and toluene, may serve as electron donors that promote the enhanced attenuation of chlorination solvents.

Alternative 3: In-Well stripping/Recirculation Wells

In-well stripping/re-circulation wells is an innovative technology for in-situ remediation. There are several basic types of recirculating wells available with slightly varying techniques for treating contaminated groundwater. The recirculating well technology was considered for evaluation of this remedial alternative, because it includes in-well air stripping as the primary contaminant removal method. Groundwater is drawn into the well through an intake screen and oxygenated with a pressurized air-stream that also provides the motive force for re-circulation. Mass transfer of the dissolved VOCs occurs as the oxygenated water flows upward through the well. Groundwater passing through the well also becomes oxygenated and carries the dissolved oxygen into the aquifer where it can promote natural degradation.

Alternative 4: Enhancement to the existing Air Sparge/Soil Vapor Extraction System

Air sparge/soil vapor extraction (AS/SVE) is a combination of complementary technologies for in-situ volatilization of contaminants, enhanced biodegradation/natural attenuation, and vacuum extraction and treatment of the volatilized contaminants. The air sparge component of this remedial alternative is facilitated by injecting air under pressure into the contaminant zone, via subsurface injection wells. The air volatilizes the contamination as it disperses in the aquifer. The volatilized contamination rises through saturated zone to the unsaturated zone, where the SVE component of this remedial alternative vacuums off the contaminated vapor via suitably placed well-screens in the unsaturated zone. The vapor is pushed through vapor-phased carbon or another appropriate air treatment system and the treated off-gas is released to the atmosphere.

The system has effectively reduced the contaminant concentration within its zone of influence. However, as indicated in Table 2, residual concentrations of napthalene and vinyl chloride have shown persistence in the deeper saturated zone, and the existing system would not be efficient in reducing these concentrations without some enhancements. Additional deeper air-sparge points would be installed to address the residual persistent contamination. The existing SVE would be modified if deemed appropriate at the design stage.

6.2: Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New

York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

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

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the NYSDEC has determined to be applicable on a case-specific basis.

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/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. 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 engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

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.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectivness. Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated 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 PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised

In general, the public comments received were supportive of the selected remedy. Several comments were received, however, pertaining to : (a) Nearby drinking well water sampling, now and in the future, (b) Impacts on the nearby well fields and landfill because of hazardous waste releases from the site, (c) The nature and extent of the contaminant plumes at the site, (d) Disruptions of the airport operations because of remedial construction and operational activities, (e) The length of time to achieve remedial goals.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected Alternative # 4 as the remedy for this site. Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to 1,1 DCA, PCE, vinyl chloride and naphthalene;

- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable.

The selected remedy of enhancement to the existing AS/SVE system (Alternative 4) is presumptive and is based on the effectiveness of the remedial system that has been in operation since August 2000. The system has effectively reduced the contaminant concentration within

its zone of influence. This selected remedy seeks to increase the zone of influence by installing additional air-sparge points to deeper depths at locations where the residual concentrations have shown persistence (Table 2).

The technology used in the air-sparging element of the system is comprised of tubes, with screened segment at the bottom, that are placed vertically in borings. The annular space between boring and the screen is filled with granular material and the rest of the space above the screen is sealed. When air is injected under pressure it bubbles out from the bottom end of the tubes, in the course of which it strips off volatile hydrophobic compounds like the volatile organics that are adsorbed to the soil or dissolved in the groundwater. Moreover, the air provides the oxygen to create an aerobic condition in the saturated zone.

The SVE element of the system captures the vapors released by the AS system and passes them through carbon filters to which the contaminants are adsorbed, thus preventing their escape into the atmosphere.

The enhancement to the existing remedy will include the installation of two or more air sparge points and extension of the soil vapor extraction system to capture the additional release of volatile organic compounds from the groundwater into the vadose zone. The additional air-sparge points will be located near well A-42S and MW -9 (Figure 8) and any other locations indentified during the design stage. The tips of the AS points would be placed on the top of the silt and clay layer. The additional sparge points and any extension to the vapor extraction system would be connected to the existing system.

Naphthalene is readily bio-degraded into non toxic compounds under aerobic conditions. And the injection of air into the groundwater will create aerobic conditions at greater depths where the napthalene concentrations have persisted.

The deeper air-sparging points would dislodge volatile organics from saturated soils and groundwater outside the influence of the existing system.

The NYSDEC anticipates that it would take about 3 months to design the remedy and two weeks to implement the remedy. It would probably take about 3 years to meet the remediation goals.

The cost of implementing the proposed alternative would be as follows:

Present Worth: *$161,150*
Capital Cost: *$25,000*
Annual OM&M: *$50,000*
(Years 1-3)

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

The elements of the NYSDEC's selected remedy are as follows:

- Installation of deeper additional air-sparging points to enhance the air-sparging/existing soil vapor extraction system (AS/SVE). (See Figure 8).

- Modification to the SVE system if deemed necessary during the design stage.

- Continued operation of the enhanced AS/SVE system.

- Removal of the gravel bed/french drain, that served as a drainage system for the overflow from the former wash-water underground storage tank.

- Sampling and analysis of soils surrounding the french drain, and evaluation of data and removal of any soil that has contaminant concentrations exceeding the NYSDEC soil cleanup objectives.

- Preparation of an operation, maintenance and monitoring plan to track the implementation of the remedy and its effectiveness.

- An institutional control will be imposed, in such form as the NYSDEC may approve, that would prevent the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Dutchess County Health Department.

- The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

- The property owner will complete and submit to the NYSDEC an annual certification until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls put in place, pursuant to the Record of Decision, are still in place, have not been altered, and are still effective.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site :

- Repositories for documents pertaining to the site were established.

- A public contact list, which includes nearby property owners, elected officials, local media and other interested parties, was established

- A Proposed Remedial Action Plan Meeting Invitation and Fact Sheet was mailed out to members of the public contact list.

- A public meeting was held on March 18, 2003, to present and receive comments on the PRAP.

- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP. The public comment period ended on March 24, 2003.

TABLE 1A
Nature and Extent of Contamination in Soils
Samples Analyzed in the period March 1991 to December 1996

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	Frequency of Exceeding SCG	SCG[b] (ppm)
Volatile Organic Compounds (VOCs)	1,1,1-Trichloroethane	ND to 8.8	1 of 78	0.8
	Tetrachloroethene	ND to 11	3 of 78	1.4
	1,1-Dichloroethane	ND to .2	1of 78	0.2
Semivolatile Organic Compounds (SVOCs)	Naphthalene	ND to 44.5	1 of 78	13

Table 1B
Nature and Extent of Contamination in Groundwater

Date	Type of	Contaminants of	Concentration	Frequency of	SCG[b]
April 1992	**Volatile Organic**	1,1,1-Trichloroethane	ND to 2871	4 of 8	5
		Tetrachloroethene	ND to 1562	4 of 8	5
		1,1-Dichloroethane	ND to 3419	6 of 8	5
December 1996	**Volatile Organic**	1,1,1-Trichloroethane	ND to 610	4 of 8	5
		Tetrachloroethene	ND to 720	3 of 8	5
		1,1-Dichloroethane	ND to 770	6 of 8	5
Sept 2000	**Volatile Organic**	1,1,1-Trichloroethane	ND to 45	16 of 22	5
		Tetrachloroethene	ND to 680	15 of 22	5
		1,1 Dichloroethane	ND to 170	18 of 22	5
		1,2 Dichloroethene	ND to 200	14 of 22	5
		Trichloroethene	ND to 200	16 of 22	5
		Chlorobenzene	ND to 200	16 of 22	5
	Semi-Volatiles	Naphthalene	ND to 9600	8 of 22	13
May 2002	**Volatile Organic**	Tetrachloroethene	ND to 74	5 of 11	5
		1,1 Dichloroethane	ND to 17	9 of 11	5
		Chloroethane	ND to 42	4 of 11	5
	Semi-Volatile	Naphthalene	ND to 1300	6 of 11	13

Notes:

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

[b] SCG = standards, criteria, and guidance values
For purpose of clarity, data for only select number of sampling events have been tabulated.

