ON-SITE FEASIBILITY STUDY
FOR
A.K. ALLEN COMPANY, INC.
MINEOLA, NY

Site Number 1-30-100

June 2005

Prepared for:

A.K. ALLEN COMPANY, INC.
255 East Second Street
Mineola, NY 11501

Prepared by:

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and

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Second Submission

CA RICH
ENVIRONMENTAL SPECIALISTS

June 6, 2005

NYSDEC
Division of Hazardous Waste Remediation
625 Broadway
Albany, New York 12233-7015

Attention: Kevin Carpenter, P.E.

Re: On-Site Feasibility Study Report
AK Allen Company, Inc.
Mineola, NY
Site No. #130100

Dear Mr. Carpenter:

Attached is the second submission of the On-Site Feasibility Study Report for the above-referenced Site. If you have questions or require any additional detail, please do not hesitate to contact us.

Respectfully submitted,

CA RICH CONSULTANTS, INC.

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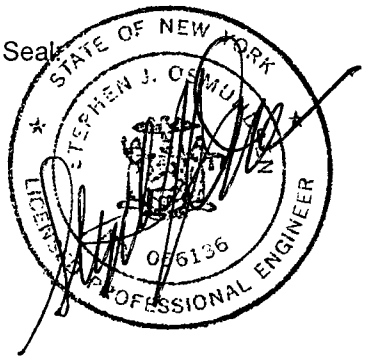

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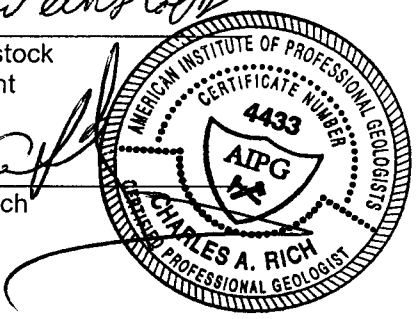

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Users/Eric/docs/AKAllen/Feasibility Study, 2nd submission/On-site Report

Second Submission

TABLE OF CONTENTS

FIGURES

APPENDICES

ON-SITE FEASIBILITY STUDY

AK ALLEN COMPANY
Mineola, NY
Site Number 1-30-100

1.0 EXECUTIVE SUMMARY

A.K. ALLEN COMPANY, INC. (AK ALLEN, the site, or the Company) is a manufacturer of precision-machined metal cylinders and valves, and has been in operation at 255 East Second Street in Mineola on Long Island since 1957. Releases from this manufacturing facility triggered a series of subsurface investigation and remediation efforts performed under the auspices of the Nassau County Department of Health (NCDH) and the New York State Department of Environmental Conservation (NYSDEC). The Company and the NYSDEC entered into an Order on Consent to perform a remedial investigation (RI) of the site. Following the RI, the Company conducted an Interim Remedial Measure (IRM) under the review and concurrence of the NYSDEC. This IRM included the excavation and removal of approximately 770 tons of soil within the source areas at the rear of the property. A summary of these activities is included in Section 4 of this Report. The RI, IRM and subsequent remedial actions have been performed at a cost to AK Allen of nearly $1,000,000.

Based on the investigation and remediation activities completed to date, two areas of concern remain at this site. One of these is an area of volatile organic compound (VOC) soil gas in the subsurface soils below the rear parking lot. The remediation management of these subsurface vapors is the subject of this On-Site Feasibility Study (FS).

In addition, an area of impacted soil remains below and adjacent to an active off-site railroad line. Remediation of these off-site volatile organic compound (VOC) - and polychlorinated biphenyl (PCB) and metals - containing soils will require discussions with the Long Island Railroad (LIRR), and other potentially affected parties. These issues are addressed in a separate Off-Site Feasibility Study Report.

Three remedial alternatives were developed and analyzed for this On-Site FS:

1. No Further Action Beyond the Completed IRM;
2. No Further Action plus Engineering and Institutional Controls (EC/ICs) with Continued On-Site Soil Gas Monitoring; and
3. Design, Installation and Operation of an On-Site Soil Vapor Extraction (SVE) System plus EC/ICs.

Based upon an evaluation of these alternatives using the eight criteria included in the NYSDEC's Division of Environmental Remediation document, DER-10, Remedial Alternative 3 is the recommended remedy for this site. Alternative 3, as detailed in this Feasibility Study, is the most cost-effective response that meets the remedial goals and objectives to minimize impacts to human health and the environment. Additionally, a separate Change of Use Plan is presented as Appendix A to pre-approve procedures for any possible AK Allen future significant change of use of the site.

2.0 PURPOSE

The following On-Site Feasibility Study (FS) Report was prepared by CA RICH Consultants, Inc. of Plainview, NY (hereafter called "CA RICH"), and Air Resources Group, LLC ("ARG") of Albany, NY, for the AK Allen Company, Inc. ("AK ALLEN"), the subject property located at 255 East Second St., Mineola, NY (hereafter referred to as the Site or Facility). The purpose of this report is to analyze the Remedial Investigation (RI) results and determine feasible remediation options. AK ALLEN performed the RI under terms of NYSDEC Consent Order Index #W1-0932-02-08.

FS reporting has been developed in two documents: an "On-Site" FS Report and a second, "Off-Site" FS Report, submitted under separate cover. This allows off-site decision-making that will require further Long Island Rail Road (LIRR) input to proceed unburdened by unrelated, on-site matters. The LIRR's parent agency, the Metropolitan Transportation Authority (MTA), is presently considering a new 2005-2009 ($2.4B) Capital Plan that includes improvements to its core service main line running through mid-Long Island (ref. Newsday 9/14/04). This would involve various track improvements and station upgrades, and may allow an opportunity to remediate some of the off-site concerns with minimal rail services interruption. We are currently aware of a potential March 2007 opportunity to perform this off-site work.

The off-site (the portion of site-related activities within the LIRR right-of-way) FS identifies and evaluates options available for site-related, off-site remedial action. It identifies the overall goal of the remediation based upon review of environmental data collected, reduced, and analyzed, and ascertains the preferred remedial objective. The intent of the off-site FS report is to serve as a basis for remedy selection decision-making processes.

This "On-Site" FS identifies the overall goal of remediation and evaluates options available for remedial action on the AK ALLEN property.

Results from the remedial investigation, the interim remedial measure, and the supplemental remedial investigation (SRI) completed in 2004, show the following specific VOCs in on-site soils as detected by soil vapor:

- tetrachloroethene (a.k.a. perchloroeth [yl] ene, PCE)
- trichloroethene (TCE)
- 1,1,1 - trichloroethane (TCA)
- 1,1-dichloroethane (DCA)
- 1,1-dichloroethene (DCE)
- acetone
- 2-butanone (a.k.a. methyl ethyl ketone or MEK)

The heavy metals (chromium, cadmium & lead), semivolatile organic compounds (SVOCs), and PCBs that were detected on-site were effectively remediated during the IRM. As such, this Report addresses only the remaining residual VOCs.

Recognizing the low level VOCs on-site, together with the fact that the property will, for the foreseeable future, remain industrially-zoned and consequently a continuing industrial/commercial land-use, three alternative remedial approaches have been developed. These approaches are presented in Section 8 of this Report.

Background Investigations

During the 1990's and early 2000's, a sequence of exploratory remedial investigations and a NYSDEC-approved IRM were performed at this site under the auspices of the NCDH and/or the NYSDEC. Work was performed by CA RICH and subject to NYSDEC review pursuant to the Order on Consent. All related Consent Order remedial investigation work has been approved by NYSDEC.

In correspondence from NYSDEC to CA RICH dated June 22, 2004, NYSDEC suggested that a deep off-site monitoring effort be designed, installed and sampled. Details of this off-site monitoring effort are addressed in the Off-Site FS Report. The letter also requested that AK ALLEN evaluate the potential for soil gas (soil vapor) impact upon on-site building indoor air quality and assess sub-slab or indoor air sampling as a basis for evaluating such impact. After discussion with NYSDEC and a review of the facility's inventory of chemicals currently and historically used, it was determined that we can neither confirm nor negate the possibility of vapor intrusion since the plant has and continues to use the chemical compounds found in the on-site RI.

