Superfund Five-Year Review Report
Syncon Resins Superfund Site
Kearny, Hudson County, New Jersey

Prepared by:
U.S. Environmental Protection Agency
Region 2
New York, New York

August 2011

Executive Summary

This is the third five-year review for the Syncon Resins Superfund Site (Site) located in Kearny, Hudson County, New Jersey. The remedy for operable unit 1 (OU1) is protective of public health and the environment in the short-term. In order for the Site to be protective in the long-term, the final Amended OU2 remedy needs to be designed and constructed, and institutional controls will need to be implemented.

The OU1 remedy identifies interim actions to address exposure pathways and contaminant migration in the OU1 ROD. These actions have been successfully implemented; therefore, the remedy protects human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: **Syncon Resins**		
EPA ID *(from WasteLAN)*: **NJD 064263817**		
Region: 2	**State: NJ**	**City/County: Kearny, Hudson County**

SITE STATUS	
NPL status: X Final ☐ Deleted ☐ Other (specify)	
Remediation status (choose all that apply): ☐ Under Construction X Operating X Complete	
Multiple OUs?* X YES ☐ NO	**Construction completion date:** 9/27/2001
Are site related properties currently in use? ☐ YES ALL X YES SOME ☐ NO NONE ☐ N/A GW	

REVIEW STATUS	
Lead agency: X EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____	
Author name: Pamela J. Baxter, CHMM	
Author title: Remedial Project Manager	**Author affiliation: EPA**
Review period:** **7/2006 to 7/2011**	
Date(s) of site inspection: 11/3/10 and 11/17/10	
Type of review: X Post-SARA **Statutory** ☐ Pre-SARA or post-SARA **Policy** ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ Regional Discretion	
Review number: ☐ 1 (first) ☐ 2 (second) X 3 (third) ☐ Other (specify) _____	
Triggering action: X Previous Five-Year Review Report ☐ Other (specify) ☐ Actual RA Onsite Construction or RA Start at OU #_____ ☐ Construction Completion	
Triggering action date *(from WasteLAN)*: **9/7/2006**	
Does the report include recommendation(s) and follow-up action(s)? ☐ yes ■ no	
Does the remedy protect the environment? ■ yes ☐ no	

* ["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, cont'd

Issues, Recommendations and Follow-up Actions:

NJDEP needs to continue the operation, maintenance and monitoring of the OU1 remedy. Access controls need to be improved and continued to be maintained and the Site use must remain restricted to ensure that the public is not exposed to site-related contaminants.

Protectiveness Statement(s):

The OU1 remedy protects human health and the environment because all interim actions comprising the remedy have been taken to address exposure pathways and contaminant migration identified in the OU1 ROD.

Other Comments:

None

Table of Contents

Five-Year Review Report

I. Introduction

This five-year review for the Syncon Resins Superfund Site (Site), located in Kearny, Hudson County, New Jersey, was conducted by the U.S. Environmental Protection Agency (EPA) Remedial Project Manager (RPM), Ms. Pamela J. Baxter, CHMM. This review was conducted pursuant to Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 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 a five-year review is to assure that implemented remedies protect public health and the environment and function as intended by the decision documents. This report will become part of the administrative record for this Site.

This is the third five-year review for the Syncon Resins Superfund Site. The triggering action for this review is September 7, 2006, the signature date of the previous five-year review. This five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

The Site has been divided into two Operable Units (OUs). OU1 remedial actions are being implemented by the New Jersey Department of Environmental Protection (NJDEP). This review focuses on OU1 which has been fully implemented and is operational. OU2 is in the design phase as an EPA-lead project.

II. Site Chronology

See Table 1 for the Site chronology.

III. Background

Site Location and Physical Description

The Syncon Resins Site encompasses approximately 15 acres and is located in a heavily industrialized area of northern New Jersey.

The Site is located at 77 Jacobus Avenue in Kearny, Hudson County. The Site is bounded on its western edge by the Passaic River. Adjacent to the northern and southern boundaries are facilities of two licensed waste haulers. The Site is bounded on the eastern side by Jacobus Avenue and is across the street from a former lacquer manufacturing facility. The closest residential areas to the Site are located approximately one mile west in Newark and one and one-half miles southeast in Jersey City.

Site Geology/Hydrogeology

The Site is situated on a narrow peninsula of land bordered by the Passaic River and the Hackensack River, whose confluence one and one-half miles south of the Site forms the upper reaches of Newark Bay. The Site is relatively flat with minor topographic variations.

The narrow peninsula on which the Syncon Resins Site is located is heavily industrialized. Various chemical plants, hazardous waste transporters, manufacturing companies, petroleum facilities, and storage terminals are situated within the immediate area. The shallow aquifer in the area is not known to be utilized for any purpose. Groundwater from the confined, or deeper, aquifer within the area is utilized solely for industrial purposes. All potable water for the area's users is supplied by municipal water supply.