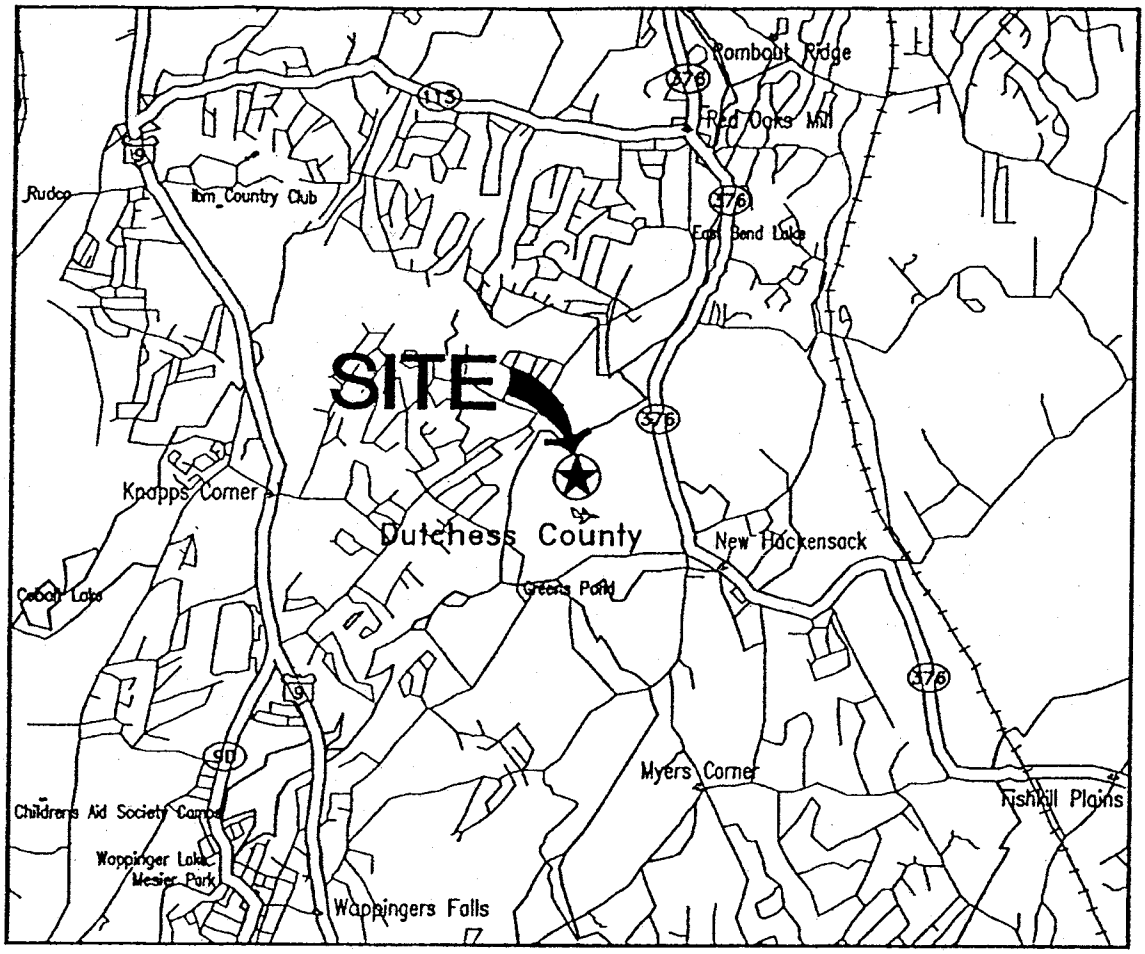
Table 2
Select Trend Indicator Groundwater Concentration Data (in ppb)

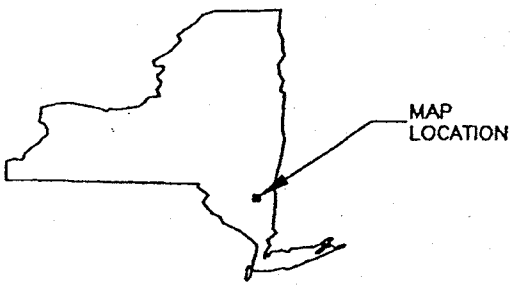
			Before Operation of IRM		During Operation of IRM	
Contaminant	Well	Depth b.g.s.[a]	April 92	Dec 96	Sept 2000	May 2002
1,1 DCA	MW-9	7	3068	25	170	7
	MW-10	7		26	8	ND
	A42-S	24			11	11
PCE	MW-9	7	1002	120	680	74
	MW-10	7		65	36	43
	A42-S	24			ND	ND
Napthalene	MW-9	7		41	9600	340
	MW-10	7		58	140	8
	A42-S	24			1200	1300
Vinyl Chloride	MW-9	7		96	ND	ND
	MW-10	7		ND	ND	ND
	A42-S	24			170	130

Note:

b.g.s[a]. Below ground surface
Blank Spaces : Indicate un-available results.
ND : Not Detected.
ppb : parts per billion
Depth to tip of air-sparge points is approximately 15 feet b.g.s.

IMAGE	X-REF	OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
---	---	ALB	S. SHKOLNIK 10-23-02			820131A2





SCALE 1:62,500

REFERENCE:
MAP FROM DELORME'S MAP EXPERT,
FREEPORT, MAINE.

Shaw
Shaw E&I, Inc.