Testing of the Soil Vapor Extraction (SVE) system as provided for in Alternative 3 will facilitate analysis and optimization of soil vapor capture and removal efficiency, and determine if additional site data such as soil porosity, moisture content, and other soil characteristics, should be collected.

The list of selected reference documents provided below summarizes AK ALLEN'S approved remedial investigations and cleanup efforts over the past ten years:

Document	Date
Remedial Investigation Work Plan, AK ALLEN COMPANY, MINEOLA, NY, CA RICH CONSULTANTS, INC. (Ref. 1)	October 1994
Remedial Investigation Report, AK ALLEN COMPANY, MINEOLA, NY, CA RICH CONSULTANTS, INC. (Ref. 2)	February 1996
Interim Remedial Measures Work Plan, AK ALLEN COMPANY, MINEOLA, NY, CA RICH CONSULTANTS, INC. (Ref. 3)	March 2003
Supplemental Interim Remedial Measures Work Plan No. 2, Additional Sampling along LIRR Embankment, AK ALLEN COMPANY, MINEOLA, NY, CA RICH CONSULTANTS, INC. (Ref. 4)	August 2003
Interim Remedial Measures Report, AK ALLEN COMPANY, MINEOLA, NY, CA RICH CONSULTANTS, INC. (Ref. 5)	February 2004
Supplemental Remedial Investigation Report, Monitoring Well Sampling & Analysis & Off-Site Soil Borings, AK ALLEN COMPANY, MINEOLA, NY, CA RICH CONSULTANTS, INC. (Ref. 12)	April 2004

Monthly progress reports regarding these various compliance efforts were submitted to NYSDEC as required.

3.0 SITE DESCRIPTION & HISTORY

A.K. ALLEN COMPANY, INC. (AK ALLEN) at 255 East Second Street in Mineola is a manufacturer of precision-machined metal cylinders and valves and has been in operation on Long Island since 1957. The Manhasset Machine Company was the initial leasehold in the building from 1947 to 1957 prior to occupation by AK ALLEN. The facility contains approximately 120,000 square feet of industrial manufacturing, warehouse and office space within a modernized one-story industrial building situated on an approximate 195,000 square foot lot (about 4.5 acres). Surface elevations in the area of the site exhibit a slight slope to the south and west.

Since at least the 1900's, neighboring and nearby land use has been industrial directly across East Second Street to the north and to both the east and west of the property boundaries. The main track line of LIRR borders the site immediately to the south and serves as an active, east-west right-of-way carrying passengers between Pennsylvania Station (NYC), Jamaica (Queens), Mineola Station and points east on Long Island. Across the tracks to the south, there is residential housing which generally continues across Old Country Road southward into the Village of Garden City.

The site is municipally sewered and serviced with public well water provided by the Village of Mineola (Town of North Hempstead) in Nassau County. Mineola Building Department records indicate that the 255 East Second Street structure was constructed in 1945 and originally included three cesspools. One of the cesspools was connected to a series of bathrooms and the other two cesspools were connected to water fountains. The building was subsequently connected to the municipal sewer system in 1953, approximately eight years after its construction. Results of groundwater sampling from on-site monitoring wells confirm that the cesspools are not historical contaminant sources.

Historical research using aerial photos, Sanborn maps, New York State and U.S. Environmental Protection Agency (EPA) databases, and other documents show several sites or areas of industrial land use within close proximity that either predated the 255 East 2nd Street facility or developed along with it, including: a coal yard, a NY telephone maintenance and repair facility, a manufacturer of railroad cars and components, a plastics manufacturing facility, airplane parts manufacturing, as well as the LIRR tracks, and others.

4.0 SUMMARY OF REMEDIAL INVESTIGATION, INTERIM REMEDIAL MEASURE, AND EXPOSURE/RISK ASSESSMENT

4.1 General

The following discussion summarizes the rationale and results of prior information gathering efforts, including a NYSDEC-approved interim remedial measure response (IRM) to remediate identified on-site soil source areas and storm drain sediments, and includes a subsequent qualitative exposure/risk assessment.

4.2 Remedial Investigations

On June 25, 1992, a representative of the Nassau County Department of Health (NCDH) inspected the facility and collected three soil samples from the rear of the property. On June 30 and July 1, 1992, NCDH representatives returned and collected an additional 13 soil samples from the former metal shavings drum storage area, and along the LIRR right-of-way.

The soil was found to contain the following halogenated VOCs at levels above applicable NYSDEC cleanup guidance levels prevailing at that time: 1,1-dichloroethane, 1,1,1-trichloroethane, 1,1-dichloroethene, tetrachloroethene, and trichloroethene. Non-halogenated VOCs that exceeded state cleanup guidance levels were: toluene, ethylbenzene, o-xylene and naphthalene. Metals analyses of the soil samples (using a sample preparation method to assess leachability) revealed only the presence of cadmium at a concentration above the cleanup guidance level. The locations of the county's soil samples with a summary of their test results, is included in Reference 2, Remedial Investigation Report.

During November 1995, in response to the aforementioned test results, an initial RI was performed under NCDH oversight. This investigation included four data-gathering efforts: 1) a series of exploratory soil test borings advanced into the ground in the rear of the property, 2) collection and chemical analyses of shallow soil samples from along the LIRR embankment, 3) collection and chemical analyses of residual sediment samples from inside two storm drains in the rear parking lot area and also from inside one building interior floor drain, and 4) the collection and chemical analyses of two samples of uppermost ground water at water table depth beneath the property.

In general, these tests confirmed the presence of the same compounds and constituents first detected in the soil by NCDH. Importantly, the underlying uppermost groundwater quality did not contain significantly-elevated levels of any of the contaminants that were detected in the soils. Cross-sectional illustrations and tables summarizing the 1995 RI results are included in Reference 2, Remedial Investigation Report.

The RI identified four (4) on-site potential soil source areas of concern illustrated on Figure 1, as well as in the IRM Report (Ref. 4), characterized as follows:

1) the former metal shavings drum storage area located in the rear parking lot and the adjacent LIRR embankment (a.k.a. the "western excavation area");

2) an area approximately 100 feet east of the former drum storage area and the adjacent LIRR embankment (a.k.a. the "eastern excavation area");

3) storm drains SD-1, SD-2, SD-3 & 3OF and SD-4; and the

4) interior floor drain, FD-1.

4.3 Interim Remedial Measure (IRM)

Based upon the RI results, an Interim Remedial Measure (IRM) cleanup was developed to address the above-listed four source areas and expedite the removal of known and identifiable impacted soils and sediments. The NYSDEC-approved IRM was completed during May through September of 2003. The completed IRM consisted of the following four elements:

- Collection of additional soil samples to supplement the data collected in the 1995 Remedial Investigation;
- Design, installation and testing of new groundwater monitoring wells screened in the uppermost aquifer underlying the site;
- Excavation and removal of impacted soils in both the designated eastern and western excavation areas; and
- Cleanout of storm drains SD-1, SD-2, SD-3 & 3OF and SD-4 & floor drain FD-1.

Remedial exploratory excavations in the eastern and western study areas were advanced both laterally and vertically until soils were visually not impacted and did not have any impact-related odor or PID meter detection. Excavation of impacted soils in both of these areas extended south of the property line, off-site, down along the slope of the LIRR embankment and on out to the gravel ballast bed supporting the LIRR track ties and rails. Sidewall and bottom excavation end-point samples were collected as outlined in the approved NYSDEC Work Plan with results summarized in Reference 5.

Western Excavation

The western excavation (beneath and surrounding the former metal shavings drum storage area) extended from the southern portion of the parking lot south to the property line and down along the embankment of the LIRR corridor. Per LIRR instruction, remedial excavation was terminated five (5) feet from the railroad ties of the northern track (i.e., closest to the site).

Drums of metal shavings historically stored in the western excavation area on-site are no longer stored outside of the building. Impacted soils excavated during the IRM were temporarily staged on-site and then subsequently transported off-site to an approved disposal facility in Canada.

