

Five-Year Review Report
for the
Myers Property Superfund Site
Franklin Township
Hunterdon County, New Jersey

May 2008

Prepared by:

U.S. Environmental Protection Agency
Region II
New York, New York

Five-Year Review Report

Table of Contents

Executive Summary	iii
Five-Year Review Summary Form	iv
I. Introduction	1
II. Site Chronology	1
III. Background	2
Physical Characteristics.....	2
Land and Resource Use.....	2
History of Contamination.....	2
Initial Response.....	3
Basis for Taking Action.....	3
IV. Remedial Actions	3
Remedy Selection.....	3
Remedy Implementation.....	6
System Operations/Operation and Maintenance.....	9
Institutional Controls.....	10
V. Five-Year Review Process	10
Administrative Components.....	10
Community Involvement.....	10
Document Review.....	10
Data Review.....	11
Site Inspection.....	13
VI. Technical Assessment	13
<i>Question A:</i> Is the remedy functioning as intended by the decision documents?.....	13
<i>Question B:</i> Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?....	13
<i>Question C:</i> Has any other information come to light that could call into question the protectiveness of the remedy?.....	15
Technical Assessment Summary.....	16
VII. Recommendations and Follow-up Actions	16
VIII. Protectiveness Statement	16
IX. Next Review	17

Attachments

Figures

- 1 - Site Location map
- 2 - General Site Plan
- 3 - Well Location Map
- 4 - Total Volatile Organics in Extraction Wells versus Time

Tables

- 1 - Chronology of Site Events
- 2 - Comparison of Remediation Goals in 1990 ROD to Current NJDEP Soil Cleanup Criteria
- 3 - Comparison of 1990 ROD Remediation Goals for Ground Water Contamination to Current Federal and State MCLs

List of Documents Reviewed

EXECUTIVE SUMMARY

A five-year review for the Myers Property Superfund site located in Franklin Township, Hunterdon County, New Jersey has been completed. This is the first five-year review for the site. It was triggered by the start of construction of the soil/sediment portion of the remedy. This is a statutory five-year review because contamination remains at the site above levels that allow for unlimited use and unrestricted exposure.

Two Records of Decision (RODs) have been signed for the site. The first ROD was signed in September 1990 and selected a remedy to address contaminated soil, sediment, and buildings at the site. It also selected an interim remedy to address contaminated ground water. The soil/sediment portion of this remedy was changed by a September 2000 ROD Amendment. A final remedy to address contaminated ground water at the site was selected in a September 2005 ROD. The site is now considered construction complete, after the signing of a Preliminary Close Out Report in September 2005. The potentially responsible party (PRP) for the site, Arkema Inc., entered into a Consent Decree with the Environmental Protection Agency (EPA) in February 1992 and has conducted all remedial response activities at the site since that time.

The contaminated building portion of the remedy was completed in 1998 and a ground water remediation system has been in operation since October 1999. The soil/sediment portion of the remedy was completed in June 2005. All work has been performed in accordance with the RODs and Remedial Designs prepared for the site, with oversight by EPA and, in some cases, the U.S. Army Corps of Engineers. The New Jersey Department of Environmental Protection has concurred with the activities conducted at the site.

Based upon a review of the RODs, a number of reports prepared by the PRP, and inspections of the site, it has been concluded that the remedies at the site continue to function as intended by the RODs and continue to protect human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name (from WasteLAN): Myers Property		
EPA ID (from WasteLAN): NJD980654198		
Region: 2	State: NJ	City/County: Franklin Township, Hunterdon County
SITE STATUS		
NPL status: <input checked="" type="checkbox"/> Final <input type="checkbox"/> Deleted <input type="checkbox"/> Other (specify)		
Remediation status (choose all that apply): <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Constructed <input checked="" type="checkbox"/> Operating		
Multiple OUs?* <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	Construction completion date: 9/28/2005	
Has site been put into reuse? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> N/A		
REVIEW STATUS		
Lead agency: <input checked="" type="checkbox"/> EPA <input type="checkbox"/> State <input type="checkbox"/> Tribe <input type="checkbox"/> Other Federal Agency		
Author name: Stephanie Vaughn		
Author title: Remedial Project Manager	Author affiliation: EPA	
Review period:** May 2003 to April 2008		
Date(s) of site inspection: 11/29/2007		
Type of review: _____ <input type="checkbox"/> Post-SARA <input type="checkbox"/> Pre-SARA <input type="checkbox"/> NPL-Removal only <input type="checkbox"/> Non-NPL Remedial Action Site <input type="checkbox"/> NPL State/Tribe-lead <input type="checkbox"/> Regional Discretion <input checked="" type="checkbox"/> Statutory		
Review number: <input checked="" type="checkbox"/> 1 (first) <input type="checkbox"/> 2 (second) <input type="checkbox"/> 3 (third) <input type="checkbox"/> Other (specify)		
Triggering action: <input checked="" type="checkbox"/> Actual RA Onsite Construction at OU #1 <input type="checkbox"/> Actual RA Start at OU# <input type="checkbox"/> Construction Completion <input type="checkbox"/> Previous Five-Year Review Report <input type="checkbox"/> Other (specify)		
Triggering action date (from WasteLAN): 5/5/2003		
Does the report include recommendation(s) and follow-up action(s)? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no		
Is the remedy protective of the environment? <input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> not yet determined		

* ["OU" refers to operable unit.]

** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow-Up Actions

This report did not identify any issue or make any recommendation for the protection of human health and/or the environment which was not included or anticipated by the site decision documents.

Protectiveness Statement

The implemented remedy for OU1 protects human health and the environment in the short-term. When institutional controls are in place and effective the OU1 remedy will be protective in the long-term.

The implemented remedy for OU2 protects human health and the environment in the short-term. When institutional controls are in place and effective the OU2 remedy will be protective in the long-term.

Because the implemented remedy for both OUs is protective in the short-term, the site is considered protective in the short-term.

**Myers Property Superfund Site
Franklin Township, New Jersey
First Five-Year Review**

I. Introduction

This first five-year review for the Myers Property site, located in Franklin Township, Hunterdon County, New Jersey, was conducted by the United States Environmental Protection Agency's (EPA's) Remedial Project manager (RPM), Stephanie Vaughn. This statutory five-year review was conducted pursuant to Section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §9601 *et seq.* and 40 CFR 300.430(f)(4)(ii) and in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001).

The purpose of five-year reviews is to ensure that implemented remedies are protective of human health and the environment and that they function as intended by the site decision documents. It is required by statute that EPA conduct five-year reviews at sites where, upon completion, the remedial action will leave hazardous substances, pollutants, or contaminants on-site above levels that allow for unlimited use and unrestricted exposure. This document will become part of the site file.