The Syncon Resins Site and the surrounding area are situated within the Hudson River drainage basin. The material overlying the bedrock comprises primarily alluvial sands, silts, clay, and detritus. Immediately beneath the Site are four major stratigraphic units within the alluvial material, as follows:

1. A surficial fine to coarse sand layer approximately 10 feet thick,
2. A highly plastic clay layer approximately eight to 10 feet thick,
3. A medium sand layer approximately 10 feet thick, and
4. A deep layer of silty clay and very fine sand approximately 15 feet thick.

All four stratigraphic units are continuous across the Site. The two sand layers are separated by the clay layer, which acts as an aquitard, thereby forming two aquifers beneath the Syncon Resins Site; a shallow, water table aquifer above the clay layer, and a deeper, confined aquifer beneath the clay layer.

Beneath most of the Site, the water table is one to two feet below ground level, and slopes gently to the west toward the Passaic River. The confining layer of clay underlying the Site begins approximately 10 feet below grade. Groundwater flow velocity within the shallow aquifer was calculated to be approximately 31 feet per year. The deeper aquifer has an estimated groundwater flow velocity of approximately 2 feet per year.

History of Contamination

The earliest evidence documenting the existence of the Syncon Resins facility consists of 1951 aerial photographs of the area. The narrow peninsula on which the Syncon Resins Site is located is heavily industrialized. Syncon Resins produced alkyd resin carriers for pigments and varnishes. Various chemical manufacturing facilities, hazardous waste transporters, manufacturing companies, petroleum facilities, and storage terminals are situated within the immediate area.

Most of the company's business consisted of reprocessing of off-specification resins purchased from other manufacturers. Six main buildings and seven ancillary structures were used in process-related activities on the Site. There were at least two chemical reactor buildings containing stainless steel vessels, various other buildings and structures, numerous large bulk storage tanks, two unlined lagoons that had been used for discharging process wastewater, and an unknown number of underground tanks and associated piping systems.

In May 1977, the owners of Syncon Resins filed for bankruptcy under Chapter 11 of the Bankruptcy Act. In November 1981, NJDEP investigated the Site and ordered its owners to control and contain the hazardous material at the Site. The company ceased all operations in 1982. In 1982, a limited Site investigation was conducted by NJDEP and EPA which identified widespread soil and groundwater contamination. On September 1, 1983, Syncon Resins was placed on the National Priorities List of Superfund Sites.

In 1983, the United States filed a proof of claim in the Syncon Resins bankruptcy action. The Chapter 11 bankruptcy was converted to a Chapter 7 liquidation. The only asset in the bankruptcy estate was the property comprising a portion of the Site, Lots 13 and 13R. On July 25, 1996, the Bankruptcy Court granted the trustee's motion to abandon the property and dismiss the bankruptcy case.

In 1984, a total of 12,824 55-gallon drums of off-specification resins, raw materials, wastes and solvents stored at various locations on the Site were removed by NJDEP. From May 1985 to April 1986, NJDEP conducted a remedial investigation (RI) at the Site. The sampling performed during the RI indicated extensive on-site contamination in vessels and tanks, soil, groundwater, and buildings. Four general classes of chemical contaminants were found on-site: organic compounds (volatiles and base/neutral extractables), pesticides, polychlorinated biphenyls (PCBs), and metals. The organic compounds present were common raw materials and/or resin components, and the metals detected in samples were attributed to metallic oxides or organo-metallic compounds utilized as pigments or catalysts in the production processes.

The United States also filed a cost recovery action in 1986 against Benjamin Farber, the former owner of the entire Site and present owner of a portion of the Site. In addition, the United States later named Disch Construction Company (Disch) and Essex Chemical Corporation (Essex) as defendants in that action. Mr. Farber filed a contribution action against 17 additional parties. After many years of litigation; the case was resolved, and as a result of settlements with six of the parties, including Mr. Farber, Disch, and Essex, the United States received $2.69 million in reimbursement of past costs incurred at the Site.

Land and Resource Use

Currently, the Site has been abandoned by its former operators. NJDEP continues to operate, maintain, and monitor a groundwater extraction and treatment system to contain groundwater contamination. As previously noted, the narrow peninsula on which the Site is located is heavily industrialized. Various chemical manufacturing facilities, hazardous waste transporters, manufacturing companies, petroleum facilities, and storage terminals are situated within the immediate area. Adjacent facility owners and others have expressed interest in purchasing the property to be developed for commercial and/or industrial use.

Although groundwater is classified as IIA - a drinking water aquifer - the groundwater is not used for drinking water, and it is not anticipated that it will be used as a drinking water source in the future. Currently, effluent from the NJDEP on-site treatment facility discharges into the Passaic River in

compliance with a surface water discharge permit issued by NJDEP.