FLAGSHIP
AIRLINES, INC.
(DBA AMERICAN EAGLE)

FIGURE 1

SITE LOCATION MAP
DUTCHESS COUNTY AIRPORT
WAPPINGER FALLS, NEW YORK

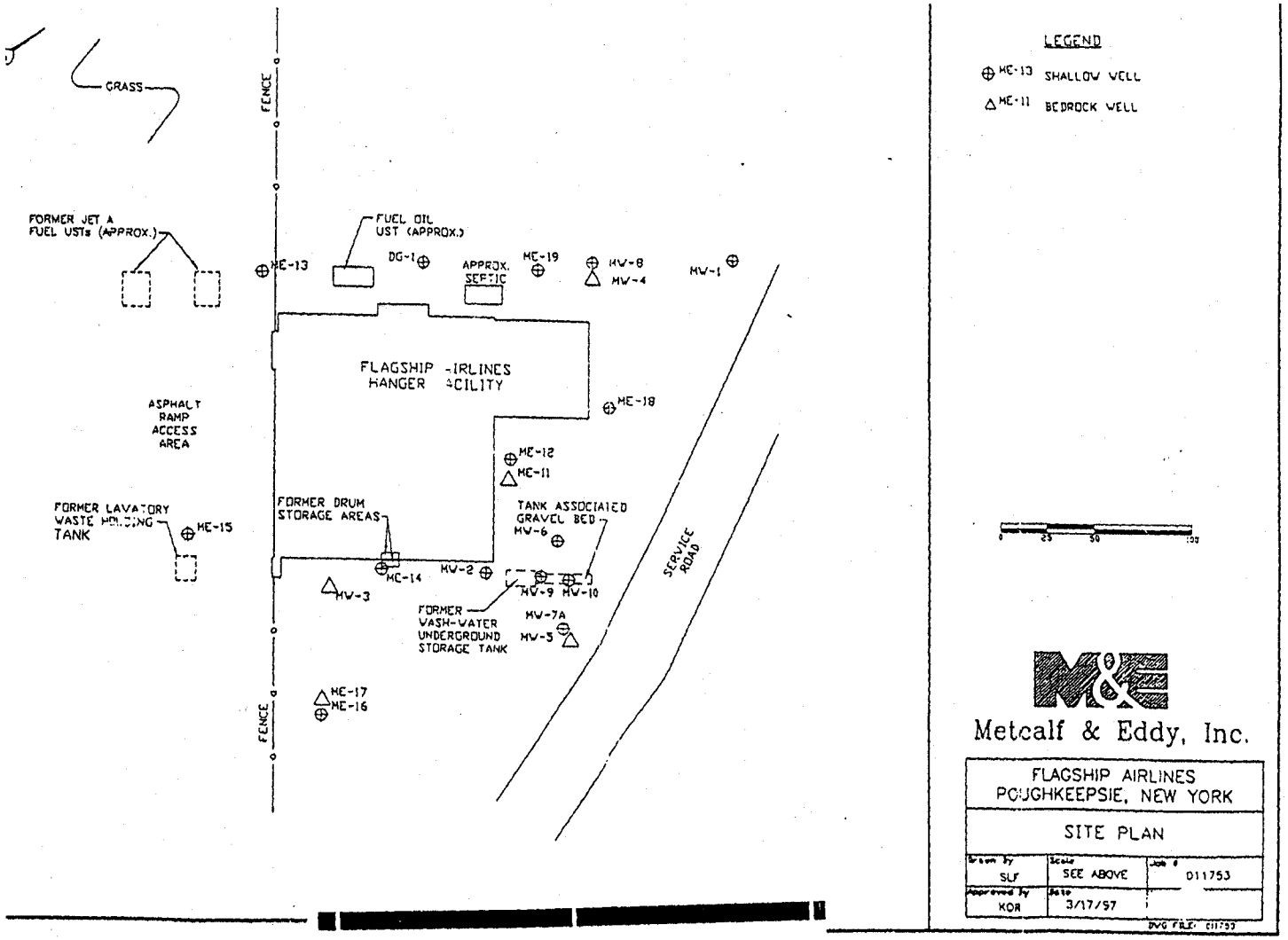

GRASS
FENCE
FORMER JET A FUEL USTs (APPROX.)
FUEL OIL UST (APPROX.)
ME-13
DG-1
APPROX. SEPTIC
ME-19
MW-8
MW-4
MW-1
FLAGSHIP AIRLINES HANGER FACILITY
ME-18
ASPHALT RAMP ACCESS AREA
ME-12
ME-11
FORMER LAVATORY WASTE HOLDING TANK
ME-15
FORMER DRUM STORAGE AREAS
TANK ASSOCIATED GRAVEL BED
MW-6
ME-14
MW-2
MW-3
MW-9
MW-10
SERVICE ROAD
FORMER WASH-WATER UNDERGROUND STORAGE TANK
MW-7A
MW-5
ME-17
ME-16
FENCE
LEGEND
ME-13 SHALLOW WELL
ME-11 BEDROCK WELL
0
25
50
100
M&E
Metcalf & Eddy, Inc.
FLAGSHIP AIRLINES
POUGHKEEPSIE, NEW YORK
SITE PLAN
Drawn by
SLF
Scale
SEE ABOVE
Job #
011753
Approved by
KOR
Date
3/17/97
DWG FILE: 011753