VOC and SVOC concentrations in all final post-excavation bottom and sidewall samples were found to be below NYSDEC Technical Administrative Guidance Memorandum (TAGM) guidance levels. Two of the samples from the southern sidewall (EP-2 & 3) displayed a black coloration and exceeded cleanup objectives for VOCs and SVOCs. In general, metals were below TAGM cleanup objectives, although three samples, EP-2, 3 and 4 (from the southern sidewall), displayed a black coloration and exceeded cleanup objectives. These discolored soils were too close to the railroad tracks and were not removed at the direction of the LIRR (for track structural integrity and safety reasons) with concurrence by NYSDEC.

PCBs were found below the NYSDEC TAGM cleanup objective with the singular exception of location EP-46D at four (4) feet. A deeper sample, EP-46D2, collected at 10 feet below grade at this same test location did not exceed the cleanup objective for PCBs. All excavation sidewall samples were below cleanup objectives with the exception of the same three southern sidewall samples referenced above (EP-2, 3 & 4).

Eastern Excavation

The "eastern excavation area" on-site was smaller and extended from the southern part of the parking lot southward to the property fence line, and down along the embankment of the LIRR. Soil in the south sidewall of the excavation was visibly clean, and NYSDEC-agreed upon clean end-points were obtained by testing.

VOCs, SVOCs, and metals levels in all of the final excavation bottom and sidewall samples were below applicable NYSDEC TAGM cleanup objectives. PCB levels in all of the final excavation bottom and sidewall samples were below TAGM cleanup objectives, with the exception of locations EP-44U (3,270 ug/kg) and EP-45U (1,650 ug/kg). These two, surficial soil samples collected to one (1) foot below grade both exceeded the PCB TAGM of 1,000 ug/kg.

IRM Summary

In total, approximately 770 tons of impacted soil/sediment (from both the on-site excavation areas and the drywell/drain cleanouts) were transported off-site to the GCI disposal facility in Quebec, Canada. This effort was conducted under the oversight of NYSDEC and all decisions with respect to end point determinations were made in agreement with the NYSDEC.

Storm & Floor Drain Cleanouts

Five (5) storm water drains identified as: SD-1, SD-2, SD-3, SD-3OF and SD-4 installed in the rear parking lot area of the facility, and one floor drain inside the building, FD-1, were thoroughly cleaned out concurrently with the aforementioned interim remedial investigation excavation program. These drains are considered discharge structures and are federally regulated. They are subject to applicable requirements under the Federal Underground Injection Control (UIC) Program as administered by NCDH serving as local administrative agent for the USEPA. Further details of the regulatory requirements and the drain cleanouts are included in Reference 5.

All impacted sediment and soil removed from the bottoms of storm water drains SD-1, SD-3OF, and SD-4 was replaced with imported clean sand backfill and these three rehabilitated drains now effectively discharge storm water from the facility. Exterior storm drains SD-2 and SD-3, and the building interior floor drain FD-01, were backfilled with clean material and closed. Upon satisfactory completion of this work, the USEPA/NCDH UIC Case was closed-out for AK ALLEN. Additional IRM detail is summarized in Reference 4, Interim Remedial Measures Report.

Monitoring Wells

As part of the IRM, on March 27 and 28, 2003, three (3) monitoring wells identified as IRM-MW-1, MW-2 and MW-3 were installed in the northern (front), eastern, and western corners of the property in a triangular configuration. Each of these small-diameter monitoring wells was drilled and installed to water table depth.

Elevations of the tops of the well casings were surveyed to 0.01-foot accuracy so that reproducible depth-to-water measurements could be used to prepare a water table elevation contour map to determine the elevation and apparent direction of horizontal groundwater flow.

On September 15, 2003, two (2) more monitoring wells, IRM-MW-4 and IRM-MW-5, were installed. MW-4 was installed on-site within the backfilled western excavation area, and MW-5 was installed off-site in the hydraulically downgradient southward direction - across the tracks at the intersection of Albertson Place & Wisteria Avenue. A map illustrating the locations of all five monitoring wells is included as Figure 2 in Reference 6, Supplemental Remedial Investigation Report.

4.4 Additional Testing

As of May 2005, a Supplemental Remedial Investigation (SRI) has been the most recently completed remedial work. The SRI involved further on-site and off-site soil, soil gas (soil vapor) and groundwater quality testing (supplementing the 2003 IRM) designed to address remaining information needs.

Soil

Additional perimeter soil borings identified as SB-2W and SB-4E were advanced west and east of the initial western excavation area. At each location, soil samples were collected at depths of 20 to 26 inches and 36 to 42 inches and analyzed for VOCs, SVOCs, metals, and PCBs. Additional deeper samples were also collected at the five-foot horizon and held for analysis, pending results from the shallower two samples. Only one of these samples, SB-4NT (54-60 inches) was analyzed for SVOCs based on the results of the shallow samples. The results of these samples are presented in the SRI report (see Reference 6, Table 3).

Soil Gas

Soil gas samples were analyzed along the south railroad track. None of the VOCs detected in the on-site or off-site impacted soils were detected in any of the off-site soil gas test locations. The 'clean' off-site soil gas beneath the tracks suggests that soil gas potentially emanating from on-site does not migrate laterally through the subsurface soils this far south. More importantly, those substances detected in the soil gas considered to be attributable to the former impacted soils on-site do not migrate beyond the tracks further south. MTBE, a compound used only as a gasoline oxygenate additive, was detected in soil gas beneath the railroad tracks,

but it is not an artifact of the facility's historical manufacturing processes and, thus, is not considered attributable to AK ALLEN.

On April 7, 2004, three soil gas probes (SG-3, SG-4 and SG-5) were advanced on-site in the rear of the facility. SG-3 and SG-4 were set alongside the building's south central wall beneath the building footing at 5 to 5-1/2 feet (SG-3), and at 4 to 4-1/2 feet (SG-4, east of SG-3), respectively. SG-5 was placed further south, away from the building within the former western remedial excavation area at 9 to 9-1/2 feet below grade. The deeper SG-5 sampling depth was designed to correspond to the elevation of the soils beneath the LIRR tracks. VOCs were detected in all three soil gas test locations at varying concentrations (Ref. 12, Table 8 & Fig. 11).

Groundwater

The depth to groundwater on-site is approximately 53 feet, which is roughly equivalent to an elevation of 58 feet above mean sea level. This water table represents the surface of the uppermost saturated aquifer beneath the site. The direction and rate of horizontal groundwater flow at the water table is to the southwest at a regional rate of about one (1) foot per day (United States Geological Survey). A water table map is included as Figure 2 in Reference 6.

The property is situated within Long Island's Hydrogeologic Zone 1 – one of several hydrogeologic zones mapped on Long Island to define and delineate the Island's specific aquifer recharge and discharge areas. Zone 1 delineates the deep flow, sole source Magothy Aquifer drinking water recharge area.

The existing upgradient monitoring well was found to be free of VOCs and SVOCs. On-site groundwater contained low levels of tetrachloroethene, trichloroethene, 1,1-dichloroethane and xylene (from 2 to 14 ug/L). No other VOCs are present above groundwater standards, and no VOCs, SVOCs, or metals occur above standards hydrologically downgradient to the south. Similar VOC compounds are noted in more than half of the NCDH-tested wells throughout Nassau County (see NCDH Groundwater report). NCDH set four primary criteria for testing wells, with one of these being the proximity of the tested well to railroad tracks, thus indicating the County's recognition that this use may represent a potential for groundwater contamination.

PCBs were not detected in underlying groundwater quality. This was expected in consideration of their extremely low solubility in groundwater and low mobility through soil.

4.5 Exposure Assessment

This Section presents a qualitative human health Exposure Assessment (EA) to evaluate whether VOCs, SVOCs, PCBs, and metals levels remaining on-site and/or off-site in unexcavated soils, and/or soil gas (VOCs only), could present risk to human health. This was accomplished by characterizing exposure settings, identifying potential and completed exposure pathways, and evaluating contaminant fate and transport.