The remedial action for the site has been divided into two separate operable units (OUs). OU1 involved implementation of a remedy to address contaminated soil, sediments, and buildings at the site. An interim remedy to address contaminated ground water was also implemented as part of OU1. OU2 involved implementing a final remedy for the ground water at the site.

The OU1 remedy for contaminated soil, sediment, and buildings was conducted in stages, and was completed in June 2005. Construction of the interim OU1 ground water remedy was completed in July 2000 and continues to operate. The interim remedy was made final by the signing of a Record of Decision (ROD) for OU2 in September 2005. The trigger for this five-year review is the start of construction of the soil/sediment portion of the OU1 remedy, which was initiated on May 5, 2003.

This five-year review finds that the selected OU1 and OU2 remedies remain protective of human health and the environment.

II. Site Chronology

See Table 1 for the site chronology.

III. Background

Physical Characteristics

The Myers Property site is located on Lower Kingtown Road in Franklin Township, Hunterdon County, in a rural part of western New Jersey (see Figure 1). The site includes approximately five acres of land currently owned by Arkema Inc. (Arkema), a potentially responsible party (PRP) for the site, and approximately two acres of land on the east side of Lower Kingtown Road which is owned by the State of New Jersey and is mostly a wetland area. The site is vacant except for a barn-like structure on the privately owned portion of the site, which is used to house the water treatment system. The structure was built on part of the foundation of a mill dating to 1827. In addition, an actively used walking/horseback riding trail runs through the site. Cakepoulin Creek, a trout production stream used for recreational fishing, runs adjacent to the site and eventually drains to the south branch of the Raritan River. Springs surface on the property and drain into the creek and through a wetland adjacent to the creek. The population of Franklin Township is approximately 3,000 people. Residents in the area obtain potable water from private wells, and on-going sampling of these wells found that no drinking water wells near the Myers site are contaminated.

Land and Resource Use

The land use at the site and in the vicinity of the site is residential. The State of New Jersey has classified the aquifer as Class II-A, a current source of drinking water. EPA has also classified the aquifer as a Sole Source Aquifer in a June 1988 decision in accordance with the Safe Drinking Water Act because it is the only viable source of drinking water for the local community.

History of Contamination

Portions of the Myers property have historically been used for chemical manufacturing by a number of companies. The W. A. Allen Company owned the property from 1928 to 1932, and may have operated on the site, formulating fertilizer-pesticide mixtures for residential use. Elko Chemical Works operated a pesticide production plant at the site from 1942 to 1945. The Pennsylvania Salt Manufacturing Company, a predecessor to Arkema, bought the property in 1945 and operated the plant for two years, producing the pesticide DDT. In 1947, the site was sold to Associated Terminal, Inc., who then leased the site from 1953 to 1959 to the Clinton Chemical Company, which became Witco Corporation. Mr.

and Mrs. Cornelius Myers purchased the property in 1971 and used it as a residence. They sold it to Atochem North America, Inc. (now called Arkema) in 1993.

Initial Response

The site was placed on the Superfund National Priorities List on September 1, 1983, which qualified it for funding and response under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). In 1984, EPA removed visibly contaminated material for off-site disposal, including contaminated soil, drummed wastes, asbestos and debris. EPA installed a fence around the most highly contaminated areas in 1987 and posted warning signs at the perimeter of the site.

EPA completed a study of the nature and extent of contamination at the site in 1989, and prepared Remedial Investigation and Feasibility Study (RI/FS) reports based on this investigation. The primary contaminants found in the site soils and sediment were the pesticides DDT and its breakdown products, DDD and DDE, chlorinated benzenes, particularly hexachlorobenzene, and arsenic. In the ground water, high concentrations of benzene, chlorinated benzenes, and other volatile organic compounds (VOCs) were detected. Some inorganic compounds, particularly arsenic, were also found to be present at elevated concentrations.

Basis for Taking Action

Remedial action at this site was necessary to protect human health and the environment from actual and potential releases of hazardous substances from the site into the environment. The contaminants found in the soil and ground water at the site include volatile and semi-volatile organic compounds, pesticides, and metals.

IV. REMEDIAL ACTIONS

Remedy Selection

Based on the results of the RI/FS, EPA signed a ROD in September 1990 which selected a remedy to address contaminated soil, sediments, buildings, and shallow ground water at the site. This portion of the remedy was designated as OU1 of the site. The 1990 ROD also selected an interim remedy to address contaminated ground water in the bedrock aquifer (OU2), to prevent contamination of down-gradient wells while the aquifer was studied further. The multi-part remedy for OU1 consisted of excavating contaminated soils and sediments above the water table, treating organic-contaminated soil by chemical

dechlorination coupled with soil washing to remove inorganic contaminants, and backfilling the treated soil on the site. The interim ground water remedy included an extraction and treatment system to capture migrating contaminants, as well as periodic testing of nearby residential wells outside of the property to ensure that they did not become contaminated. The remedy also called for on-site buildings to be decontaminated.

EPA entered into a Consent Decree with Atochem North America, Inc. (now called Arkema) in February 1992, to implement the selected remedy under EPA supervision, and to reimburse EPA for a portion of its past response costs. Witco Corporation and several other parties agreed to pay additional response costs under a Consent Decree in September 1996.

Arkema's subsequent site investigations revealed several conditions which indicated that implementation of the selected soil remedy would not be successful. Primarily, Arkema found that the soil washing would not effectively remove the arsenic from the soil. As a result, EPA changed the soil and sediment portion of the remedy to excavation of contaminated material above the water table with off-site disposal, backfilling of the excavated areas with clean fill, and restoration of the affected areas. A ROD Amendment was signed in July 2000.

In addition, the 1990 ROD selected decontamination as a treatment for the on-site buildings, but anticipated that this might not be possible. Further investigation during the remedial design showed that most of the buildings could not be effectively decontaminated, and, with the exception of a portion of the mill, dismantling of the buildings with off-site disposal was chosen as an appropriate alternative.

In its final form, the OU1 remedy included the following major components:

Soil/Sediment:

- Excavation of soils and sediments above the water table contaminated with organic and inorganic compounds exceeding the cleanup goals specified in the 1990 ROD. Contaminated material below the water table was left in place, but no exposure pathway to this material exists and, therefore, the remedy is protective of human health and the environment. In order to assure that the remedy remains protective, institutional controls are being placed on the part of the site owned by the PRP. Specifically, a deed restriction is being placed on the PRP-owned portion which will specify that the ground surface can not be disturbed without prior

written approval. The rest of the property is owned by the State of New Jersey and is designated as a wetland.

- Off-site disposal of excavated material with treatment as necessary to meet disposal requirements.
- Backfilling of the excavated area with clean fill similar in type to the native soil.
- Restoration of designated wetland areas subsequent to backfilling with clean fill.
- Appropriate environmental monitoring to ensure the effectiveness of the remedy.