Initial Response

In 1982, a limited Site investigation showed widespread contamination. Within the deeper aquifer, six contaminants (benzene, methylene chloride, tetrachloroethylene, chloroform, carbon tetrachloride and PCBs) exceeded adjusted ambient water quality criteria (AAWQC). Shallow groundwater was grossly contaminated with 24 organic compounds, of which 14 exceeded AAWQC. Thirteen of these contaminants were found at extremely high concentrations [greater than 760 parts per million (ppm)], with nine of them present in the groundwater at percent levels (parts per hundred). Seven contaminants found in the shallow groundwater could not be compared to water quality criteria since no criteria exist for these compounds.

The chemical contamination present at the Syncon Resins Site is restricted from vertical movement due to the clay layer beneath the Site. However, it appears that lateral movement of contaminants within the shallow aquifer is not restricted.

Chemical constituents were also detected in the confined aquifer beneath the clay layer. These constituents, however, appear to stem from an off-site source or sources, and don't appear to be related to the Site.

Gross chemical contamination was found in soils at the Syncon Resins Site. Soil samples were collected from test pits that were excavated at the Site. Ten base/neutral compounds in excess of 400 ppm were found in these samples. Concentrations of toluene, up to 3,100 ppm, and methylene chloride, up to 670 ppm, were found in the soils from these test pits. PCBs (greater than 33,000 ppm), DDT (in excess of 1,400 ppm) and high concentrations of arsenic, chromium, lead, mercury, and zinc were also present. Many of the compounds found in the test pit soils are suspected carcinogens.

From May 1985 to April 1986, NJDEP's contractor conducted a remedial investigation at the Syncon Resins Site. The sampling performed during the remedial investigation indicated extensive on-site contamination in all of the matrices sampled (i.e., vessels and tanks, soil, groundwater, and buildings. Four general classes of chemical contaminants were found on-site: organic compounds (volatiles and base/neutral extractables), pesticides, PCBs, and metals. The organic compounds present

were common raw materials and/or resin components, and the metals detected in samples were probably from metallic oxides or organo-metallic compounds utilized as pigments or catalysts in the production processes.

Materials encountered at the ground surface of borings performed during subsurface investigations were sand, concrete or fill material depending on the locations on the Site. Sands at the ground surface at a number of boring locations were visibly contaminated, giving a black and oily appearance. In some of the well borings, a concrete slab prevented sampling for the first foot of drilling. Asphalt and fill material of various thicknesses were encountered during drilling for the installation of some of the monitoring wells. Those obstructions impede groundwater flow.

Basis For Taking Remedial Actions

The Site has been divided into five distinct areas based on historical soil investigation information which consists of data collected during a sampling event by NJDEP in 1994, cone penetrometer testing(CPT) in 1997, a preliminary design investigation(PDI) conducted in 2006, and a data gap field investigation conducted by EPA in 2008. The areas are: northeastern area, northwestern area, southeastern area, southwestern area, and an area west of the slurry wall. (See Figure 2).

A variety of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPHs), PCBs, pesticides, and metals were identified in soil that exceeded the delineation criteria, and the human health risk assessment(HHRA) indicated that exposure by workers to these soils via ingestion resulted in cancer risks that exceeded EPA's acceptable risk levels. Specifically, contaminants that were detected exceeding the delineation criteria (NJDEP non-residential direct contact soils remediation standard and NJDEP impact to groundwater soil remediation standard) include: VOCs - benzene, toluene, ethylbenzene and xylenes (BTEX); 1,2-dibromo-3-chloropropane; and 1,2-dichloropropane; SVOCs - benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd) pyrene, and naphthalene; PCBs; Pesticides - aldrin, diedrin, 4,4'-DDD, 4,4'-DDT, and heptachlor; TPH and Metals - arsenic, cadmium, lead, and manganese.

VOCs (in particular, BTEX) appear to be localized within the southwestern area, and coincide with the estimated extent of free product based on the 1997 CPT investigation. For instance, soil sampling results indicate that benzene was not detected frequently or at high concentrations at the Site; the highest detected concentration of benzene was at 1.1 milligrams per kilogram (mg/kg) in a soil boring in the southwestern area. With the exception of a few soil sample locations in the southeastern area, PCBs appear to be located primarily within the southwestern area. PCB concentrations decline with depth, where PCBs were detected at 5,300 mg/kg, 3,400 mg/kg, and 5.7 mg/kg for the depth intervals 0 to 2 feet below ground surface (bgs), 5 to 6 feet bgs, and 6 to 6.5 feet bgs, respectively. A similar trend was observed in another portion of the southwest area of the Site where PCBs were detected at 1,700 mg/kg, 0.9 mg/kg, and 0.57 mg/kg for the depth intervals 4.5 to 6.5 feet bgs, 8.5 to 10.5 feet bgs, and 11.5 to 13.5 feet bgs, respectively.