Figure 2

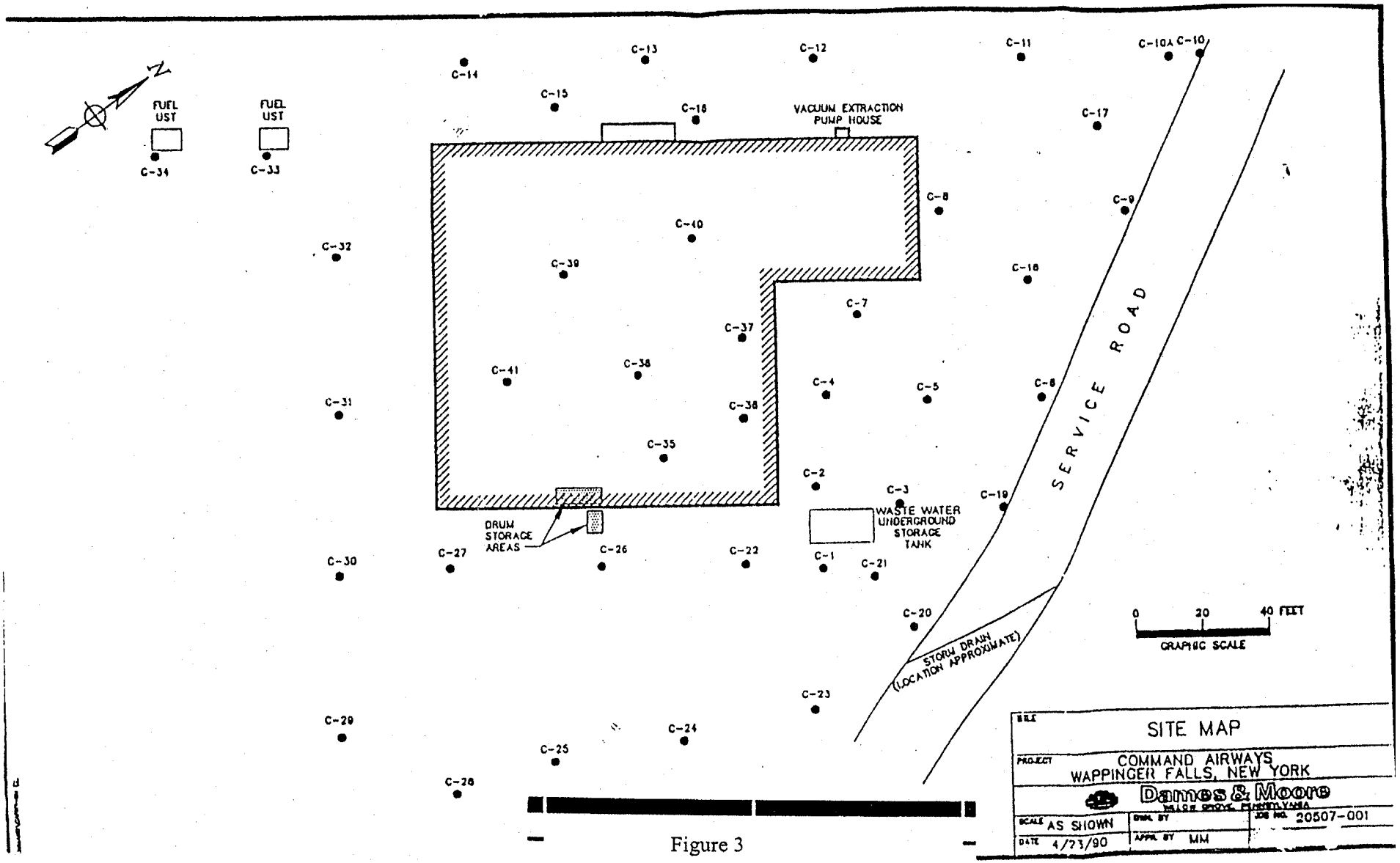
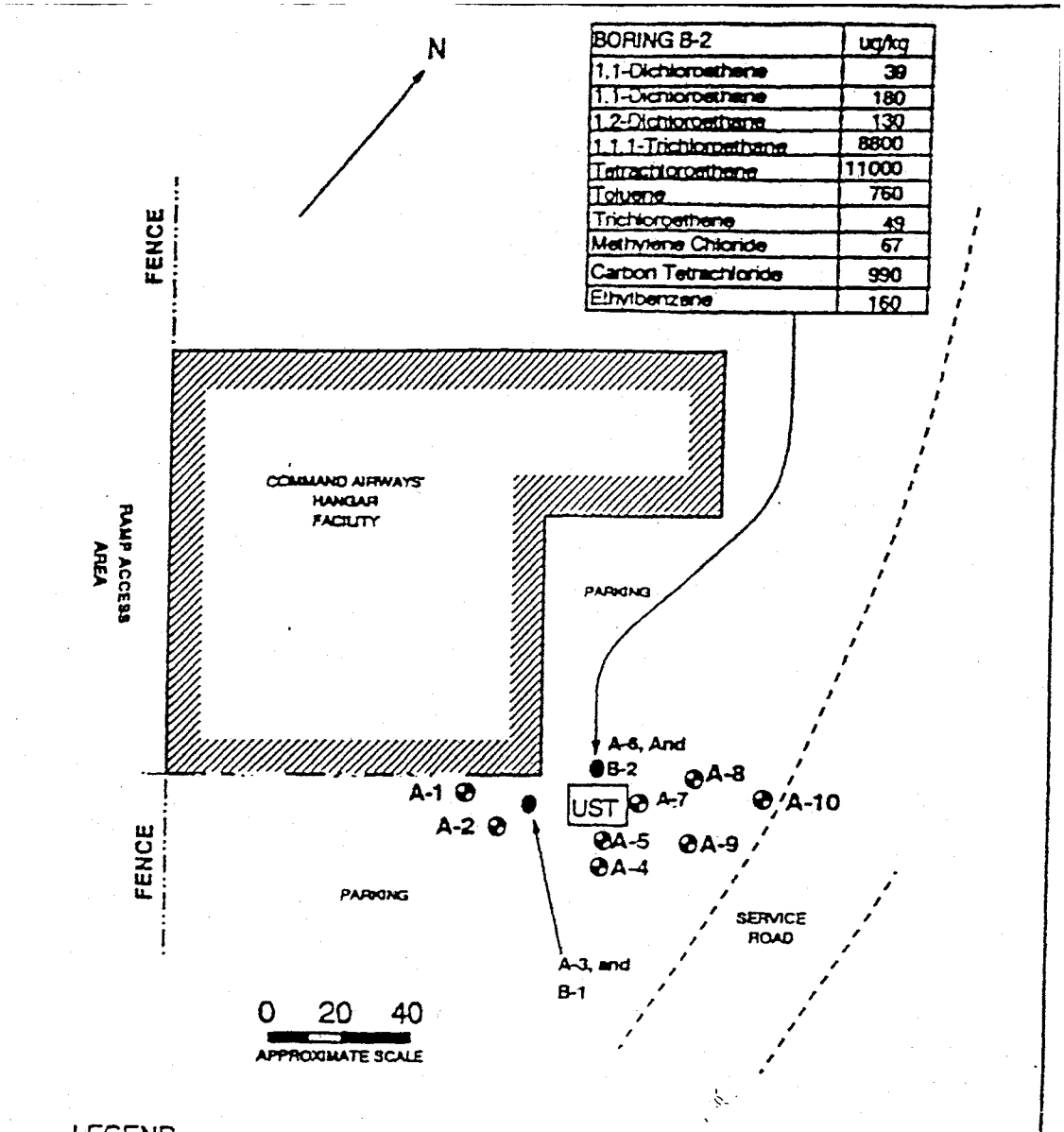

N
FUEL UST
FUEL UST
C-34
C-33
C-14
C-13
C-12
C-11
C-10A
C-10
C-15
C-16
VACUUM EXTRACTION PUMP HOUSE
C-17
C-8
C-9
C-40
C-32
C-39
C-18
C-7
C-37
C-41
C-38
C-4
C-5
C-6
C-31
C-36
C-35
C-2
C-3
C-19
SERVICE ROAD
WASTE WATER UNDERGROUND STORAGE TANK
DRUM STORAGE AREAS
C-27
C-26
C-22
C-1
C-21
C-30
C-20
STORM DRAIN (LOCATION APPROXIMATE)
0 20 40 FEET
GRAPHIC SCALE
C-23
C-29
C-24
C-25
C-28
SITE MAP
PROJECT
COMMAND AIRWAYS
WAPPINGER FALLS, NEW YORK
Dames & Moore
SCALE AS SHOWN
DWN. BY
JOB NO. 20507-001
DATE 4/23/90
APPR. BY MM

Figure 3



BORING B-2	ug/kg
1,1-Dichloroethene	39
1,1-Dichloroethane	180
1,2-Dichloroethane	130
1,1,1-Trichloroethane	8800
Tetrachloroethene	11000
Toluene	760
Trichloroethene	49
Methylene Chloride	67
Carbon Tetrachloride	990
Ethylbenzene	160

LEGEND

- COMPOSITE SAMPLE 0 TO 2 FEET (zone A)
- SAMPLES COLLECTED FROM 0 TO 2 FEET (zone A) AND 6 TO 7 FEET (zone B)

NOTE:

All samples collected analyzed for VOCs by USEPA method 8240. Only those compounds detected in each boring are summarized above. All other values tested for under method 8240 are reported as not detected.