Buildings:

- Off-site disposal of on-site buildings with the exception of a portion of the mill.

Ground Water:

The 1990 ROD selected an interim remedy to address contaminated ground water. It included:

- Extraction of shallow ground water contaminated above health-based drinking water standards, on-site treatment, and reinfiltration in the ground water or discharge into Cakepoulin Creek.
- Extraction and on-site treatment of bedrock ground water contaminated above health-based drinking water standards in the areas of highest contamination, and reinfiltration into the ground water or discharge into Cakepoulin Creek, coupled with additional study to evaluate a long term response for the contaminated bedrock ground water.
- Ground water monitoring to identify the threat to potable wells in the area and provision of point-of-use treatment for these wells should they become contaminated by the site.

As per the terms of the 1990 ROD, operational data from the interim ground water treatment system and monitoring wells was collected and analyzed. In June 2005, the PRP prepared an FS which summarized the data collected to date, and evaluated various alternatives which could be used as a final remedy for the bedrock ground water.

Based on the 2005 FS, a ROD was signed in September 2005 which selected a final remedy for the site ground water that consisted of continuing the already operating interim remedy, with periodic review. As such, no new construction was needed. Operation and maintenance (O&M) of the ground water extraction and treatment system will continue for an estimated time period of 30 years.

The ground water portion of the remedy includes the following activities:

- Continued operation of the existing ground water extraction wells for containment of the source area and restoration of the ground water down-gradient of the source area.
- Continued operation of the existing treatment plant.
- Continued use of reinjection wells for discharge of treated ground water.
- Ground water use restrictions within the area where contaminants are present above cleanup criteria.
- Continuation of the on-site ground water monitoring program.
- Continuation of the residential well sampling program.
- Annual review of the well monitoring program and ground water treatment system.

Note that the 30-year timeframe is only an estimate. Contamination in the form of Dense Non Aqueous Phase Liquid, commonly referred to as DNAPL, is likely present in the ground water. The potential for implementing alternative treatment technologies, including in-situ treatment of the contaminants, will be periodically reviewed, and alternative treatment technologies may be implemented in the future, as appropriate. Any changes could significantly affect the overall time-frame for treatment.

Remedy Implementation

Soil and Sediment:

A design report for the soil and sediment portion of the work was prepared by Arkema and approved by EPA in July 2002 (see Figure 2). The primary contaminants of concern in the soil and sediment at the site included total VOCs, hexachlorobenzene, total DDT, and arsenic. Table 2 at the end of this document lists the cleanup goals for soil and sediment at the site, as outlined in the 1990 ROD. Extensive sampling of the contaminated areas was conducted by Arkema prior to completion of the design report and summarized in a Soil Delineation Report prepared by Environmental Liability Management, Inc. in 2001. Information from this report was used to pre-determine the excavation areas and, as such, no

post-excavation sampling was required during the soil/sediment portion of the remedial action. Excavation depths varied from six inches in some areas down to the water table in others. The mean seasonal water table varies from less than one foot to approximately four feet below the ground surface. Contamination below the water table was generally left in place, though it was removed from certain areas where the water table was particularly shallow. Horizontally, excavation limits were determined by the existence of soil samples with contaminant concentrations below the cleanup criteria.

Field work was initiated in the spring of 2003. All work was conducted in accordance with an approved Site Management Plan. Because most of the site is located within a 100-year floodplain, excavation areas were generally not left open over night and were filled in as soon as possible to minimize the potential for contamination of Cakepoulin Creek. Appropriate storm water runoff and erosion control measures were also implemented to control the inadvertent spread of contamination. All excavations were surveyed at their bottom and sides prior to backfilling to assure that the intended extent was excavated. All backfill material used at the site was tested for geotechnical parameters and contamination prior to being brought to the site, and met New Jersey's residential cleanup criteria.

The total volume of soil/sediment excavated and disposed of off-site was 22,190 cubic yards. All contaminated material was disposed of as non-hazardous waste at approved landfills. After the excavation was completed, the affected areas of the site were restored. To help speed the restoration of the site and minimize the visual disturbance, thirty-two overstory trees within the excavation area were left in place. The PRP will monitor the success of the wetland restoration for a period of five years, including the health of the retained trees, and will conduct additional restoration activities, as necessary. All physical work associated with the soil/sediment cleanup was completed in the spring of 2005. A Final Report for Remedial Construction and Notice of Completion, which provides a detailed description of the soil/sediment cleanup, was approved in June 2005.

Buildings:

All contaminated buildings were removed from the site in 1997 and 1998 except for a portion of the foundation wall of the 1827 mill, which was the only structural component that could be decontaminated and reused. The foundation wall was decontaminated and incorporated into a new building which was built to house the ground water treatment system.

Ground Water:

A design report for construction of the interim ground water remediation system was prepared by Arkema and approved by EPA in December 1998. The extraction and treatment system, which addresses both shallow and bedrock ground water contamination, has been in operation since October 1999, and a Notice of Completion and Final Report for Remedial Construction for the system was approved in July 2000.

The remediation system consists of extracting contaminated ground water, treating it at an on-site treatment facility, and re-injecting the treated water into the ground, up-gradient of the extraction area. The treatment system includes air stripping, followed by polishing with activated carbon, and then filtration for arsenic removal, as necessary. Air from the stripping operation was initially treated through a catalytic oxidizer and scrubber. In February 2006, the catalytic oxidizer was replaced with a vapor phase carbon adsorption unit. The treatment system is operating under appropriate New Jersey Department of Environmental Protection (NJDEP) permits. This is a long-term process that (1) controls the spread of contamination further down-gradient of the site and (2) reduces the concentration of contaminants in the ground water over time.

When the system began operation in 1999, it consisted of four extraction wells and two injection wells. In the fall of 2001, a fifth extraction well was added to the system, and, in the spring of 2004, four new extraction wells and three new injection wells were added (See Figure 3). Water is currently being extracted at a rate of 35 to 44 gallons per minute (gpm). The design capacity of the treatment system is 50 gpm.

Water quality data for the site is available since 1996, and samples have been collected quarterly since 1999 from monitoring wells, extraction wells, and from the influent and effluent of the treatment system. The data shows that ground water quality has improved significantly since the implementation of the remedy, and that the system is effectively controlling the spread of contamination further down-gradient of the site. In addition, domestic wells in the area have been tested periodically since 1983, and routinely since 1997. No impacts from the site to domestic wells have been detected, and sampling will continue into the future.

System Operations/Operation and Maintenance

Soil/Sediment:

A post-remediation restoration monitoring plan was included as Appendix K of the approved Remedial Design for OU1, and updated by the remedial action contractor in January 2004.