Elevated TPH concentrations were detected in soil samples collected from the northeastern area, southwestern area, and, to a lesser extent, the southeastern area. Similar to BTEX contamination, the spatial distribution of TPHs appears to be consistent with the estimated extent of free product based on the 1997 CPT investigation. Vertically, TPHs extended below the groundwater table in the northeastern area and southwestern area, which was encountered at approximately 5 to 6 feet bgs during soil borings (however, the depth to groundwater was measured at approximately 2 to 3 feet bgs in nearby on-site monitoring wells). For instance, TPHs were detected at 8,636 mg/kg and 13,170 mg/kg in soil samples collected from between 9.5 to 10.5 feet bgs at SB-49, and 5.6 to 8.6 feet bgs in SB-50.

Pesticides exceeded the delineation criteria only at isolated locations in the northeastern area, in the southwestern area, and in the area west of the slurry wall. In addition, these isolated and limited exceedances occurred only in the shallowest sample depth intervals, indicating that the pesticides were primarily located in the surface soil.

One of the metal contaminants, arsenic, was detected throughout the Site; but the highest concentrations (up to 265 mg/kg) of arsenic appear to be clustered in three areas of the Site: area west of the slurry wall, northwestern area, and northeastern area.

The National Contingency Plan (NCP) establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(I)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, Non-Aqueous Phase Liquids in groundwater may be viewed as source material. Principal threat wastes are those source materials considered to be highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using nine remedy-selection criteria. That analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

IV. Remedial Actions

OU1 Remedy Selection

From May 1985 to April 1986, NJDEP conducted a remedial investigation (RI) at the Site. Following the investigation, a Focused Feasibility Study (FFS) was completed in 1986. Based on the findings of the FFS, a Record of Decision (ROD) was issued by EPA on September 29, 1986. The interim remedy selected in the ROD included: removal and disposal of the contents of storage tanks and vessels, lagoon liquids and sediments, and grossly contaminated surface soils; decontamination of buildings and tank structures; installation of cover material over the Site to allow for natural flushing of underlying soil and groundwater contaminants; and construction of a collection and treatment system for contaminated groundwater from the shallow aquifer, with discharge of the treated groundwater to the Passaic River. The ROD also called for supplemental studies to evaluate methods to enhance the effectiveness of flushing and/or treatment of the contaminated soil. The remedial objective of this remedy was to control the potential release of contaminants from the Site.

The following remedial objectives were established as a result

of the risk assessment performed for the Site.

- Develop mitigative measures to prevent exposure of humans to organic and metal contaminants within the unsaturated soil, lagoon sediments, and building dirt/dust through direct contact and ingestion exposure routes; and

- Implement mitigative measures to eliminate the potential hazard to exposed populations caused by the asbestos material covering the on-site tanks and vessels and the chemical materials remaining within them.

OU2 Remedy Selection

Remedial Investigation (RI) activities performed under OU2 included soil and groundwater sampling, a CPT investigation, and a Pilot-Scale Field Test to study the movement of contamination in the groundwater. In February and March 1997, a CPT was used to probe the shallow subsurface at approximately 70 locations. The results of this testing revealed that widespread free and/or residual product were still present throughout the Site. The depth of free and residual product at many of the probe locations was found to be about 6 to 8 feet below existing grade. Based on the CPT investigation, approximately 30,000 cubic yards (CY) of soil were contaminated with free and/or residual product.

In summer 1997, a pilot-scale field test was initiated near the existing collection trench on the Site. The purpose of the testing was to confirm through excavation that areas of high fuel fluorescence detector readings actually represent free/residual product and to determine if flushing could be enhanced by installing a connector trench from the product-contaminated area to the existing collection trench. Four rounds of samples were collected. The analytical data did not indicate any rapid movement of contamination from the surrounding areas through groundwater in the excavated trench. Influent contamination levels at the contaminated waste treatment system(CWTS) also showed no significant change.

In January 1998, NJDEP completed a feasibility study (FS) of the Site using the data collected during the investigations noted above. The results of the study are summarized in the July 1998 FFS Report for the Site. OU2 efforts were directed at improving the efficiency and effectiveness of the existing OU1 remedy by removing the remaining free/residual product source of contamination, and enhancing the natural flushing component of

the existing remediation system. These enhancements were expected to shorten the remediation phase. An OU2 ROD was issued on September 27, 2000. The major components of the OU2 remedy were: excavation and drainage of approximately 30,000 CY of contaminated soil from an area of about 2.5 acres; removal and disposal of buried debris and other obstructions from the excavated areas; installation of a drainage layer at the bottom of the excavations, treatment and or disposal of drained free product from the excavated materials; addition of soil amendments to the excavated soil before backfilling; possible restoration of natural hydraulic conditions; discontinuation of the CWTS operation; and establishment of institutional controls to ensure continued commercial/industrial use of the property.

Supplemental studies led to a re-evaluation of the ongoing OU1 remedy, and the selection of OU2. The final remedy for OU2 was selected in a September 27, 2000 ROD. The OU2 remedy was modified through a ROD Amendment dated September 30, 2010. OU2 efforts were directed at improving the OU-1 remedy by excavating and draining approximately 30,000 cubic yards of contaminated soil, removing and disposing of buried debris and other obstructions from the excavated areas, installing a drainage layer at the bottom of the excavations, treating/disposing of drained free product from the excavated material, adding soil amendments to the excavated soils before backfilling.