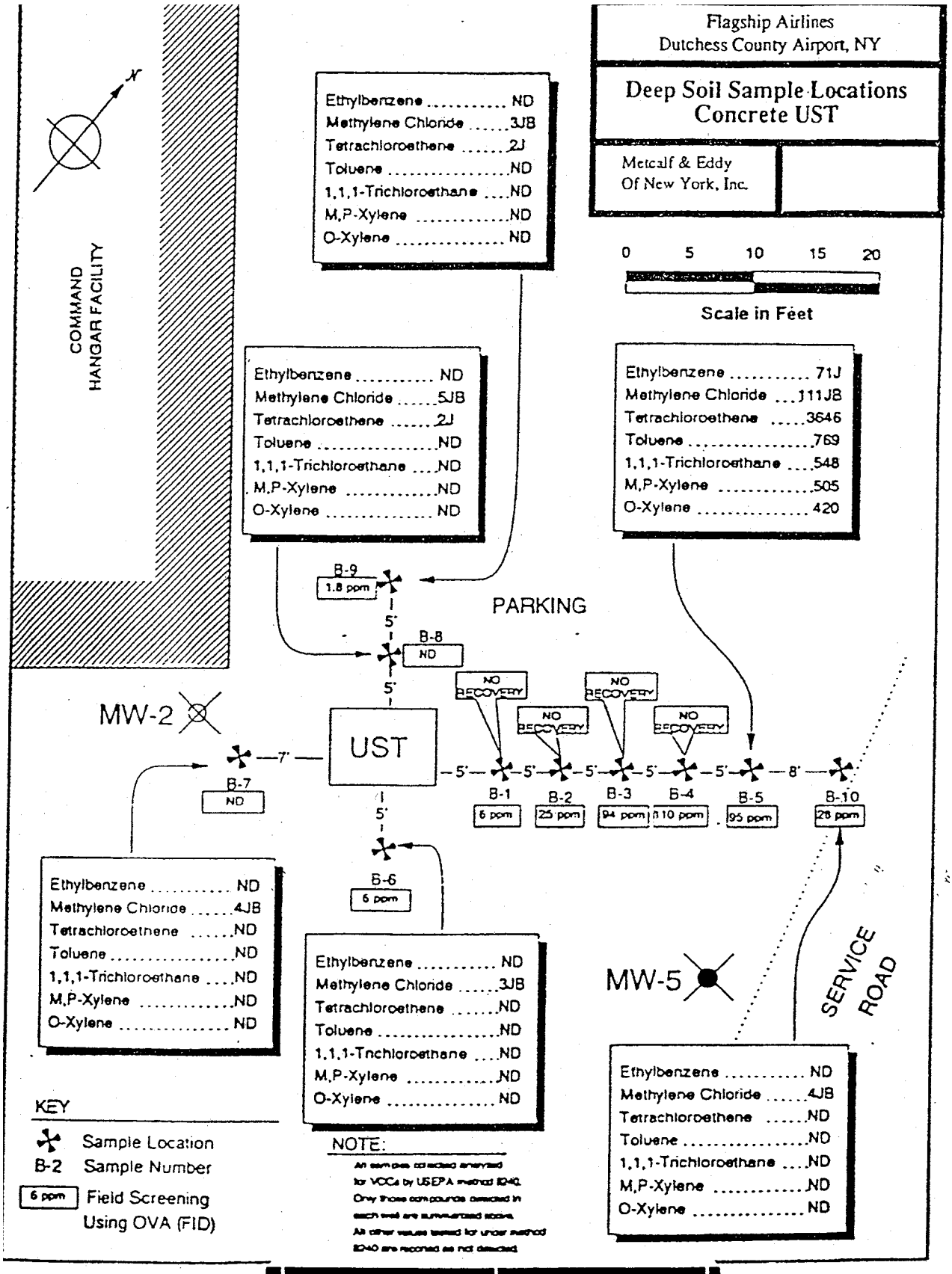
Flagship Airlines
Dutchess County Airport, NY

Shallow Soil Sample Locations Concrete UST

Metcalf & Eddy
Of New York, Inc.