Long-term monitoring and maintenance of the restored areas of the site is being conducted. The overall goal of the restoration plan is to establish 85 percent areal coverage and 85 percent survival of mitigation plantings by the end of 2008. Annual mitigation monitoring reports are being submitted by the PRP.

The restoration is being monitored qualitatively on an annual basis and quantitatively (through such measures as percent survival) on a bi-annual basis. In 2008, the overall success of the restoration will be assessed against the performance criteria stipulated in the remedial design, as well as relevant NJDEP standards. These performance criteria and standards are described in greater detail in Section 5 of this report.

Ground Water:

The ground water treatment system continues to operate. In accordance with a discharge to ground water permit equivalency issued by NJDEP, the system is tested on a monthly basis. A set of monitoring wells at the site is also tested on a quarterly basis to assure that the remedy remains effective, and to guide any adjustments to the treatment approach that may be required. In addition, water from nearby private, residential wells is tested bi-annually to assure that they remain unaffected by the site. The entire ground water treatment system undergoes routine maintenance, as necessary.

In August 2006, the treatment system was shut down due to a fire in the treatment building. The fire was attributed to a failure of an exhaust pipe leading from the catalytic oxidation unit within the plant. Repairs were completed and the catalytic oxidizer was replaced with a vapor phase adsorption unit. The treatment system resumed operation in October 2006.

Minor bacterial growth fouling of the extraction wells has been a persistent problem at the site, and has been controlled by well disinfection and mechanical cleaning. From late 2006 to 2007, the fouling became more severe because of the system shut down due to the fire. A specialty contractor was able to clear all fouling by February 2007, and the system is now operating at or near its design capacity.

Institutional Controls

The Myers site is currently vacant except for the water treatment building. The privately owned portion is fenced. While it is zoned for residential use, a deed restriction specifying that the impacted areas of soil can not be disturbed without prior written approval will be implemented on the land. The restriction is necessary because contaminated material below the water table was left in place by the OUI remedy. Furthermore, the water table is shallow and may be accessible. No change in land use is anticipated in the near future. The deed restriction has been drafted and will be implemented in the near future.

In addition, and in accordance with NJDEP regulations, a classification exception area will be implemented in order to prevent potential exposure to contaminated ground water.

V. Five-Year Review Process

Administrative Components

The five-year review team included Stephanie Vaughn (EPA-RPM), Richard Krauser (EPA-Hydrologist), Marian Olsen (EPA-Human Health Risk Assessor) and Natalie Loney (EPA-Community Involvement Coordinator). This is PRP-lead site.

Community Involvement

A notice was published in the *Hunterdon County Democrat*, a local newspaper, on April 3, 2008, notifying the community of the five-year review process. It was also indicated that once the five-year review is completed, the results will be made available at the local site repository, which is at the North County Branch Library, 65 Halstead Street, Clinton, New Jersey. In addition, the notice included the RPM's address and telephone number for public inquiries related to the five-year review process or Myers site. No phone calls or letters from the public have been received as a result of the above-described Public Notice. Note that since domestic wells in the area are tested regularly, contact with those residents living closest to the site is ongoing. The residents have not voiced any concerns about the site.

Document Review

The documents, data, and information which were reviewed in completing the five-year review are summarized at the end of this document.

Data Review

Soil and Sediment:

The restored areas of the site include four distinct wetland areas covering a total area of about 2.57 acres. Other restored areas include an upland meadow area, a pond, a small creek, and a public walking/horseback riding trail.

The most recent Annual Mitigation Monitoring Report - 2007 (prepared by Environmental Resources Management, Inc. on behalf of the PRP, November 2007) includes the following findings:

- Herbaceous vegetation coverage met or exceeded 98 percent in all areas, which exceeds the 85 percent areal coverage requirement in the permit equivalency. Wetland vegetative coverage ranged from 61 to 100 percent. The wetland area with the lowest percentage of wetland vegetation cover did show a significant increase from the previous monitoring session.
- There were several new mortalities of seedlings and shrubs. Most of these mortalities were in two of the restored wetland areas, where dense herbaceous vegetation appeared to be "crowding out" the seedlings and shrubs.
- Limited insect herbivory and deer herbivory was noted, but not to a significant extent, and less so than had been noted during earlier monitoring rounds.
- Volunteer seedlings were noted in all areas. However, extremely dense vegetation made it difficult to locate all the seedlings.
- No significant signs of erosion were noted in any of the restoration areas, including along the restored streambed and banks.
- Water was observed in ten of the thirteen piezometers placed on site to monitor water levels. Two of the three dry piezometers were located along the delineated wetland boundary, and would, therefore, not be expected to have ground water levels as high as in the middle of the wetland.
- All but two of the thirty-two retained overstory trees have survived. Of the remaining trees, a few appear stressed but most are thriving.

Three additional monitoring rounds have been or will be conducted after the 2007 annual report was prepared before the restoration monitoring period ends in 2008. The report makes several suggestions for fixing some of the problems noted above, and the goal of establishing 85 percent areal coverage and 85 percent survival of mitigation plantings by the end of 2008 should be met. After this period, the PRP will continue routine maintenance of the restored areas as necessary, particularly in relation to the retained overstory trees.

Ground Water:

The ground water monitoring program includes monthly testing of the treatment system, quarterly collection of water levels and ground water quality samples from 17 wells, and bi-annual collection of water quality samples from approximately 20 private residential wells in the area.

- Treatment System Monitoring

As of February 2008, approximately 125 million gallons of water have been treated on site. The treatment system is currently processing water at a typical rate of between 35 and 44 gallons per minute, and has resulted in a consistent zone of capture. All discharge permit limits are consistently met, and removal of the monitored constituents is consistently at nearly 100 percent.

- Ground Water Monitoring

Quarterly ground water quality data is currently collected from 13 wells. Overall, concentrations of the site contaminants of concern have decreased significantly over time. As part of the February 2008 annual assessment report, concentration versus time graphs were prepared for each of the monitoring wells. In general, the trends show stable or decreasing concentrations of site constituents throughout the well monitoring network (see Figure 4).

One of the monitoring wells located outside of the capture zone, MW-12TR, still has significantly elevated concentrations of site-related contaminants. While the remedy remains protective, the current extraction system may not be adequately addressing contamination near this well. As such, the system is being reviewed and an additional monitoring well and/or extraction well closer to the MW-12 well cluster may be installed.

Water level measurements are taken monthly to evaluate the capture zone of the system. Note that, for each sampling round in 2007, none of the monitoring wells outside of the capture

zone, other than those at the MW-12 cluster, have shown concentrations of site-related contamination above drinking water standards.

- Residential Well Monitoring

No site-related contamination has been detected in any of the residential wells that are sampled. In fact, there have been virtually no detections of non-metal contaminants in any of the potable wells sampled over the course of this project, and metals concentrations are consistent with naturally occurring, background levels.