On September 18, 2007, EPA assumed the lead responsibility for Site activities for OU2. On July 14, 2008, a field investigation was conducted which consisted of installing soil borings and conducting soil sampling activities. In 2009, a technical memorandum was prepared to assess regional groundwater flow and groundwater quality in unconsolidated deposits in the vicinity of the Site. EPA issued an FFS on August 10, 2010 and signed a ROD Amendment for OU2 on September 30, 2010.

As described in Section V, the OU2 remedy was modified in September 2010. The OU2 remedy is currently under design and not subject to this five-year review.

OU1 Remedy Implementation

The selected 1986 ROD remedy was completed by NJDEP in October 1993. The major items that were completed included: the installation of the collection trench and a slurry wall; construction of the contaminated water treatment system; hot spot excavation of contaminated wastes; and closure of underground storage tanks. Sampling of soil and groundwater was

performed in the summer of 1994. Twenty-two soil samples were collected during the excavation of test pits. Benzene, toluene, ethylbenzene and xylenes (BTEX) were found to exceed the applicable soil criteria. Groundwater samples were also collected and were found to exceed NJDEP Class II-A Groundwater Quality Standards for the BTEX constituents as well as chlorobenzene, lead, arsenic and PCBs.

In 1997, Handex of New Jersey conducted an investigation of the type and extent of soil contamination remaining at the Site. Using cone penetrometer technology, many of the open areas were studied. However, some areas could not be investigated or could not be completely delineated due to physical barriers. These included areas under buildings and the area where the very large storage tanks once stood because of an earthen berm around it. The visibly contaminated wells were also sampled at that time.

In January 1998, L. Robert Kimball and Associates was contracted by NJDEP to perform an FFS of the Site using the data from the above investigation and a Pilot-Scale Field Test to study the movement of contamination in the groundwater. The results are summarized in the July 1998 FFS Report for the Syncon Resins Site, which has been included in the Administrative Record for this Site.

O&M Operational Summary

In 1991, NJDEP completed construction activities and started operating the groundwater treatment plant to treat contaminated water from the shallow aquifer. Initially, the plant was operated by the construction contractor until October 1993. It has been operated continuously by a variety of contractors engaged under contracts competitively bid by NJDEP. The services required of the plant operators generally include the following tasks: complete scheduled (routine) operations and maintenance; respond to routine or emergency alarms; sample, test and report as required by the plant operations or permit requirements; procure spare parts, consumables, supplies and/or services; sample and dispose of generated wastes; maintain outer building and associated structures; maintain the grounds on a limited basis; and train replacement operators at contract turnover. Fencing has been repaired as needed sometimes by contractors engaged through NJDEP competitively bid term contracts and sometimes by the contractor operating the plant.

Until September 2007, NJDEP's contractor, LFR, was providing operation and maintenance(O&M) services at the plant under a

sole source contract. Handex Consulting & Remediation replaced LFR and is currently operating the plant under the Subsurface Remediation Term Contract.

Operational activities included repairs to the extraction trench piping, which was completed in June 2006. Unit operations were reduced in the plant. Work began in June 2007 on the physical changes in the plant. The plant floor was stripped and recoated. NJDEP had some issues with their previous contractor, and some of the work was not completed. The contractor removed their personnel from the plant in late 2009/early 2010. NJDEP has been coordinating with the previous contractor and with the new contractor to resolve the issue of outstanding work to be completed. Currently, NJDEP is preparing a contract, change order, and financial information, and creating a punch list for closeout.

The fencing around the Site was inspected and found to need some minor repairs. The repairs were completed in June 2008. Snow plowing services were provided by contractors engaged through a Grounds Maintenance Services Term Contract, and they were called as needed each year. In 2009, another leak in the extraction trench piping was detected, and was repaired in June 2010.

V. Progress Since Last Five-Year Review

The Recommendation from the second five-year review report was to design and construct the OU2 remedy and implement institutional controls.

As background, in December 2002, NJDEP received funding from EPA to start OU2 activities for the 2000 ROD and in January 2004, NJDEP started contractual proceedings to perform a PDI. A PDI was conducted from July to October 2006 by NJDEP. The PDI consisted of geophysical investigations and soil and groundwater sampling, and was intended to further delineate the source(s) and extent of contamination in soil and groundwater to facilitate an effective and efficient evaluation of the remedy selected in the 2000 OU2 ROD. The results of the investigation and the comparison with the 2000 ROD were presented in a Draft PDI Report dated February 14, 2007. The report indicated that it would not be feasible to implement the remedy selected in 2000 because total petroleum hydrocarbons (TPHs), which also contains PCBs, would not drain from the soil.