Source: Dames & Moore, Inc., March 1991

Figure 4



Moore, Inc., April 1991

Figure 5

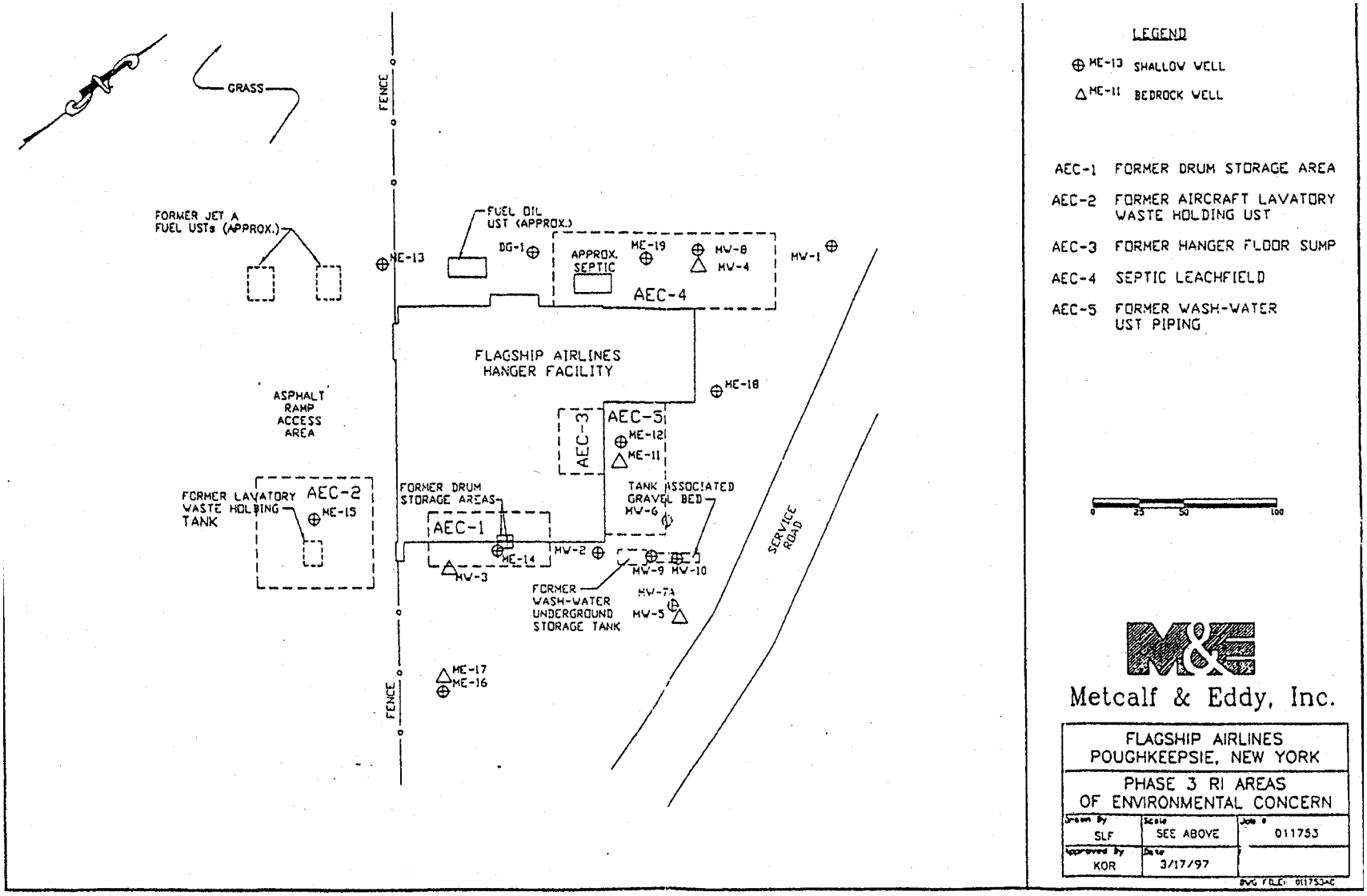

GRASS
FENCE
FORMER JET A FUEL USTs (APPROX.)
FUEL OIL UST (APPROX.)
ME-13
DG-1
APPROX. SEPTIC
ME-19
MW-8
MW-4
MW-1
AEC-4
FLAGSHIP AIRLINES HANGER FACILITY
ME-18
ASPHALT RAMP ACCESS AREA
AEC-3
AEC-5
ME-12
ME-11
FORMER LAVATORY WASTE HOLDING TANK
AEC-2
ME-15
FORMER DRUM STORAGE AREAS
AEC-1
ME-14
MW-2
MW-3
TANK ASSOCIATED GRAVEL BED
MW-6
MW-9
MW-10
SERVICE ROAD
FORMER WASH-WATER UNDERGROUND STORAGE TANK
MW-7A
MW-5
ME-17
ME-16
FENCE
LEGEND
ME-13 SHALLOW WELL
ME-11 BEDROCK WELL
AEC-1 FORMER DRUM STORAGE AREA
AEC-2 FORMER AIRCRAFT LAVATORY WASTE HOLDING UST
AEC-3 FORMER HANGER FLOOR SUMP
AEC-4 SEPTIC LEACHFIELD
AEC-5 FORMER WASH-WATER UST PIPING
0 25 50 100
M&E
Metcalf & Eddy, Inc.
FLAGSHIP AIRLINES
POUGHKEEPSIE, NEW YORK
PHASE 3 RI AREAS
OF ENVIRONMENTAL CONCERN
Drawn By SLF
Scale SEE ABOVE
Job # 011753
Approved By KOR
Date 3/17/97
DWG FILE: 011753-4C

Figure 6

Flagship Airlines - Dutchess County Airport
Poughkeepsie, New York
Geoprobe Soils Investigation - Probehole Locations
December 1996 and January 1997