Chemical Usage & Waste Streams

The Facility currently has four (4) separate hazardous waste streams and has ceased generating one additional hazardous waste stream. The locations of AK ALLEN's waste management units, and the past and present waste stream types and inventory, are listed in the IRM Work Plan (Ref. 3). Waste constituents include mineral spirits, alcohols, blackening caustics, chromic acid, and alodine solutions. Small quantities of chlorinated solvents are currently used from time to time for parts cleaning. Material Safety Data Sheets (MSDSs) for these products were submitted to the NYSDEC along with a memorandum dated January 20, 2005 (Ref. 13) describing the ongoing utilization of small quantities of solvent for cleaning purposes. As agreed to with the Department (Ref. 14), Federal OSHA permissible exposure limits (PELs) will provide the applicable regulatory guidance for workplace air quality at this Facility should there be a need to establish any interior background range of concentration levels for any particular chemical used in the facility during operation of the SVE system.

NYSDEC has agreed that federal OSHA permissible exposure limits (PELs) will provide the applicable regulatory guidance for indoor air quality at this Facility (Reference 14, letter dated April 4, 2005).

Cleaning and lubricating products now used at the facility do not contain PCBs. Furthermore, there is no evidence of on-site historical utilization of PCBs. PCB utilization has been identified historically with the LIRR and with the railroad transportation in general.

A description of present-day physical characteristics of the existing Facility is available in Reference 12, Supplemental Remedial Investigation Report.

Receptors

Generalized categories of potential human receptors likely to be present at the site and site environs were developed as listed below. This list is based upon the history of past and current industrial/commercial and residential land use in the surrounding area and assumes a similar industrial use in the future.

- On-site workers (current/future)
- Off-site workers (current/future)
- On-site visitors (current/future)
- Passers-by and trespassers (current/future)
- Adjacent area residents (current/future)
- On-site construction workers (current/future)
- Off-site construction workers (current/future, includes LIRR track workmen)

On-site visitors, passers-by, and occasional trespassers would have significantly less potential for exposure than on-site workers and were consequently deleted from further consideration.

On-Site Routes of Potential Exposure

The primary exposure routes by which the identified substances could contact or enter the body are: ingestion of water and/or soil; inhalation and dermal contact of vapors and dust; and/or dermal contact (with water or soil).

The source areas of soil impact were the five exterior storm drains (SD-1, SD-2, SD-3, SD-3OF and SD-4), the interior floor drain (FD-1), the western excavation area and the eastern excavation area. The storm drains and the interior floor drain were fully remediated to the satisfaction of both the EPA and NCDH. The eastern excavation area was also fully remediated to the satisfaction of the NYSDEC based upon end-point test results. The western excavation area achieved clean end points along its northern, eastern and western sidewalls. After completion of the western remedial excavation, the southern sidewall (parallel to the tracks) still had slight exceedances of VOCs, SVOCs, metals and PCBs (detailed in Tables EP-1 through 4 of the IRM Report) consistent with end point agreements with the NYSDEC. Further exploratory subsurface soil testing between the completed backfilled western excavation, and along the railroad embankment and out onto the active railroad track bed revealed soils containing both PCBs and VOCs at two (2) foot depths.

On-Site Exposure Pathway(s)

The potential exposure pathway from soil would occur during future excavation(s) by on-site construction workers. It is not reasonable to expect that the other receptor groups (i.e., area residents, site visitors, passers-by) would have contact with these substances, because residual soil vapor remains below grade and below the pavement cap.

There is no potential ingestion exposure pathway from groundwater to on-site workers, off-site workers, area residents, or on-site and off-site construction workers as this area is permanently serviced by public water from deep (e.g., 400-500 ft.) municipal supply wells – none of which are situated in proximity to the subject site and all of which must meet federal and state potable drinking water standards.

The only exposure pathway that may be potentially complete is from the possible migration of soil gas. EPA and NYSDEC have issued draft guidance to evaluate if vapor intrusion (the migration of VOCs from subsurface vapors up into overlying building interiors) poses risk to human health. Depending upon the concentration of subsurface soil vapor arising from soil and/or groundwater VOCs, pressure gradients, building conditions inside and outside the structure, and the quality of both indoor and outdoor air, the potential for vapor intrusion into building interiors may not be of concern. Soil vapor VOCs detected directly below the footings of the facility building along the south central wall could be indicative of a potential pathway to outside on-site workers at the rear of the Facility, if the pavement and/or building foundation integrity is compromised, but EC/ICs are intended to prevent the possibility of such occurrences.

Summary

The pathway from contact with residual impacted subsurface soil or soil gas is potentially complete only for on-site construction workers and vapor intrusion into the building interior. A Health & Safety Plan for on-site construction workers would be one of several EC/ICs for control of these potential exposures.

Despite any likelihood for PCBs in groundwater, there is the potential that the uppermost groundwater quality flowing beneath the site could serve as a pathway for other types of contaminant transport. However, there is no evidence to suggest completion of this possible pathway based upon the existing groundwater quality data. The uppermost groundwater quality has been shown to be relatively free of the chemicals of concern. In addition, shallow groundwater quality upgradient and downgradient of the site, and downgradient of the LIRR tracks to the south, is presently being monitored using the existing network of monitoring wells. Rainfall

infiltration down through site-impacted soils has been eliminated or dramatically reduced by the redirection of stormwater runoff into and vertically through cleaned-out storm drains.

It is highly improbable that low level VOCs observed in the uppermost groundwater quality beneath the site -- whether from historical site activities or from regional ambient groundwater quality within the shallow Upper Glacial Aquifer -- will reach any public supply well in the deeper Magothy Aquifer at any significant concentration. This is based upon: considerable horizontal distances from the site to municipal public supply well fields; significant screen depths of these same water wells in the deep Magothy Aquifer; and the attenuation capability of the multi-layered stratified geology that exists between the site and the deep intake zones of area supply wells. Thus, this potential exposure pathway is considered not complete.

No significant impact is expected from on-site soil vapor migration upon area residential property to the south as evidenced by the absence of VOCs in soil vapor samples from the right-of-way between the homes and the LIRR tracks.

The presence of on-site soil vapor provides some potential for the possible accumulation and/or migration of soil vapor underneath the building itself, and under such conditions, some possibility for its subsequent intrusion up into the building interior air given any pathways for migration to occur. As such, the soil vapor detections outside the building have provided only the premise for a potential exposure pathway with respect to the possibility of vapor intrusion, but not a completed pathway, since the building is on a concrete slab of at least 4-inch thickness that remains in relatively good repair.

The parking area in the rear of the building that showed soil vapor readings is now paved. As such, there is no likelihood for vapor migration upward through the sealed, paved parking lot immediately adjacent to the building. Likewise, the other AK Allen buildings situated immediately to the east and west of the remediated areas are not expected to be significantly influenced by the soil gas detected in the vicinity of the SG-3 and SG-4 test locations along the south central building wall beneath the footing. In the short distance between these two test points there is an almost complete attenuation and disappearance of the site-specific halogenated VOCs, indicating that the detected soil vapor appears confined to a relatively small area and does not migrate very far. In addition, there is also significant attenuation of soil vapor from SG-5 to both SG-3 and SG-4 evidencing that the detected soil vapor is relatively immobile. Factors that may affect the limited migration and mobility of soil vapor on-site include: the presence of the building foundation and pavement cap that minimizes water infiltration; redirected storm water infiltration; reduced gas exfiltration due to the pavement cap; and the likelihood that there are only minimal pressure gradients occurring in the subsurface in this area. The small part of the site that is unpaved or uncapped slopes gently toward the south and west away from the building.

It is recommended that for any potential source or residual remaining in the ground, that construction workers be protected by a Health & Safety Plan should the need arise to expose potential subsurface soil vapors, such as during deeper excavations or trenching work.

5.0 REMEDIAL GOAL AND REMEDIAL ACTION OBJECTIVE

5.1 Remedial Goal

The remedial goal is to control and manage residual on-site soil gas. The preferred remedial alternative will be designed to mitigate VOCs and to allow existing and intended future use of this property for commerce, industry and manufacturing.