A PDI was conducted by NJDEP in 2006, and a "data gap" field

investigation was conducted by EPA in 2008. An updated Human Health Risk Assessment was completed by EPA in August 2009 and a Focused Feasibility Study was completed in August 2010. The OU2 remedy was modified in a ROD Amendment dated September 30, 2010. It presents modifications to the OU2 remedy to address contaminated soils. The major components of this current modification of the OU2 Remedy consist of:

- Excavation of soils exceeding Remediation Goals (RGs), to a depth of about 12.5 feet;
- Post-remediation sampling to verify achievement of RGs;
- Treatment and/or disposal of excavated soils at off-site facilities in accordance with applicable regulatory requirements;
- Backfilling of recovered existing gravel from completed excavation areas to the bottom portion of the excavation;
- Backfilling of excavated areas with imported clean fill; and
- Implementation of institutional/engineering controls.

Recently, partial funding has been provided to conduct remedial design activities for the Site.

VI. Five-Year Review Process

Administrative Components

The five-year review team consisted of Ms. Pamela J. Baxter, Remedial Project Manager (RPM); Mr. Robert Alvey, Hydrogeologist; Dr. Lora Smith, Risk Assessor; Ms. Mindy Pensak, Ecological Risk Assessor; Ms. Jeanette Abels, NJDEP Operations Manager; Mr. Thomas O'Neill, NJDEP Section Chief; and Mr. Craig Wallace, NDJEP Site Manager.

Community Involvement

EPA's Community Involvement Coordinator for the Syncon Resins Superfund Site is Ms. Wanda Ayala. An Announcement was published in the Jersey Journal, an area newspaper, on November 26, 2010 notifying the community of the initiation of the five-year review process. The notice indicated that upon completion of the five-year review, the document would be available to the public at the Kearny Main Public Library located at 318 Kearny Avenue, Kearny, New Jersey. In addition, the notice included the RPM's name, address and telephone number for questions

related to the five-year review process of the Syncon Resins Superfund Site in general. No comments were received from the public.

Document Review

The documents, data, and information which were reviewed in completing this third five-year review are: 1986 RI/FS report, 1986 OU1 ROD, 2000 OU2 ROD, 2007 Louis Berger Draft PDI Report, 2008 CDM Final Data Gap Evaluation Memorandum, 2009 Human Health Risk Assessment, and 2010 OU2 ROD Amendment (September, 30, 2010). Monthly monitoring data and annual bioassay data, along with the two previously conducted five-year reviews, June 2001 and September 2006, were also reviewed.

Data Review

Reviews that were related to the data were incorporated in the Human Health Risk Assessment. Other data reviewed are listed in Document Review section, above, and in the Technical Assessment Section in Section VII.

Site Inspection

EPA's RPM, Hydrogeologist, Risk Assessor and NJDEP's Operations Manager, and Site Manager conducted a Site visit on November 3, 2010. On November 17, 2010, another Site visit was conducted with EPA's RPM and Ecological Risk Assessor and NJDEP's Operations Manager and Section Chief. The visits included a walk around the Site, observation of monitoring wells, tour of the groundwater treatment facility, and visual assessment of the unsafe buildings and deteriorated structures remaining at the Site from the Syncon operational period. The two groundwater plant operators were on the Site to explain the facility procedures.

Interviews/Meetings

There is regular contact between the facility operators, NJDEP and EPA. There have been meetings, phone calls, and correspondence.

VII. Technical Assessment

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

Yes, the remedy is functioning as intended by the decision documents. The slurry wall prevents discharge of contaminated groundwater from the Syncon Resins Site to the Passaic River. Shallow groundwater which flows toward the Passaic River is intercepted by a collection trench and is directed to the water treatment plant. The collected groundwater is treated and discharged to the Passaic River, although the time frame for groundwater collection and treatment operations is indeterminant due to the lower than anticipated groundwater flow at the Site. A September 2010 Amendment of the OU2 ROD provides for excavation and removal of soils contributing to groundwater contamination.

The 1986 OU1 ROD interim remedy called for the following: above-ground structures to be decontaminated, when necessary, and disposed of in appropriate hazardous or non-hazardous waste landfills, lagoon sediments and highly contaminated soils to be removed and disposed of in a hazardous waste facility, a groundwater containment system keyed into the underlying clay layer, an on-site wastewater treatment system to be constructed to treat contaminated surface and groundwater and discharge of treated effluent to the Passaic River, installation of a permeable cover material over the Site to enhance natural flushing, and monitoring. The proposed work in the OU1 ROD interim remedy was completed by the NJDEP in 1993.

The groundwater remedy is functioning as intended, however, the volume of recovery of contaminated groundwater is lower than anticipated. The contaminated soils above and in contact with the water table contribute to groundwater contamination, but low hydraulic parameters of the Site preclude effective movement of the groundwater contamination to the collection trench for treatment. Groundwater contamination is caused by the contamination present in the soils.