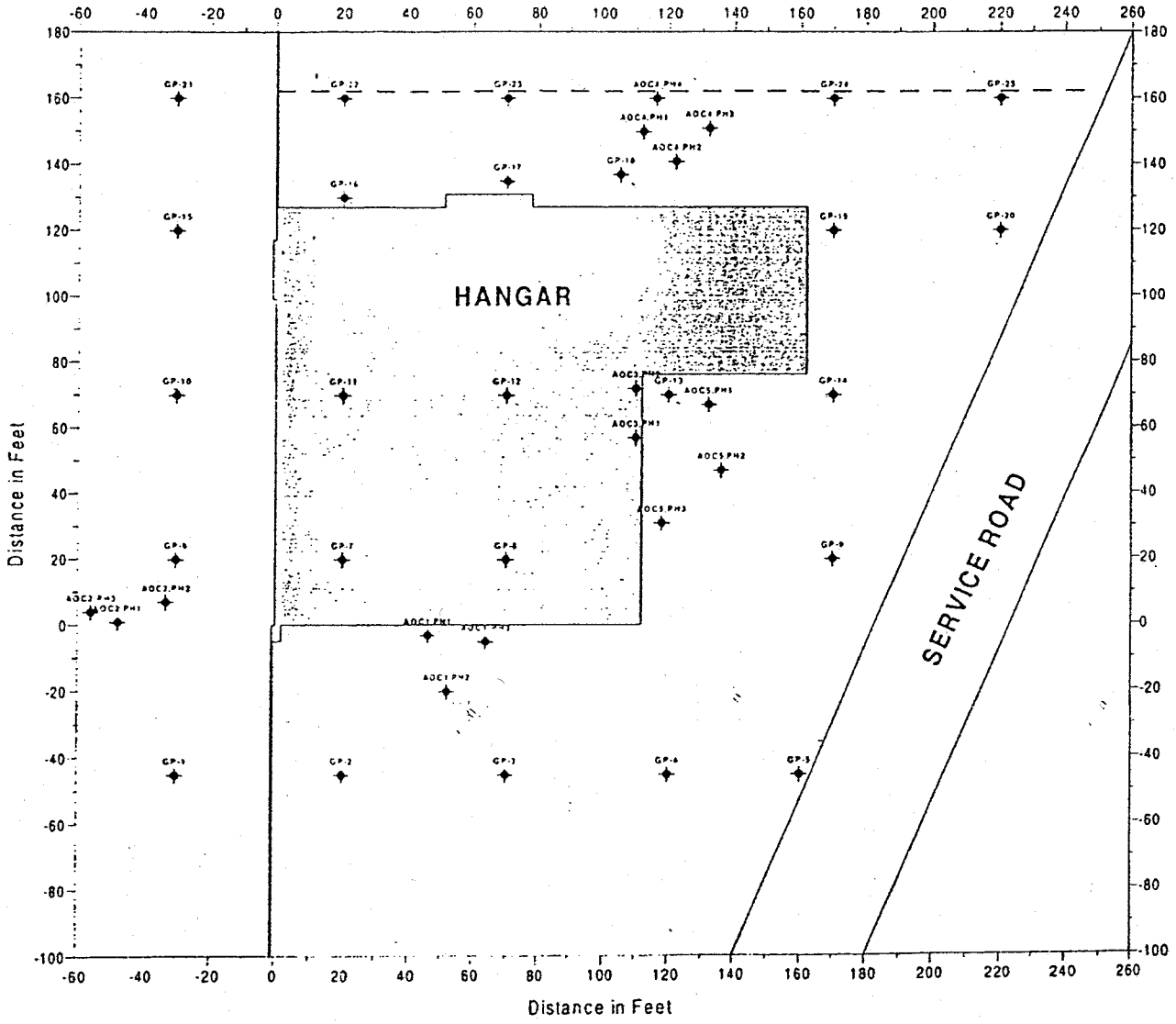


Figure 7

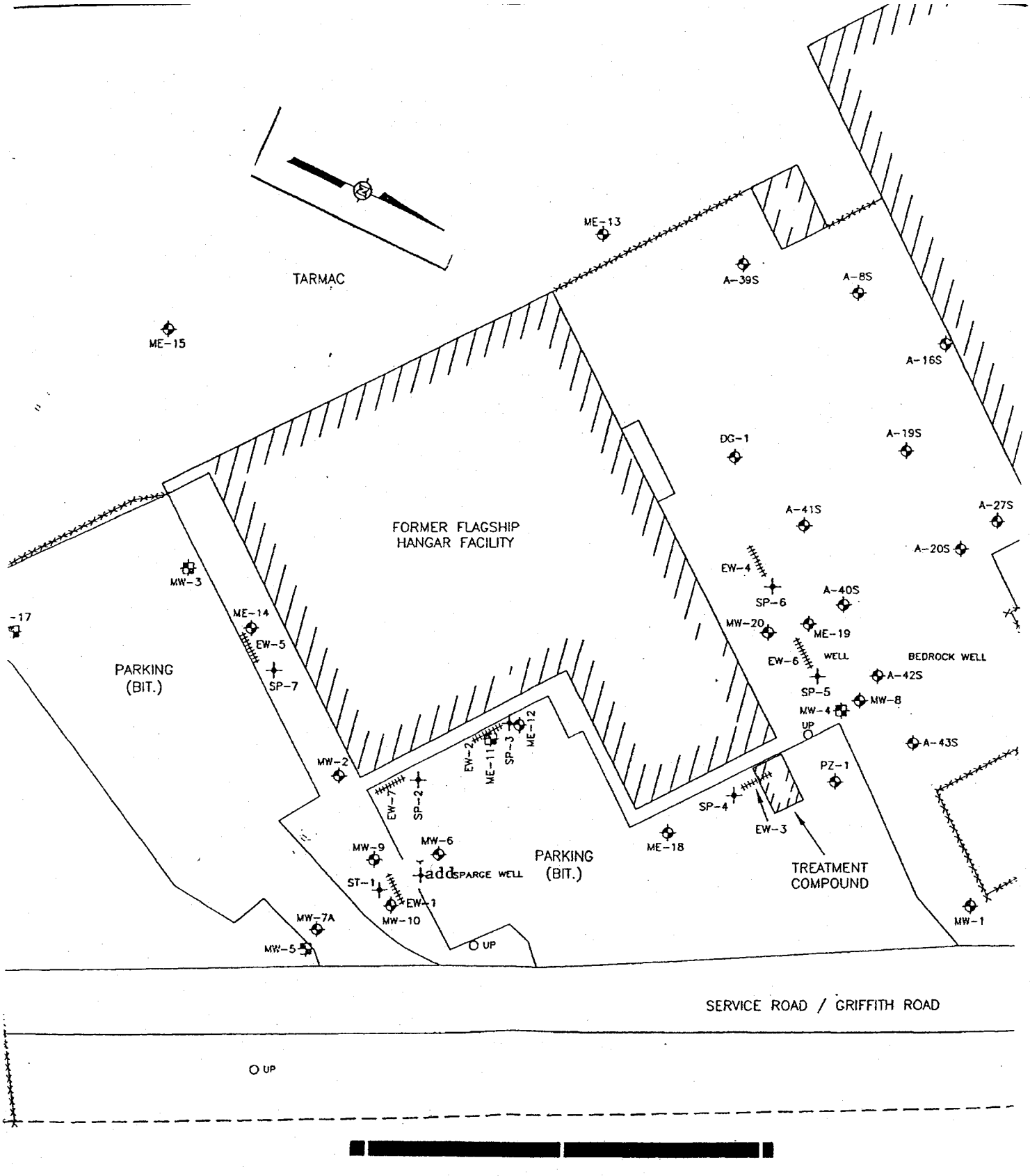


Figure 8

LEGEND:

- SHALLOW WELL
- BEDROCK WELL
- SPARGE WELL
- EXTRACTION WELL
- PROPERTY LINE (APPROXIMATE)

SCALE

0 20 40

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Flagship Airlines Hangar
Town of Wappinger, Dutchess County, New York
Site No. 3-14-101

The Proposed Remedial Action Plan (PRAP) for the Flagship Airlines Hangar site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 20, 2003. The PRAP outlined the remedial measure proposed for the contaminated groundwater and sub surface soil at the Flagship Airline Hangar site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 18, 2003, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 24, 2003.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the NYSDEC's responses:

COMMENT 1: Which of the private wells near the site were sampled and what were the results ?

RESPONSE 1: In February 2002, the Dutchess County Health Department (DCDH) sampled several of the private wells, including residential and commercial properties, within a 1/4 mile of the site. These wells were located to the east of the site along route 376 in Wappingers Falls. No site related contaminants were found in the private wells.

On-site perimeter monitoring wells indicate that the contamination is localized on the airport property. Additionally a public drinking water well supply about 600 feet northeast of the site has not been affected by site related contamination.

COMMENT 2: Were wells at the commercial properties and multiple residences to the north of the site sampled?

RESPONSE 2: Please refer to Response 1. No other private wells have been sampled in connection with this site. Shallow groundwater flow is to the north west towards the Wappinger Creek. Several monitoring wells to the north and north-west of the site were previously installed to investigate the County Airport Hangar

Facility (Site ID. 314078). The County Airport Hangar Facility site is listed as a class 4 site in the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites. This means the site is properly closed and requires continued monitoring and/or management. Hydrogeological data collected from these wells and the wells located on the Flagship Airlines Hangar Site do not indicate threat to off-site drinking water wells. However, the NYSDEC will be conducting sampling of additional nearby private wells to alleviate any concerns the public may have.

COMMENT 3: The Town of Wappinger owns and operates the Atlas Well Field adjacent to Wappinger's Creek and approximately 9,000 feet south west of the Flagship Airlines Hangar. The well field draws water at the rate of 1 million gallons per day (mgd) and there are plans to boost this draw to 2 mgd. How would the contamination at the site and the significant increase in the pumping rate impact the water quality at the well head. Other hydrogeological studies indicate that the groundwater flow could be in a southerly direction.

RESPONSE 3: The well field that constitutes the Atlas Well Field is 40 to 50 feet deep and is re-charged by Wappinger's Creek. The additional draw-down in the individual wells belonging to the Atlas Well Field are expected to be compensated by the re-charge from the creek. At the Flagship Airlines Hangar site, the hydro-geological features consist of an overburden water bearing unit, a confining unit and a shallow bedrock aquifer. The confining unit has a very low hydraulic conductivity and has prevented the downward migration of contamination into the bedrock. The 4 bedrock wells at the Flagship Airlines Hangar do not exhibit any significant contamination. Therefore, despite some uncertainty of the groundwater flow patterns around the site, the bedrock aquifer has not been impacted by site-related contamination and is not expected to impact the Atlas Well Field even if the capacity is increased. The Town of Wappinger is, however, advised to include an extended list of chemical compounds in its periodical analysis of the well-field water.

COMMENT 4: A negotiation is underway between the NYSDEC and the Dutchess County Airport Joint Landfill Board to close an old 30 acre landfill northeast of this site. There is a problem with leachate from this landfill. The closure will include the installation of shallow and bedrock monitoring wells and groundwater analysis. Who would be responsible for remediating the groundwater if some of the contaminants detected in the monitoring wells at the landfill are found to be similar to the ones found at the Flagship Airlines site.

RESPONSE 4: The site is located approximately 3/4 of a mile up-gradient from the landfill. Based on the data collected during the remedial investigation, it seems unlikely that the site is the source of any contamination encountered in the landfill leachate.

COMMENT 5: Has the outer limits of the contamination in the shallow groundwater been defined? How do you know that the contamination has dropped, not because the IRM is working but because you are on the back end of the contamination plume and the plume is simply just moving away from the AS/SVE system.