5.2 Remedial Action Objective (RAO)

The remedial goal is to bring the site to pre-disposal/pre-release conditions (including consideration of background) to the extent feasible and practiceable. Extensive IRM work has eliminated the potential for other pathways, so the RAO is directed solely toward the management of on-site soil vapor below the rear parking lot using NYSDEC Standards, Criteria & Guidance (SCGs), where applicable & relevant and OSHA standards for workplace air.

RAOs are not included for storm water since storm water is not expected to come into contact with site contaminants. Storm water, either as rooftop drainage and/or parking lot runoff is conveyed directly into on-site storm drains designed to recharge to underlying ground water. There is no surface water body present on-site.

Soil vapor issues are for only a select few VOCs and the categories and sources of these VOCs respective compliance SCGs are listed below by media type. The RAO is to prevent dermal contact and inhalation of VOC vapors from soil gas.

Media	VOC SCGs
Soil Vapor	None Available
Soil	State TAGM
Indoor Air	Federal OSHA

Issues related to the off-site area are addressed in the Off-Site Feasibility Study provided under separate cover.

6.0 RESPONSE ACTIONS

The gross volume of soil removed from the western excavation, the eastern excavation, on-site exterior storm drains, an interior floor drain, and the LIRR embankment was approximately 770 tons. These impacted areas met the remedial targets in the IRM and were then backfilled with clean fill. The NYSDEC-approved remedial excavations from this 'source removal' work confirm that the significant sources were removed and that no further on-site remedial soil excavation is necessary.

Soil vapor chemistry has been observed beneath the backfilled western excavation (soil vapor probe SG-5) at levels ranging from 4,400 ug/m^3 (0.8 ppmv - 1,1,1-TCA) to 9,400 ug/m^3 (1.4 ppmv - PCE). Thus, soil vapor is the focus of this Feasibility Study although there are no applicable soil vapor standards or guidance values in New York State.

No groundwater remediation is required due to the fact that the SRI indicates that there is no or negligible, site-related significant impact(s) to underlying groundwater quality. Ongoing groundwater quality monitoring utilizing the existing monitoring well network is addressed in the Off-Site Feasibility Study.

7.0 IDENTIFICATION & SCREENING OF TECHNOLOGIES

As discussed above, impacted on-site soil was excavated and removed during the IRM, leaving only residual soil vapor issues to be addressed for the site. Therefore, the remaining remedial cleanup alternatives identified for this site are: 1) No Further Action beyond the completed IRM; 2) No Further Action beyond the completed IRM plus EC/ICs and continued on-site soil vapor monitoring and 3) Design, Installation and Operation of an On-Site Soil Vapor Extraction System (SVE) plus EC/ICs to actively eliminate, mitigate and/or control the migration of affected soil gas within the subsurface.

The unconsolidated, unsaturated sands and gravels comprising the subsurface soils at the Facility are sufficiently permeable and porous to accommodate and support an effective SVE system. The sealed, paved parking lot and adjacent AK ALLEN building foundation concrete pad will serve as a cap, preventing the escape of residual vapors and dilution by ambient air, and serving to extend the horizontal capture zone within the subsurface to enhance the operation of the SVE system.

8.0 DEVELOPMENT OF ALTERNATIVES

Three (3) remedial alternatives are developed as described below and analyzed in further detail.

8.1 Alternative 1: No Further Action Beyond the Completed IRM

This alternative is the least disruptive remedial approach. It involves no further action beyond the already accomplished extensive source removal in the completed IRM.

8.2 Alternative 2: No Further Action plus EC/ICs with Continued On-Site Soil Gas Monitoring

This alternative also involves no further source removal action beyond the already accomplished extensive IRM, and adds EC/ICs and continued monitoring of existing soil vapor points SG-3, SG-4 and SG-5.

The pavement cap and clean backfilled materials overlying the remediated area serve as a highly impermeable cover and prevent water infiltration/percolation and vapor exfiltration. Additionally, the continued presence of this cap prevents the interchange of gases in the soil interstitial zones with atmospheric gases above the soil surface, thereby precluding soil vapor degassing through the paved areas. Lateral soil vapor movement in this zone would also be limited by the lack of a motive force. Additional soil vapor sampling will be performed during the subsequent remedial design phase to evaluate current VOC levels and gather information necessary for design and operation of the SVE system.

This alternative includes ensuring that the remediated areas remain covered by a paved parking lot, and that the current building foundation remains in place. EC/ICs in the form of an environmental easement will include restrictions on the use of the property, restrictions on the use of groundwater below the property, a soil management plan, long-term monitoring, and a program of annual certification to ensure that these restrictions remain valid. Proposed EC/ICs are attached as Appendix B .

8.3 Alternative 3: Design, Installation and Operation of an On-Site Soil Vapor Extraction (SVE) system plus EC/ICs

This third alternative is designed to mitigate the observed soil vapor levels in existing soil gas monitoring points SG-3, SG-4 and SG-5, and to address the residual VOCs in the soil gas in the area of the western excavation. Since the VOCs detected in the soil vapor are still used in the plant and OSHA standards govern the indoor air quality, sub-slab monitoring is not included in this alternative. Determination of the appropriate regulatory regime for soil vapor was addressed in a letter from the Department dated April 4, 2005 (Ref. 14). As agreed to with the NYSDEC, federal OSHA permissible exposure limits (PELs) for occupational exposure were determined to be the appropriate SCGs for the existing on-site land use.

During the IRM, SVE-related horizontal four-inch diameter PVC header piping was pre-installed within the clean excavation backfill of the western excavation area. This alternative would utilize these existing header pipes as part of the SVE system. Operation of the SVE system in the western excavation area would create a 'radius-of-influence' of vacuum (capture zone) withdrawing soil vapor for above-ground treatment by activated carbon.

The design of the SVE system will utilize interconnected soil vacuum extraction points, a common header assembly, a blower to generate the vacuum, condensate traps for moisture removal, and treatment of the soil vapor by granular activated carbon (GAC) prior to venting of the effluent air stream to atmosphere. As the activated carbon becomes saturated and approaches breakthrough, carbon replacement will be accomplished by replacing the first GAC canister with the second in series, and putting a new GAC canister in the second position. Plumbing for the system will be installed below grade in the rear parking lot (subject to repaving) with the aboveground components of the unit treatment process (carbon canisters, compressor, etc.) housed in a shed. The conceptual location of the SVE system is provided on Figure 1.

Prior to startup, SVE performance parameters will be assessed. Some of the information necessary to evaluate design and performance of the system, such as soil porosity, particle size, humic content, moisture content, and soil consistency and homogeneity, may be collected as part of the system installation. Once operational, the soil vapor exhaust from the SVE system will be monitored. And once the system is further tested/adjusted for continuous operation and optimal soil vapor removal efficiencies, three existing soil vapor points will be sampled three times yearly, once during the winter heating season (November to March) and twice during the April to October period.

At this time, one to five years of SVE system operation are presented for costing purposes. Closure criteria will be determined during the design phase of construction. Proposed EC/ICs are included as Appendix B for on-site

9.0 ANALYSIS OF ALTERNATIVES

The following analyses of all alternatives are presented below in accordance with the criteria of NYSDEC's Division of Environmental Remediation draft technical guidance for site investigation and remediation, DER-10.

9.1 ALTERNATIVE 1: No Further Action Beyond the Completed IRM

9.1.1 Protection of Human Health and the Environment

Alternative 1 could achieve the RAOs if IRM removal actions, natural soil attenuation, site capping, and reduced potential mobility show that residual VOCs are declining and that exposure pathways are not completed. However, there are no EC/ICs included to assure that RAOs will be met. IRM removal activities achieved substantial progress towards the RAOs by removing impacted soil source areas.

9.1.2 Standards, Criteria & Guidance (SCG)

The SCGs are:

Media	SCG	PCE	TCE	TCA
Soil	NYSDEC TAGM*	1,400 ug/Kg	700 ug/Kg	800 ug/Kg
Groundwater	NYSDEC TOGS*	5 ug/L	5 ug/L	5 ug/L
Workplace Air	OSHA**	100 ppm	100 ppm	350 ppm
Soil Vapor	No standards or peer reviewed guidance values available.			