There have been no physical changes to the Site that would adversely affect the protectiveness of the remedy; however, existing building structures may limit the implementation of the amended remedy and may require demolition for storage of existing gravel cover to be reused for backfill.

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

The remedy has eliminated exposure related to ecological

receptors by controlling the source of contamination. The soil pathway has been addressed through soil removal and transferring soils off-site for disposal and the covering of surface soil with a layer of gravel; the only pathway of concern is that of the shallow aquifer discharging to the Passaic River. A collection trench and slurry wall has been installed along with a water treatment system. Treated water is discharged directly to the Passaic River. NJDEP samples the discharge water twice a month to ensure it meets the permit requirements.

Monthly Treatment Facility Discharge Monitoring Reports were reviewed along with annual bioassay data to determine whether treated groundwater discharging from Outfall 001 met NJPDES requirements and toxicity data (acute toxicity, mysid shrimp) were acceptable. Monitoring data (October 2006, November 2006, December 2006, January 2007, April 2007, March 4, 2008, March 31, 2008, July 2008, January to October 2009 [no discharge was reported for November and December 2009], March to July 2010, November to December 2010 [no discharge reported for January to February 2010, and August to October 2010]) show that discharge is within acceptable limits as per the NPDES permit. The monthly discharge data summary sheet for 2009 should be amended to note that the average limit for lead in effluent is 50 micrograms per liter and that there is no average pH value, only a minimum value. 96-hour bioassay tests were conducted using the Mysidopsis bahia (opossum shrimp). Test results from bioassay data reported August 2006, June 2007, January 2008, April 2009, and in July 2010 showed 100 percent survivability.

Land use assumptions, exposure assumptions and pathways, remedial action objectives (RAOs), and cleanup levels considered in the decision documents remain valid. Although specific parameters may have changed since the time the original 1986 risk assessment was completed, the process that was used remains valid. The risk assessment updated in 2009 was necessary because new information indicated the presence of PCBs in soil in an area of the Site not originally known to contain PCBs.

The remedial objectives in the 1986 OU1 ROD were: develop mitigative measures to prevent exposure of humans to organic and metal contaminants within the saturated soil, lagoon sediments, and building dirt/dust through direct contact and ingestion exposure routes, implement mitigative measures to eliminate the potential hazard to exposed populations caused by the asbestos material covering the on-site tanks and vessels and the chemical materials remaining within them, implement mitigative measures to remediate the contaminated groundwater within the shallow

aquifer to levels identified in guidance documents, and develop mitigative measures to remediate the contaminated saturated soils above the continuous clay layer.

Currently, the Site is mostly fenced. However, trespassers have had access to the Site as evidence such as graffiti on Site buildings has been observed. Since contaminated above-ground structures were decontaminated and/or disposed of off-site, lagoon sediments and highly contaminated soils were removed and disposed of off-site, a permeable cover layer was placed over the ground surface, and groundwater is not currently used or expected to be used for drinking water in the future, the direct contact exposure to contaminated surface soils and groundwater at the Site have been interrupted. Additionally, with regard to direct contact exposure to subsurface soils and groundwater, no construction/utility work is anticipated in the next five years, the timeframe considered in this review; therefore, the current remedy is considered protective.

Soil vapor intrusion (SVI) is evaluated when soils and/or groundwater are known or suspected to contain VOCs. Because of the presence of VOCs in the groundwater and the shallow water table, vapor intrusion was qualitatively evaluated as a potential exposure route. The chemical concentrations in the water were compared to the corresponding values in Table 2c of the November 2002 "OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils." BTEX chemicals (benzene, toluene, ethylbenzene, and xylenes) and chlorobenzene to a lesser extent were flagged as chemicals of potential concern(COPCs) for vapor intrusion, mainly in areas of the Site with known product (MW-11 and MW-19). A recent groundwater sampling event indicates that groundwater flow in the lower area is generally to the south toward Newark Bay, while flow in the upper area is generally toward surface water or toward the storm sewer running north/south along Central Avenue. There are neighboring industrial facilities between the Site and Central Avenue. A vapor intrusion investigation may be necessary in the buildings currently on those properties.

According to EPA's ecological risk assessor, potential environmental impacts to biota within the Passaic River were qualitatively and/or, whenever possible, semi-quantitatively assessed, by comparing groundwater concentrations to ambient water quality criteria (AWQC) and by factoring in a river dilution factor for the Passaic River. Although the exposure assumptions and toxicity assessment conducted to support the 1986 ROD may not necessarily reflect the current ecological risk

assessment methodology, the remedy is protective of ecological resources as contaminated lagoon sediments and soil were excavated and contained within a secure covered landfill. Further, as the groundwater treatment system is functioning as intended, the contaminant pathway to the Passaic River has been removed. There is no evidence that site-related contaminants migrate beyond the slurry wall to impact the river. Treated groundwater meets permit requirements. Therefore, the groundwater-surface water pathway has been addressed.