Site Inspection

The RPM conducts periodic visits to the site. The five-year review team and a representative for the PRP visited the site on November 29, 2007. The RPM visited the site as recently as April 3, 2008. Conditions observed indicate that the site is being properly operated and maintained, and that the wetland restoration is progressing satisfactorily.

VI. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes, the remedy is functioning as intended by the OU1 and OU2 RODs.

The restoration of the excavated portions of the site is progressing satisfactorily. The ground water treatment system has prevented the spread of contamination off site and continues to reduce the concentration of contaminants on site. The ground water remediation system will continued to be modified, as necessary, to maximize its effectiveness.

Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of the remedy selection still valid?

- **Are the exposure assumptions and toxicity data used at the time of the remedy selection still valid?**

- a. Soil and Buildings. The exposure assumptions and toxicity values that were used to estimate the potential cancer risks and non-cancer hazards in the risk assessment supporting 1990 ROD for human health followed the Risk Assessment Guidance for Superfund used by the Agency. The process that was used in

the human health risk assessment is still valid. Now that the remedy has been implemented, the human exposure pathways to contamination remaining in the soil and sediment below the water table have been interrupted.

b. Ground Water. The treatment system is effectively containing and reducing the size of the plume of contamination from the site. Overall, concentrations of site-related contaminants present in the ground water are decreasing. Residents in the area use wells as their source of drinking water and an ongoing monitoring program is in place to assure their wells do not become affected by the site. This activity is precautionary and detections in these wells have not occurred.

The 2005 OU2 ROD states that the potential for implementing alternative treatment technologies, including in-situ treatment of contaminants, will be periodically reviewed and discussed in the annual report. If warranted, studies will be conducted to determine the effectiveness of alternative technologies and changes to the treatment technology may be implemented, as appropriate and with EPA approval. To date, no alternative treatment technologies have been found to warrant further study for use at this site.

c. Vapor Intrusion. Currently the only building on the site is the ground water treatment facility. A review of the available data indicates that the screening levels identified in the "OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Ground Water and Soils available at <http://www.epa.gov/correctiveaction/eis/vapor.htm> were exceeded for the following chemicals.

- Benzene was detected at a concentration of 2,000 micrograms per liter (ug/l) in MW-2D and 1,300 ug/l in MW-12TR. These concentrations exceed the risk-based vapor intrusion screening level of 140 ug/l for benzene. The screening level is associated with an increased risk of cancer of 1×10^{-4} , which means that one person out of 10,000 could get cancer due to this exposure if it were to occur.
- Chlorobenzene was detected at a concentration of 12,000 ug/l in MW-2S, 33,000 ug/l in MW-2D, and 6,800 ug/l in MW-12TR. These concentrations exceed the screening level of 390 ug/l for chlorobenzene. This screening level is based on non-cancer health hazards.
- Dichlorobenzene was detected at a concentration of 3,670 ug/l in MW-2S and 7,000 ug/l in MW-4D. These concentrations exceed the screening criteria of 830 ug/l for 1,3-

dichlorobenzene and 2,600 ug/l for 1,2-dichlorobenzene. These are the only comparable screening criteria available, and they are based on non-cancer health hazards.

An operator does not work full-time at the site, so there is no current cause of concern for workers. In the future, if the site were developed, it would be important to further evaluate vapor intrusion as a potential pathway of exposure.

- **Are the Cleanup Values Selected in the ROD Still Valid?**

a. Soil. The selected remedy for the soil was intended to prevent exposure to contaminated material. The 1990 ROD established remediation goals for a number of chemicals. Table 2 provides the remediation goals from the 1990 ROD and the NJDEP current remediation goals. The only original remediation goal that would not meet current standards is that for benzo(a)pyrene. However, a review of the site data shows that benzo(a)pyrene was not left on site above the water table at concentrations greater than the current standard. As such, this is not an issue.

Many of the current NJDEP remediation goals are lower than those established in the 1990 ROD. However, none of these new goals were exceeded at the limits of excavation.

b. Ground Water. The 1990 ROD established the federal and state Maximum Contaminant Levels (MCLs) as the remediation goals. Table 3 provides a comparison of the original values listed in Table 15 of the ROD (1990) with current EPA and NJDEP MCLs. As indicated in the tables, one of the federal and several of the state MCLs have changed since 1990. However, the remedy remains effective because all extracted ground water is still being treated to concentrations well below the current MCLs prior to discharge.

In addition, there is no current exposure pathway to the contaminated portions of the ground water, and institutional controls will be established to prevent any future exposure.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Based on the evaluation of the potential human exposures at the site there is no new information that has been developed that could call into question the protectiveness of this remedy.

Technical Assessment Summary

According to the data reviewed and the site inspection, the soil and ground water remedies are functioning as intended by the RODs, and contaminated buildings are no longer present at the site. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedy. There have been no changes in the toxicity factors of the contaminants of concern or in the risk assessment procedures that would affect the protectiveness of the remedy.

VII. Recommendations and Follow-Up Actions

There are no recommendations or follow-up actions stemming from this five-year review, other than the ongoing review of the restoration of the OU1 remedy and of the effectiveness of the OU2 remedy. In particular, monitoring results from MW-12TR should be evaluated closely, for the reasons described in Section V of this report. In addition, institutional controls still need to be implemented at the site.

XIII. Protectiveness Statement

The implemented remedy for OU1 protects human health and the environment in the short-term. When institutional controls are in place and effective the OU1 remedy will be protective in the long-term.

The implemented remedy for OU2 protects human health and the environment in the short-term. When institutional controls are in place and effective the OU2 remedy will be protective in the long-term.

Because the implemented remedy for both OUs is protective in the short-term, the site is considered protective in the short-term.