* Guidance
** Regulatory Standard: OSHA Permissible Exposure Limits (PELS) apply to occupational exposure.

NYSDEC's TAGMs (Technical Administrative Guidance Memorandum) for soil and TOGS (Division of Water Technical and Operational Guidance Series) for groundwater quality have been used as the cleanup objectives for the site. This alternative meets the prevailing SCGs; there are no existing SCGs for soil gas.

9.1.3 Long-Term Effectiveness & Permanence

Alternative 1 will remove residual soil vapor VOCs by natural attenuation, soil degasification and natural degradation. Its effectiveness is not expected to be a short-term remedy but could be a long-term remedy for this site.

9.1.4 Reduction of Toxicity, Mobility or Volume

Alternative 1 will not reduce the toxicity of residual VOCs in the soil vapor at the site, but the volume of VOC soil vapor will be reduced by natural attenuation. The building foundation and parking lot pavement create a large cap over impacted areas that reduces water infiltration by redirecting storm water through point source drains, and inhibits dramatic subsurface pressure gradients, thereby reducing soil vapor mobility. The overall mobility of soil vapor is dependent upon numerous factors including the continued integrity of the building floor and operation of the HVAC system.

9.1.5 Short-Term Effectiveness & Permanence

This proposed remedy will remove VOC soil vapor by natural attenuation, degasification, and natural degradation over time. It is not viewed as a short-term remedy for the site.

9.1.6 Implementablilty

No implementability issues are contemplated.

9.1.7 Cost

There is no additional cost for this alternative.

9.1.8 Community Acceptance

Although this alternative does not rapidly remove the affected soil vapor, it may achieve community acceptance if the community is made aware that this situation is localized and does not extend beyond the Facility. Additional community information is needed to emphasize the adequate completion of significant Interim Remedial Measures that removed the major sources from the site and placed a cap over the cleaned source areas to prevent contact, water infiltration, and reduce mobility.

9.2 ALTERNATIVE 2: No Further Action Plus EC/ICs with Continued On-Site Soil Gas Monitoring

9.2.1 Protection of Human Health and the Environment

Alternative 2 could achieve the RAOs if IRM removal actions, natural soil attenuation, site capping, and the reduced potential mobility show that residual VOCs are declining and that exposure pathways are not completed. IRM removal activities achieved substantial RAOs by removing impacted soil source areas. In Alternative 2, EC/ICs and continued monitoring are included to ensure that remaining RAOs are achieved.

9.2.2 Standards, Criteria & Guidance (SCG)

The SCGs are:

Media	SCG	PCE	TCE	TCA
Soil	NYSDEC TAGM*	1,400 ug/Kg	700 ug/Kg	800 ug/Kg
Groundwater	NYSDEC TOGS*	5 ug/L	5 ug/L	5 ug/L
Workplace Air	OSHA**	100 ppm	100 ppm	350 ppm
Soil Vapor	None available.			

* Guidance
** Regulatory Standard: OSHA Permissible Exposure Limits (PELS) apply to occupational exposure.

NYSDEC's TAGMs for soil and TOGS for groundwater quality have been used as the cleanup objectives for the site. This alternative meets the prevailing SCGs. There are no existing SCGs for soil vapor.

9.2.3 Long-Term Effectiveness & Permanence

Alternative 2 will remove residual VOC soil vapor by natural attenuation, soil degasification and natural degradation. Its effectiveness is not expected to be a short-term remedy but could be a long-term remedy for this site.

9.2.4 Reduction of Toxicity, Mobility or Volume

Alternative 2 will not reduce the toxicity of residual VOCs in the soil vapor at the site, but the volume of VOC soil vapor will be reduced by natural attenuation. The building foundation and parking lot pavement create a large cap over impacted areas that reduces water infiltration by redirecting storm water through point source drains, and inhibits significant subsurface pressure gradients, thereby reducing soil vapor mobility. The overall mobility of soil vapor is dependent upon numerous factors including the integrity of the building floor and operation of the HVAC system.

9.2.5 Short-Term Effectiveness & Permanence

This proposed remedy will remove VOC soil vapor by natural attenuation, degasification, and natural degradation over time. It is not viewed as a short-term remedy for the site.

9.2.6 Implementablilty

The required monitoring points are already in-place. As such, no implementability issues are contemplated.

9.2.7 Cost

The generalized cost range to perform Alternative 2 for a period of 30 years is:

Activity	Estimated Cost
Soil Vapor Monitoring & Reporting $5,000 per event x 3 events per year x 30 years	$ 450,000.
Parking lot maintenance (as needed)	$ 30,000.
Floor slab maintenance (as needed)	$ 10,000.
Annual Certification & Report $1,000 per year x 30 years	$ 30,000.
Total:	$ 520,000.
Present Worth (excludes inflation, Interest@5%):	$ 263,000.

9.2.8 Community Acceptance

Although this alternative does not rapidly remove the affected soil vapor, it may achieve community acceptance if the community is made aware that this situation is localized, does not extend beyond the facility and EC/ICs will be in place. An additional community outreach effort is contemplated to emphasize the adequate completion of significant Interim Remedial Measures that removed the major sources from the site and placed a cap over the cleaned source areas to prevent contact, water infiltration, and reduced contaminant mobility.

9.3. Alternative 3: Design, Installation and Operation of an On-Site Soil Vapor Extraction (SVE) System plus EC/ICs with Additional Monitoring

9.3.1 Protection of Human Health and the Environment

The proposed remedy conceptually outlined as Alternative 3 above achieves the Remedial Action Objective. The proposed SVE system will address the on-site soil vapor issue.

The system, illustrated on Figure 1, will be designed to capture soil vapor from two separate depth zones beneath the area of concern in the rear of the Facility. Shallow soils will be addressed with a set of vapor extraction points set at 10 to 20 foot depths. Although IRM soil borings B-1 and B-2 indicate that soil impact is limited to the upper 20 feet, a second set of deeper SVE points will also be installed at the 30 to 40 foot depth below grade in these same borings. The SVE well couplets will have separate risers and valves so that each zone can be vacuumed and monitored individually. To minimize the potential for drawing VOC vapors downward, the deeper SVE wells will be tested and placed under vacuum only if the results of the tests warrant their inclusion in the full-scale operation of the system.

The SVE system will create a radius-of-influence that draws the flow of soil vapor down the pressure gradient toward and into the extraction points. This design will control the mobility of soil vapor across the site and create a divide between the site and potential downgradient receptors. The SVE system is also expected to influence soil vapor movement down the gravity gradient away from the building and paved parking area. Design criteria will be further developed and confirmed during the initial start-up operations of the installed SVE system.

9.3.2 Standards, Criteria & Guidance (SCG)

The SCGs are:

Media	SCG	PCE	TCE	TCA
Soil	NYSDEC TAGM*	1,400 ug/Kg	700 ug/Kg	800 ug/Kg
Groundwater	NYSDEC TOGS *	5 ug/L	5 ug/L	5 ug/L
Workplace Air	OSHA**	100 ppm	100 ppm	350 ppm
Soil Vapor	None available			

* Guidance
** Regulatory Standard: OSHA Permissible Exposure Limits (PELS) apply to occupational exposure.

NYSDEC's TAGMs for soil and TOGS for groundwater have been used as the cleanup objectives for the site. This alternative meets the prevailing SCGs; there are no existing SCGs for soil gas.

9.3.3 Long-Term Effectiveness & Permanence

This proposed remedy, as judged from prior and existing experience of the project team elsewhere on Long Island, as well as an investigation of peer-reviewed literature, indicates that the SVE system will be effective in achieving the RAO. After completion of remediation and SVE system demobilization and removal, there will be no significant threats, exposure pathways, or risk to the public or the environment from the site. As such, it will achieve long-term effectiveness.