RESPONSE 5: The outer limits of the contamination at the site have been defined based on the data collected from the downgradient wells on site and on the County Airport Hangar Site - Site ID. 314078 (Also see response to Comment 2). During the various stages of investigations since 1988, the contamination patterns have indicated that the concentrations at the sources of contamination have been at higher levels than at

locations away from the sources. This would suggest that peak values of contamination were detected on-site and addressed by the IRMs. The remedy will ensure that the residual groundwater contamination is removed before it migrates out of the zone of influence of the remedial system.

COMMENT 6: What impact is the remedial construction activity and the installed system going to have on the operation at the airport ? Will there be an alarm or other means of monitoring the remedy to minimize "down time" during the operation of this remedial system.

RESPONSE 6: The remedial construction activity at the property is expected to take three months to design and two weeks to implement. The construction activity would consist of installation of a few air-sparge points using a drill rig and some minor changes to the piping for inlet and outlet air. With proper scheduling of construction activity, the disruption in the airport activity should be minimal. There is an alarm system that currently monitors the activity of the present IRM and helps to minimize the "down time" during the operation of this remedial system. This feature will be accentuated to allow greater control and quicker response by the operator on duty.

COMMENT 7: What is the estimated time for the cleanup to be completed ?

RESPONSE 7: The cleanup is expected to be substantially complete within three years. However, after three years, the rate of incremental attenuation of contamination in the groundwater can be expected to decrease. Therefore, firm dates for achieving the cleanup goals cannot be readily estimated.

Matt Jordan submitted a letter (dated March 19, 2003) which included the following comments:

COMMENT 8: My only concern is that the safest system be adopted, insuring the tenants (Tanglewood Apartments) safety of the water in our wells. I do not wish any alternative to be accepted that will endanger, in any way, our tenants.

RESPONSE 8: The Dutchess County Health Department sampled the drinking water wells at the Tanglewood Apartments on March 12, 2002 and found no VOCs and SVOCs present in the well water samples. In addition, the ROD includes provision for the regular sampling of the site's monitoring wells to assure that no groundwater contamination migrates from the site during the remediation process.

Walter Hetzer submitted the following comment during a telephone call on March 3, 2003:

COMMENT 9: I am concerned about the effect the Flagship Airlines Hangar would have on the quality of the drinking water in our well.

RESPONSE 9: The groundwater flow direction at the site is towards the Wappingers Creek which is northwest of the site. Mr. Hetzer's well is south of the site; therefore, we do not expect any site related contamination to migrate towards Mr. Hetzer's well. The Hetzer well is also situated in the bedrock aquifer and site related contaminants have not been found in this aquifer. Additionally, several on-site monitoring wells located between the site and Mr. Hetzer's well indicate no off-site migration of contamination.

In addition, the ROD includes provision for the regular sampling of the site's monitoring wells to assure that no groundwater contamination migrates from the site during the remediation process.

COMMENT 10: Mr. Brian Neumann, Project Manager for the consultants to the PRP sent in a written comment letter dated March 24, 2003 (see attached). He suggests the following changes in the proposed remedy:

1) That any soil with high levels of contamination encountered during excavation of the gravel bed be treated with additional AS points and changes to the SVE system rather than be excavated and removed off site.

2) Provide one or two stacked replacement AS points in the MW-9/MW-10 area and one new AS well in the A-42S area.

3) Removal of AS points in areas no longer requiring treatment, and reuse of the materials for constructing the selected remedy.

RESPONSE 10: With regard to item 1, there will be a requirement to sample the soil once the gravel bed is removed. Extension of the AS/SVE system to the gravel bed area will be considered in the light of analytical results. Consideration of items 2 &3 are included in the elements of the remedy listed in Section 8 of the ROD. Further consideration of the comments will be made during the remedial design stage.

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

Flagship Airlines Hangar
Town of Wappinger, Dutchess County, New York
Site No. 3-14-101

1. Proposed Remedial Action Plan for the Flagship Airlines Hangar site, dated February, 2003, prepared by the NYSDEC

2. Order on Consent, Index No. W3-0837-98-12, between NYSDEC and American Eagle Airlines, Inc., executed on March 30, 1999

3. The Phased Remedial Investigation Report Former Flagship Airlines Hangar, August 1997, prepared by Metcalf & Eddy of New York, Inc.

4. Feasibility Study: Groundwater Remediation Alternatives Former Flagship Airlines Hangar, November 29, 1999, prepared by Metcalf & Eddy of New York, Inc.

5. Operation, Maintenance and Monitoring (O,M&M) Reports for seven quarters for the period Jan 2000 to May 2002

6. Citizen Participation Plan including Fact Sheet and Public Notice of release of PRAP

APPENDIX C

Written Public Comments

APPENDIX C

Proj: _____

Acct Code: _____

Shaw Environmental & Infrastructure, Inc.

13 British American Boulevard
Latham, NY 12110-1405
518.783.1996
Fax 518.783.8397

Shaw The Shaw Group Inc.™

March 24, 2003

Mr. S.E. Mahamooth, Project Manger
New York State Department of Environmental Conservation
Division of Environmental Remediation
21 South Putt Corners Road
New Paltz, New York 12561-1696

Subject: **March 18, 2003 Public Meeting Comments**
Site No. 3-14-101, OOC Index No. W3-0837-98-12
Former Flagship Airlines Hangar Facility
Dutchess County Airport, Wappinger Falls, NY
(email with hard copy to follow in the US mail)

Dear Mr. Mahamooth:

Shaw Environmental, Inc. (Shaw), on behalf of American Eagle Airlines, Inc. (AEA), submits the following comments for your consideration as they relate to the Proposed Remedial Action Plan (PRAP) and public meeting held on March 18, 2003.

The PRAP and Public Meeting Invitation and Fact Sheet address removal of soil surrounding the french drain feature in the MW-9 and MW-10 vicinity. One or two vertically positioned air sparge wells will be installed in the former french drain feature location to more efficiently treat remaining dissolved contamination. Additionally, the drain remains the source of residual contamination and it will be removed and disposed of properly off-site. Therefore, AEA does not believe that soil removal is necessitated from the french drain feature area as it is anticipated that the enhanced AS/SVE system, along with removal of the french drain, will achieve this result.

The PRAP and Public Meeting Invitation and Fact Sheet address "the installation of deeper additional air-sparging points to enhance the existing air-sparging/soil vapor extraction system (AS/SVE). To date, concentrations of some contamination beyond the influence of the AS points have remained persistently high." In both the MW-9/MW-10 and A-42S areas, AEA plans to utilize the existing Interim Remedial Measure (IRM) system to focus accelerated remedial efforts in these two locations. This will require the installation of one or possibly two stacked replacement AS wells in the MW-9/MW-10 area and one new AS well in the A-42S area. AEA recommends that pre-identified and jointly agreed to AS wells in areas no longer requiring treatment be taken off-line so their piping can be used for the new AS wells.

On behalf of AEA, Shaw appreciates your consideration of these comments in preparation of the final Record of Decision for the site.

Sincerely,

Brian L. Neumann, PG, CPG
Project Manager/Hydrogeologist

Cc: Alan Angers, American Airlines
James Johnson, Esq, American Airlines