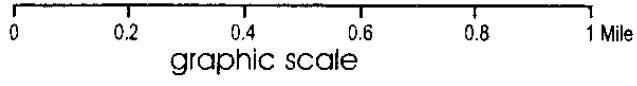
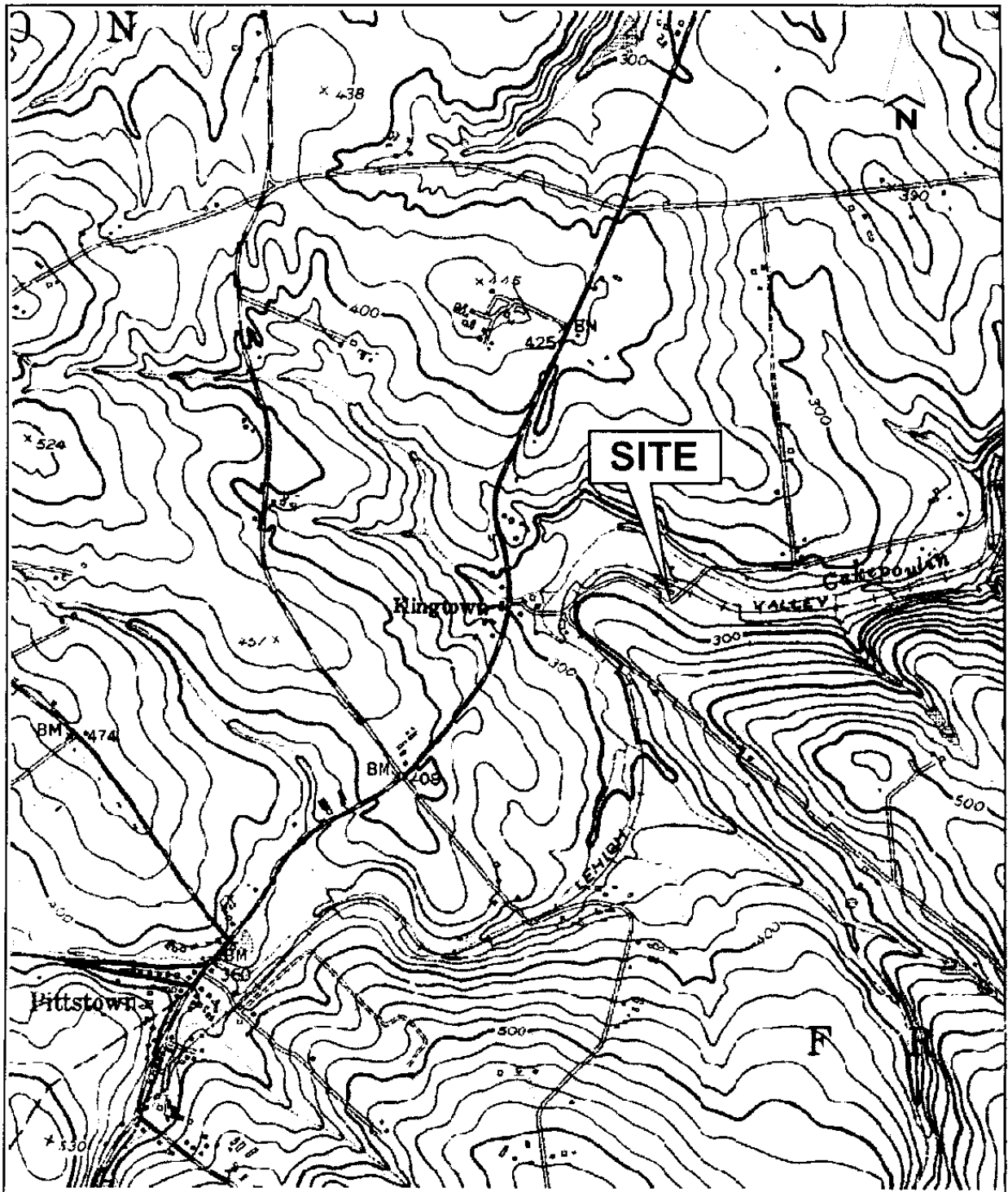
X. Next Review

The remedies selected in the September 28, 1990 OU1 ROD and the September 28, 2005 OU2 ROD do not provide for unlimited use and unrestricted exposure. The remedies include establishment of institutional controls to ensure continued protectiveness. EPA will conduct another five-year review within five years of this report.

Approved:

Susan A. Jarowick
for George Pavlou Director
Emergency and Remedial Response Division

5/2/08
Date



Map Source: Pittstown, NJ
 7.5' USGS Quadrangle
 1970


<p>Figure 1 Site Location Map</p>	
	<p>Arkema Inc. Myers Property Site OU-2 Focused Feasibility Study Franklin Township, New Jersey</p>