9.3.4 Reduction of Toxicity, Mobility or Volume

The objective of the SVE System is to remove and treat impacted soil vapor beneath the formerly remediated and backfilled western excavation. The SVE system will capture and preferentially route soil vapor migration and create a divide between the site and downgradient receptors. The SVE wells will be installed as two couplets and will collect soil vapor from the upper 20 feet of strata, as well as at depth, from deeper soils below the 20 foot horizon (if warranted). The overall treatment application is intended to achieve either permanent acceptable end-point VOC concentrations or an asymptotic level (a point at which further reduction is negligible). Therefore, the toxicity and volume of the contaminants will be reduced as the concentration of VOCs in the soil vapor is reduced over time.

While impacted soils have been remediated as part of the completed IRM, minor residuals may still remain in site soils that could be contributing to the generation of soil vapor. End point samples from the earlier remediation did achieve TAGMs, and the underlying ground water does meet TOGS, where applicable.

This SVE remedy will serve to increase the mobility and migration of the VOCs through porous soils to be extracted from the soil under vacuum for above-ground treatment and discharge.

9.3.5 Short-Term Effectiveness & Permanence

An on-site SVE system can be constructed within a two-week period. Much of the necessary subsurface horizontal common header pipes comprising the vacuum system were pre-installed during the IRM and covered with clean backfill prior to paving the parking lot. Therefore, short-term construction related impacts will be minimal.

Given the unsaturated, porous, and homogeneous nature of the site soils, operation of the SVE system is expected to be highly effective in reducing on-site soil vapor levels within a relatively short period. Exhausted carbon will be replaced with new carbon on an as-needed basis as the system is monitored for signs of breakthrough. Carbon adsorption of VOCs from the subsurface soil vapor is a highly effective and proven treatment process for control of these types of vapor emissions. The SVE system will incorporate three separate monitoring points: at the carbon canister inlet, between canisters, and in the outlet air following the second canister.

9.3.6 Implementability

There should be no difficulty installing, operating, and/or maintaining the SVE system, which will include exterior secured space and energy needs for placement and operation of the aboveground treatment system shed. No implementability issues are contemplated.

9.3.7 Cost

The generalized cost range to design, install & operate preferred Alternative 3 is:

Activity	Estimated Cost
Design, Install, and test a 2-point SVE System	$ 50,000
Soil Vapor Monitoring and Reporting (during SVE operation) $4,000/quarter x 4 quarters/year x 1 year to 5 years	$ 16,000 - $ 80,000
Operation ($2,000/month, excludes energy) $24,000 per year x 1 year to 5 years	$ 24,000 - $120,000
Carbon replacement and disposal ($2,000/year)	$ 2,000 - $10,000
Post Remediation Monitoring $5,000/event x 3 events/year x 3 years	$ 45,000
Parking lot maintenance (as needed) assumes $10,000 repairs at 10, 20,& 30 years	$ 30,000
Floor slab maintenance (as needed) assumes $5,000 repairs at 15 and 30 years	$ 10,000
Annual Certification & Report $1,000/year x 30 years	$ 30,000.
Total:	$ 207,000 - $ 348,000
Present Worth (excludes inflation, Interest=5%):	$ 161,000 - $ 299,000

9.3.8 Community Acceptance

This alternative will manage and remove the VOC soil vapor residuals remaining on the site and is expected to achieve community acceptance.

9.4 Comparison of Alternatives

Criteria	Alternative 1 No Further Action Beyond the Completed IRM.	Alternative 2 No Further Action Plus EC/ICs with Continued On-Site Soil Gas Monitoring	Alternative 3 Design, Installation and Operation of an On-Site Soil Vapor Extraction (SVE) system plus EC/ICs with Additional Monitoring	
Protection of Human Health and the Environment	Yes, but there are no EC/ICs to assure this over time	Yes	Yes	
Standards, Criteria & Guidance (SCG)	Meets SCGs (SCGs for soil vapor have not been developed)	Meets SCGs (SCGs for soil vapor have not been developed)	Meets SCGs (SCGs for soil vapor have not been developed)	
Long-Term Effectiveness & Permanence	May achieve long-term effectiveness, but no EC/ICs	Achieves long-term effectiveness with EC/ICs	Achieves long-term effectiveness with EC/ICs	
Reduction of Toxicity, Mobility or Volume	Toxicity, mobility & volume of contamination will not be reduced	Toxicity, mobility & volume of contamination will not be reduced	Toxicity, mobility & volume of contamination will be reduced	
Short-Term Impacts	None	None	Minor construction-related impacts	
Implementablilty	This alternative is fully implementable.	This alternative is fully implementable. EC/ICs will have to be developed.	This alternative is fully implementable. EC/ICs will have to be developed.	
Cost (in present worth)	No Cost	$263,000	$161,000 – 299,000	
Community Acceptance	Not expected	Community acceptance may be expected once EC/ICs are developed.	Community acceptance may be expected once EC/ICs are developed.	

9.5 Change of Use Protocol

Included are alternatives to address a significant change of use of the property. The change of use protocol is intended to pre-approve appropriate actions to be taken by AK Allen and the NYSDEC in order to provide business flexibility to AK Allen and expedite change of use of the site. A change of use protocol is included as Appendix A .

10.0 RECOMMENDED REMEDY

Of the three remedial alternatives presented herein, proposed Alternative 3 is preferred. This selection is based upon review of the site's environmental setting, anticipated future land use, and site data. As such, in accordance with NYSDECs DER-10 Guidance, an evaluation of preferred Alternative 3 was performed.

Alternative 3 is protective of human health and the environment. It achieves the RAOs by mechanically removing VOCs from the soil vapor underlying the site. It creates an influence that controls soil vapor migration across the site and creates a vapor flow divide between the AK ALLEN site and any potential receptors to the south and west. It is effective in both the long- term and short-term. Operation of the SVE system will, over time, reduce both the toxicity and volume of soil vapor at a relatively low cost. Since the soil vapor will be removed, this alternative is expected to achieve community acceptance.