Figure 2

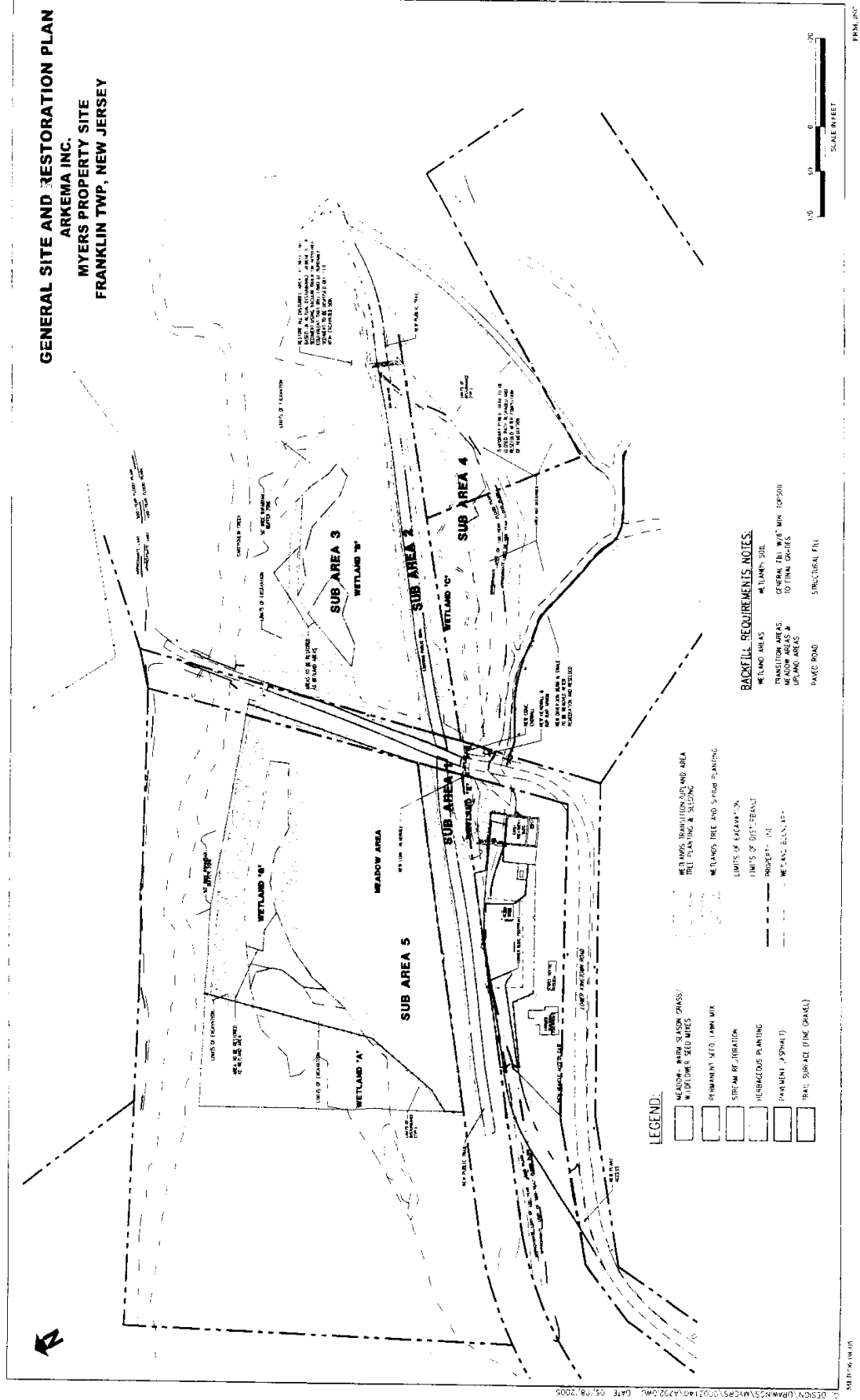
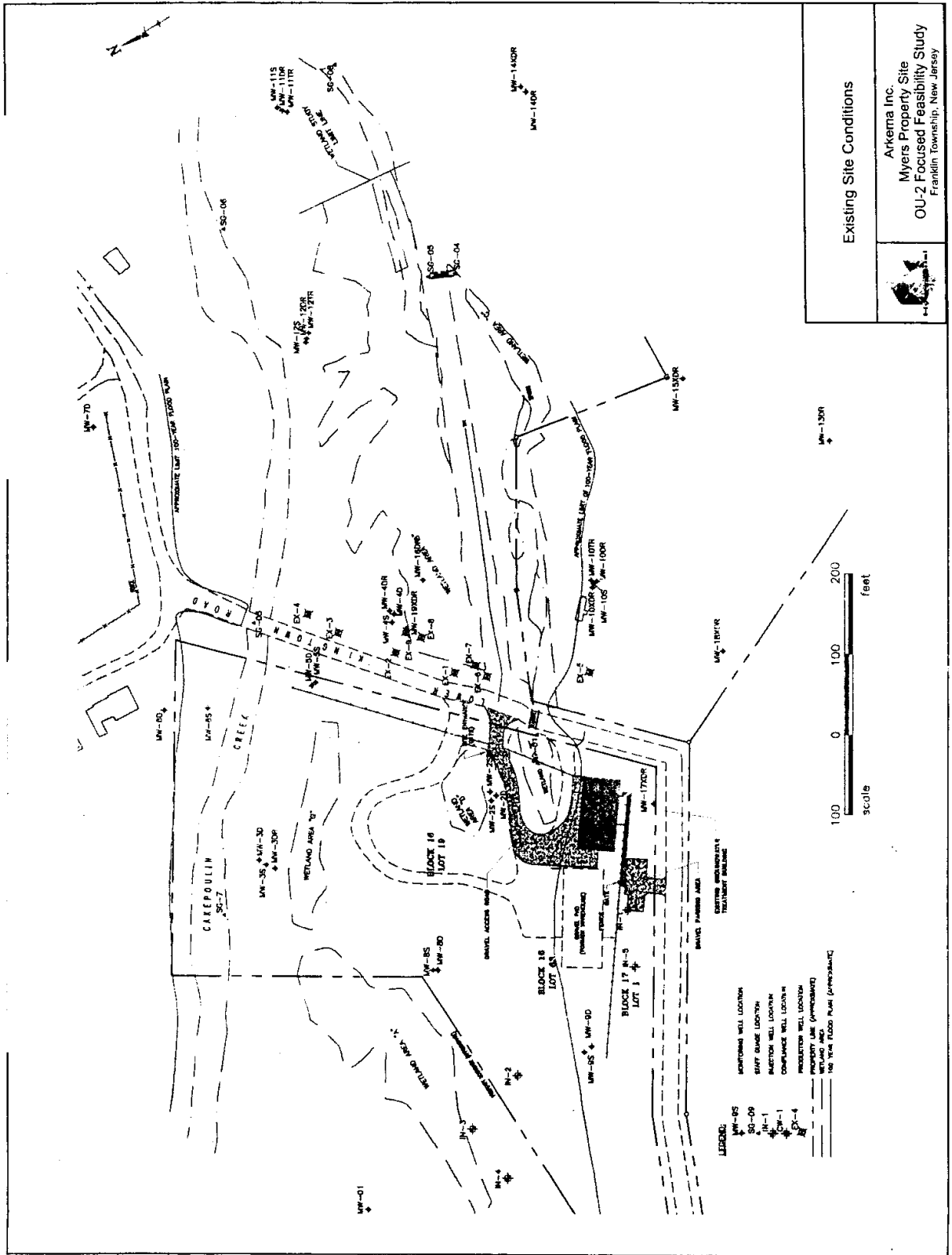



Figure 3



Existing Site Conditions



Arkema Inc.
Myers Property Site
OU-2 Focused Feasibility Study
Franklin Township, New Jersey