-oOo-

11.0 REFERENCES

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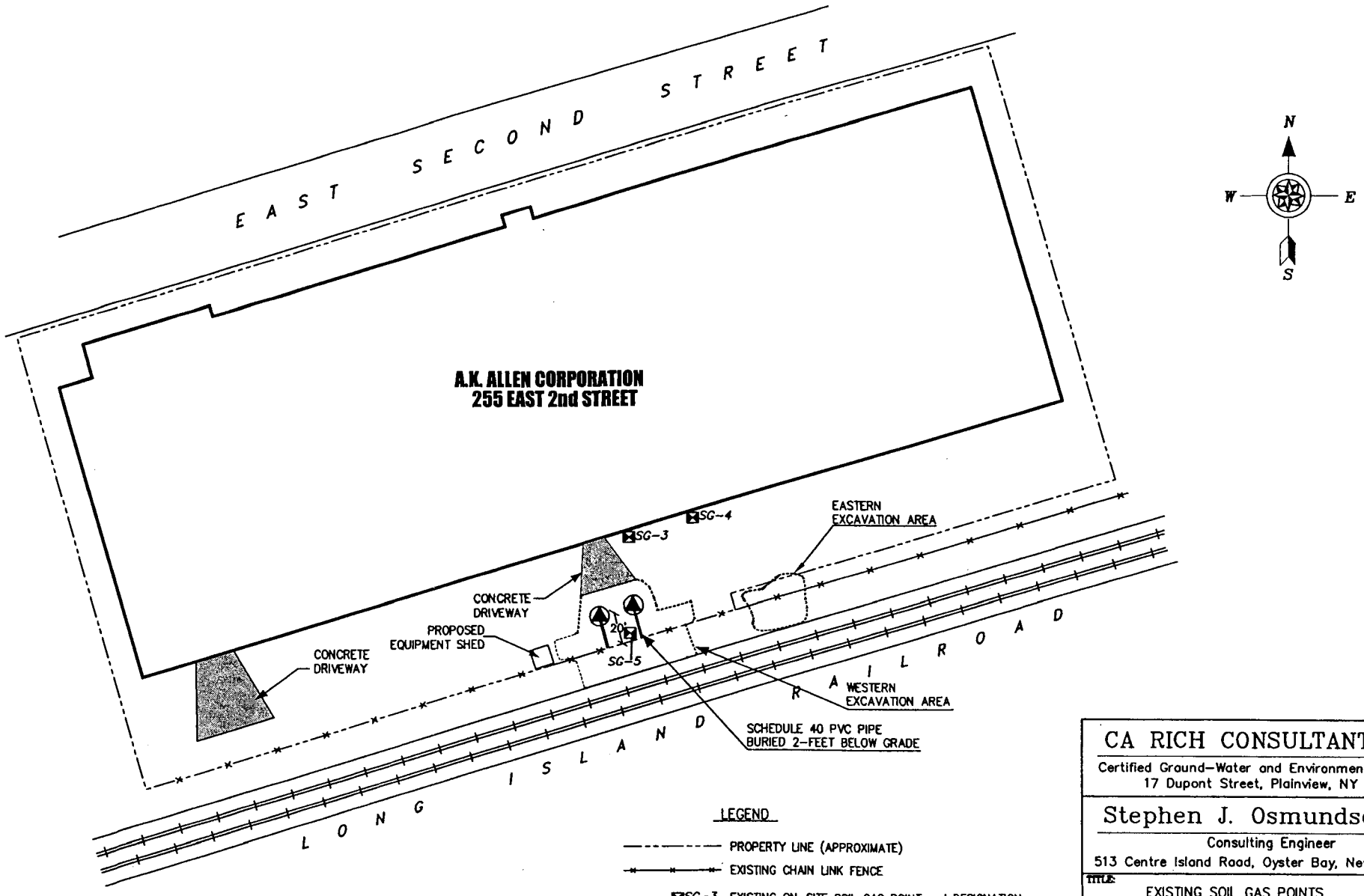
7. USEPA, 1990, Guidance on Remedial Actions for Superfund Sites with PCB Contamination, EPA/540/G-90/007.
8. Code of Federal Regulations, 40 – CFR – Chapter I – Part 761.
9. NYSDEC, Ambient Water Quality Standards, Guidance Values and Groundwater Effluent Limitations, TOGS 1.1.1 June 1998.
10. NYSDEC, 2002, DER-10 Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation.
11. CA RICH, August 2003, Supplemental IRM Work Plan No. 2 Additional Sampling along LIRR Embankment AK Allen Site 255 East 2nd Street, Mineola, NY.
12. CA RICH, April 2004, Supplemental Remedial Investigation Report, Monitoring Well Sampling & Analysis and Off-Site Soil Borings AK Allen Company, Inc., Mineola, NY.
13. CA RICH, January 20, 2005, Memo to Kevin Carpenter with MSDSs attached.
14. NYSDEC, April 4, 2005, Letter from Kevin Carpenter to Ronald Buttner (AK ALLEN).
15. NYSDEC, November 12, 2004, Letter from Kevin Carpenter to Eric Weinstock (CA RICH).

FIGURES



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TITLE: EXISTING SOIL GAS POINTS, PROPOSED SVE WELLS and PROPOSED EQUIPMENT SHED		DATE: 9/21/04
		SCALE: As Shown
FIGURE: 1	A.K. ALLEN CORPORATION 255 EAST 2nd STREET MINEOLA, NEW YORK	DRAWN BY: S.T.M.
DRAWING NO: 3226-01AA.b		APPR. BY: E.A.W.

APPENDIX A

Change In Use Protocols For AK Allen Property

The selection of the remedy to be described in the Record of Decision ("ROD") for 255 East Second Street, Mineola, New York (the "AK Allen Property") will not necessarily provide for a future change in use of the existing business operations of the AK Allen Company. Specifically, the ROD will reflect the fact that OSHA standards govern workplace exposure for the VOC's found in the soil immediately adjacent to the building on the AK Allen Property based upon the presence of those same VOC's in substances used as part of AK Allen's industrial processes.

Should there be a future change in use in the business operations at the AK Allen Property, respondent acknowledges that OSHA standards might no longer be applicable. In the absence of OSHA jurisdiction, the DEC has identified a series of steps that should be implemented to ensure that the selected remedy is protective of workers and others at the Property.

In the event of a change of use in the operations at the AK Allen Property which results in the discontinuance of products containing the same VOC's which were found in the soil gas adjacent to the building foundation, as a condition of such change in use, AK Allen (or any successor to AK Allen) agrees to implement the following measures:

1. AK Allen will install a minimum of one sub-slab performance monitoring point(s) beneath the slab to document that negative pressure is maintained and to establish baseline VOC concentrations in the sub-slab soil vapor (Ref. 15);

2. The performance monitoring point(s) will be tested to determine if sub-slab soil vapor exceeds prevailing soil gas standards; and

3. Based upon the test results for the performance monitoring point(s), AK Allen will expand or modify the existing SVE system to ensure that negative pressure is maintained beneath the building slab.

Upon implementation of these measures, the AK Allen Property shall not be restricted in future use for commercial or industrial purposes.

Nothing herein shall preclude AK Allen or any successor in interest from seeking relief from the above requirements in the event AK Allen believes that these requirements go beyond the State's applicable standards for industrial and commercial properties regarding soil vapor monitoring and vapor intrusion at the time of such change in use.

APPENDIX B

Engineering and Institutional Controls (EC/ICs) for AK Allen Site

Several engineering and institutional controls are deemed necessary and appropriate for remedy selection for the AK Allen Site. Some EC/ICs are considered to be independent of the remedy option selected as presented in the June 2005 On-Site FS. Others may be more dependent upon the remedy selection.

EC/ICs Independent of the Remedy Selection

- AK Allen shall certify annually that it continues to institute the remedial option selected in the Record of Decision (ROD). Such a certification may come in the form of a statement by a third party agent for AK Allen or may be made by a responsible official of AK Allen.

- Groundwater shall not be extracted and used from the Site unless such action is consistent with NYSDEC groundwater requirements and the intended use of such groundwater meets applicable State and/or Federal requirements for that usage. AK Allen shall submit a request in writing to both the NCDH and the NYSDEC at least 30 days in advance of the planned activity demonstrating that all applicable requirements are met for this action.

- AK Allen shall maintain an institutional control that informs employees and construction contractors of the location and nature of the prevailing remedial portion of the site. The IC shall be in the form of a fact sheet made available to employees and contractors.

- AK Allen shall maintain an institutional control that requires timely maintenance of all remedial and/or monitoring equipment placed in operation on the site. Such an IC shall be in the form of maintenance contracts or assignment of such responsibility to a designated entity. A log of required maintenance shall be maintained on-site for inspection upon reasonable notice by a representative of the NYSDEC.

- AK Allen shall maintain in place and operational any required engineering controls such as operation of an active soil vapor extraction system. AK Allen shall also monitor the engineering controls on a schedule agreed to in the Operations, Maintenance & Monitoring (OM&M) Plan for the project. This schedule shall be modified as necessary and appropriate based upon change in circumstance. AK Allen shall make a request for change in writing to the NYSDEC and shall be provided a written response to that request in a timely fashion. NYSDEC shall not unnecessarily withhold its approval of a change in schedule where AK Allen provides a reasonable justification for its request.

- AK Allen shall record an appropriate covenant with the Clerk of Nassau County New York indicating that a portion of its property held at 255 E 2nd Street, Mineola, NY is listed as a New York State Inactive Hazardous Waste Site. The covenant will make reference to the ROD for the Site and that extensive IRM activities have been performed to date to remove contamination. AK Allen shall be entitled to remove the covenant once the site achieves the remedial goals required in the ROD.

- AK Allen shall maintain the paved cover over the remedial portion of the Site. The pavement shall be inspected yearly to ensure that it retains an acceptable level of integrity in the remedial portion of the Site. This engineering control does not apply to any portion of the pavement outside of the remedial portion of the Site as defined in the ROD. Prior to penetrating the pavement, employees and contractors shall follow procedures that will be outlined in a Site Health & Safety Plan that will be developed after completion of the ROD as part of the OM&M Plan.