Figure 4

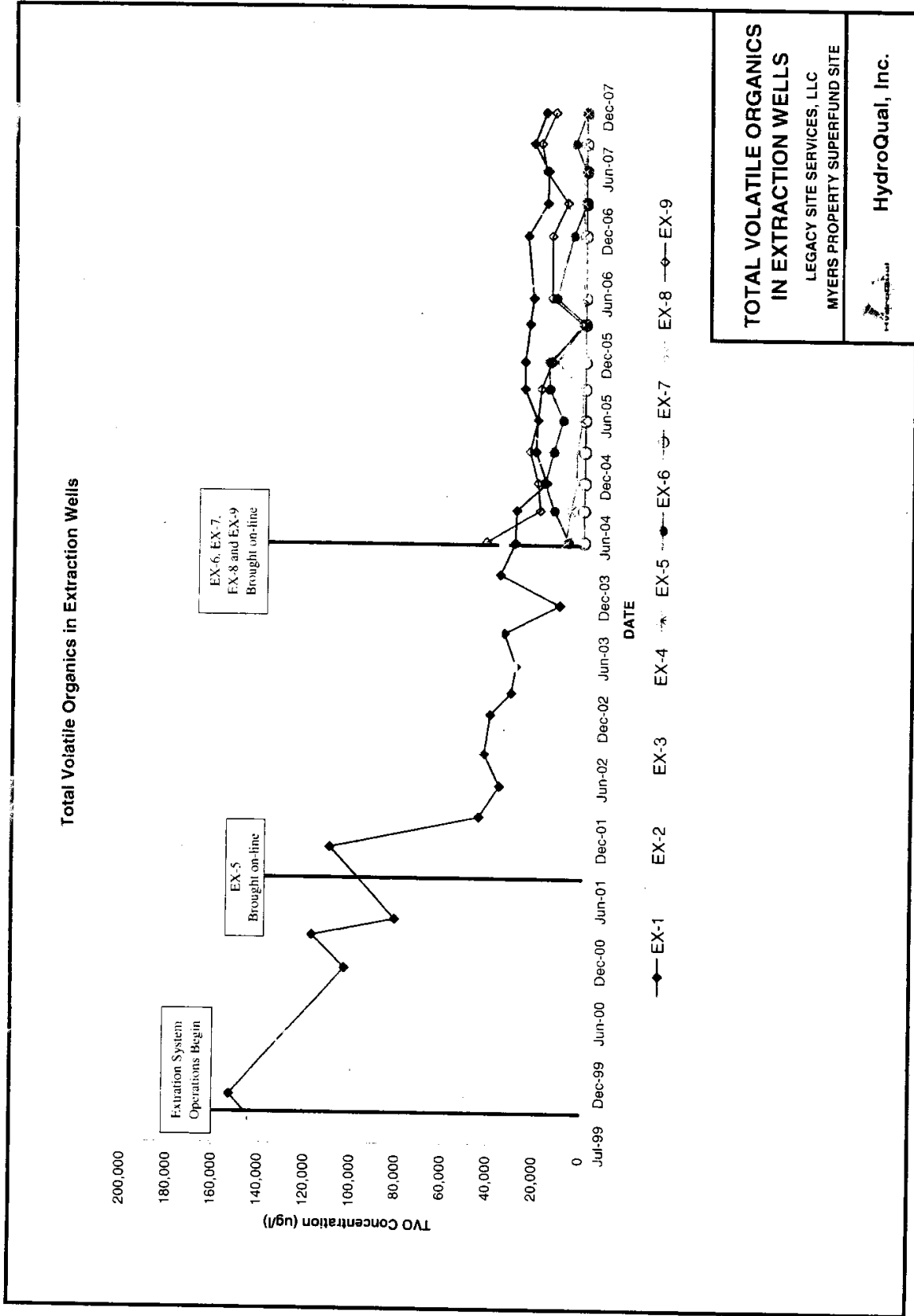


Table 1
Chronology of Site Events

Event	Date(s)
The land now known as the Myers Property site was owned by a series of companies and used primarily for pesticide production.	1928 to 1959
The property was purchased by Mr. and Mrs. Myers and used as their residence.	1971
The site was listed on the NPL.	1983
The property was sold to Atochem North America, Inc. (now called Arkema).	1987
The OU1 ROD was signed.	1990
EPA entered into a Consent Decree (CD) with Arkema to implement the selected remedy.	1992
The building portion of the remedy was completed.	1997 to 1998
The PRP began operation of the interim ground water treatment system.	1999
Based on additional investigations completed by Arkema, an OU1 ROD amendment was signed.	2000
The final OU1 remedial design prepared by the PRP was approved by EPA.	2002
The OU1 remedy was implemented by the PRP group pursuant to the CD.	2002 to 2005
The OU2 FS (ground water) was submitted by the PRP.	2005
The OU2 ROD was signed.	2005
The PCOR for the site was signed by EPA.	2005

Table 2
Comparison of Remediation Goals in 1990 ROD to Current NJDEP Soil
Cleanup Criteria

Chemical	1990 ROD (mg/kg)	NJDEP Residential	NJDEP Non- Residential	Impact to Ground Water
Total base neutral/acid extractable	10	Toxicity values not available for this grouping of chemicals		
Hexachlorobenzene	10	0.66	2	100
Total DDT	10	A value for total DDT is not provided so the components and their respective values are listed below.		
4,4'-DDD		3	12	Site-specific
4,4'-DDE		2	9	Site-specific
4,4''-DDT		2	9	Site-specific
Total VOCs	1	A value for total VOCs is not available for comparative screening.		
PAHs	10	A value for PAHs is not available for comparative screening.		
Benzo (b) fluoranthene		0.9	4	50
Benzo (a) anthracene		0.9	4	500
Benzo (a) pyrene		0.66	0.66	100
Benzo (k) fluoroanthene		0.9	4	500
2,3,7,8-TCDD	0.001	OSWER Directive identifies this as the remediation goal for 2,3,7,8-TCDD		
Antimony	10	14	310	
Arsenic	20	20	20	
Barium	400	700	47,000	
Cadmium	3	39	100	
Chromium	100	A value for chromium is not available for comparative screening.		
Chromium 6		240; 270	6,100; 20	
Chromium 3		120,000	Not regulated for exposure pathway	
Copper	170	600	600	
Lead	250-1000	400	600	
Silver	5	110	4,100	
Zinc	350	1,500	1,500	

Source: Current NJDEP Soil Cleanup Criteria at <http://www.state.nj.us/dep/srp/regs/scc/index.html>

Table 3
Comparison of 1990 ROD Remediation Goals for Ground Water Contamination to Current Federal and State MCLs

Chemical	1990 Fed. MCL (ug/l)	Current MCL (ug/l)	1990 State MCL (ug/l)	Current State MCL (ug/l)
Benzene	5	5	1	1
Chlorobenzene (mono)		100	4	50
1,2-DCB		600	600	600
1,3-DCB		600	600	600
1,4-DCB		75	75	75
Lindane		0.2	4	0.2
Methoxychlor		40	100	40
1,2,4-trichlorobenzene		70	8	9
Arsenic	50	10	50	5
Chromium	50	100	50	100
Lead	50	15 (Action Level)	50	15
Silver	50		50	100

Data Sources:

EPA MCLs at
www.epa.gov/safewater/contaminants/index.html#listmcl
 NJDEP drinking water standards at
www.state.nj.us/dep/watersupply/standard.htm).

List of Documents Reviewed

- Record of Decision, EPA, September 1990
- Record of Decision Amendment, EPA, July 2000
- Record of Decision, EPA, September 2005
- Superfund Preliminary Close Out Report, EPA, September 2005
- Ground Water Monitoring December 2007 and Annual Assessment Report, prepared by Hydroqual on behalf of the PRP, February 2008
- Annual Mitigation Monitoring Report for 2007, prepared by ERM on behalf of the PRP, November 2007
- Ground Water Monitoring December 2006 and Annual Assessment Report, prepared by Hydroqual on behalf of the PRP, March 2007
- Quarterly Discharge to Ground Water Permit Equivalency Reports prepared by Hydroqual on behalf of the PRP
- Bi-annual Domestic Well Sampling Reports prepared by the PRP
- Final (100%) Design Report, prepared by ERM on behalf of the PRP, June 2002
- Final Report for Remedial Construction and Notice of Completion, prepared by ERM on behalf of the PRP, June 2005
- Monthly progress reports for the site prepared by the PRP
- Soil Delineation Report, prepared by Environmental Liability Management, Inc. on behalf of the PRP, May 2001
- Comprehensive Five-Year Review Guidance, EPA Office of Emergency and Remedial Response, EPA 540-R-01-007, OSWER No. 9355.7-03B-P, June 2001