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

No other information has come to light which calls into question the protectiveness of the remedy.

Technical Assessment Summary

NJDEP is the agency responsible for continuing the operation, maintenance and monitoring of the OU1 remedy. According to the schedule of Site improvements outlined in the September 2010 OU2 ROD Amendment, interruptions of the current operation, maintenance, and monitoring may occur.

EPA will consider optimizing the monitoring well network after completion of OU2. Access controls need to be maintained, and Site usage must remain restricted to prevent the public from being exposed to site-related contaminants.

VIII. Issues, Recommendations and Follow-up Actions

At this time, there are no issues, recommendations or follow-up actions.

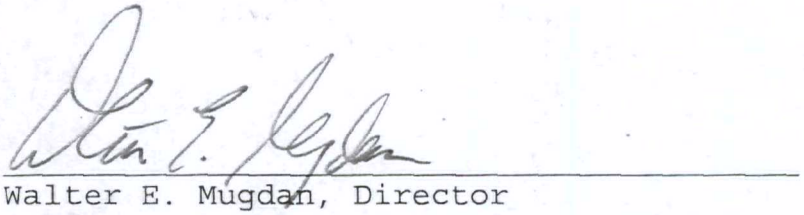
IX. Protectiveness Statement

The OU1 remedy protects human health and the environment because all interim actions comprising the remedy have been taken to address exposure pathways and contaminant migration identified in the OU1 ROD.

X. Next Review

EPA will conduct another Five-Year Review by August 2016.

Approved:



Walter E. Mugdan, Director
Emergency and Remedial Response Division

August 23, 2011
Date

TABLES

Chronology of Site Events	
Event	**Date(s)**
Earliest evidence documenting existence of the Site.	1951
The owners of the Syncon Resins facility filed bankruptcy under Chapter 11 under the Bankruptcy Act.	May 1977
NJDEP investigated the Site and ordered its owners to control and contain the hazards at the Site.	November 1981
The company ceased all operations.	1982
A limited Site investigation showed widespread contamination.	1982
The Site was added to the National Priorities List.	December 1982
Under a cooperative agreement between EPA and NJDEP, a total of 12,824 55-gallon drums of off-specification resins, raw materials, wastes and solvents were removed at a cost of about $2.4 million.	1984
NJDEP's contractor conducted a remedial investigation at the Syncon Resins Site.	May 1985 - April 1986
The United States filed a cost recovery action against Mr. Benjamin Farber.	1986
The Feasibility Study was completed.	August 1986
EPA issued the interim OU-1 ROD.	September 29, 1986
The selected OU-1 ROD remedy was completed by NJDEP.	October 1993
The Bankruptcy Court granted the trustee's motion to abandon the property and dismiss the bankruptcy case.	July 25, 1996
L.R. Kimball and Associates was contracted by NJDEP to perform a Focused Feasibility Study of the Site using the data collected during the investigations.	January 1998
Focused Feasibility Study Report for the Site was completed.	July 1998
The final remedy was selected in the OU-2 ROD.	September 27, 2000
The first Five-Year Review was completed.	July 10, 2001
EPA provided funding to NDJEP to commence RD-OU-2 activities.	September 2002
NJDEP and EPA held a meeting with the RD contractor, Louis Berger.	October 7, 2003
EPA attended NJDEP's kickoff meeting with the design contractor.	February 4, 2004
EPA received the draft Conceptual Approach for Pre-Design Investigation Report for review.	August 23, 2004

Chronology of Site Events	
Event	**Date(s)**
EPA reviewed the Conceptual Approach for Pre-Design Investigation Report and provided comments.	September 7, 2004
EPA submitted comments to NJDEP to the draft Pre-Design Investigation Workplan.	March 10, 2005
NJDEP submitted a draft Pre-Investigation Workplan for EPA's review.	August 9, 2005
EPA and NJDEP conducted a Site visit for the Five-Year Review.	March 7, 2006
An on-site building assessment was conducted.	May 2006
A Pre-Design Investigation was conducted by NJDEP.	July to October 2006
The second Five-Year Review was completed.	September 7, 2006
A Draft Pre-Design Report was completed.	February 14, 2007
EPA assumed the lead responsibility for Site activities for OU2.	September 18, 2007
A field investigation was conducted which consisted of collecting soil borings and conducting sampling activities.	July 14, 2008
A technical memorandum was prepared to assess regional groundwater flow and water quality in unconsolidated deposits in the vicinity of the Site.	2009
Human Health Risk Assessment report was completed.	August 9, 2009
Public Comment Period commenced.	August 9, 2010
Public Meeting was held.	August 19, 2010
FFS activities began and a Final FFS report was completed.	August 10, 2010
Public Comment Period ended.	September 8, 2010
The final remedy was selected in the Amended OU-2 ROD.	September 30, 2010
Five-year review Site visit.	November 3, 2010
Five-year review second Site visit.	November 17, 2010

FIGURES

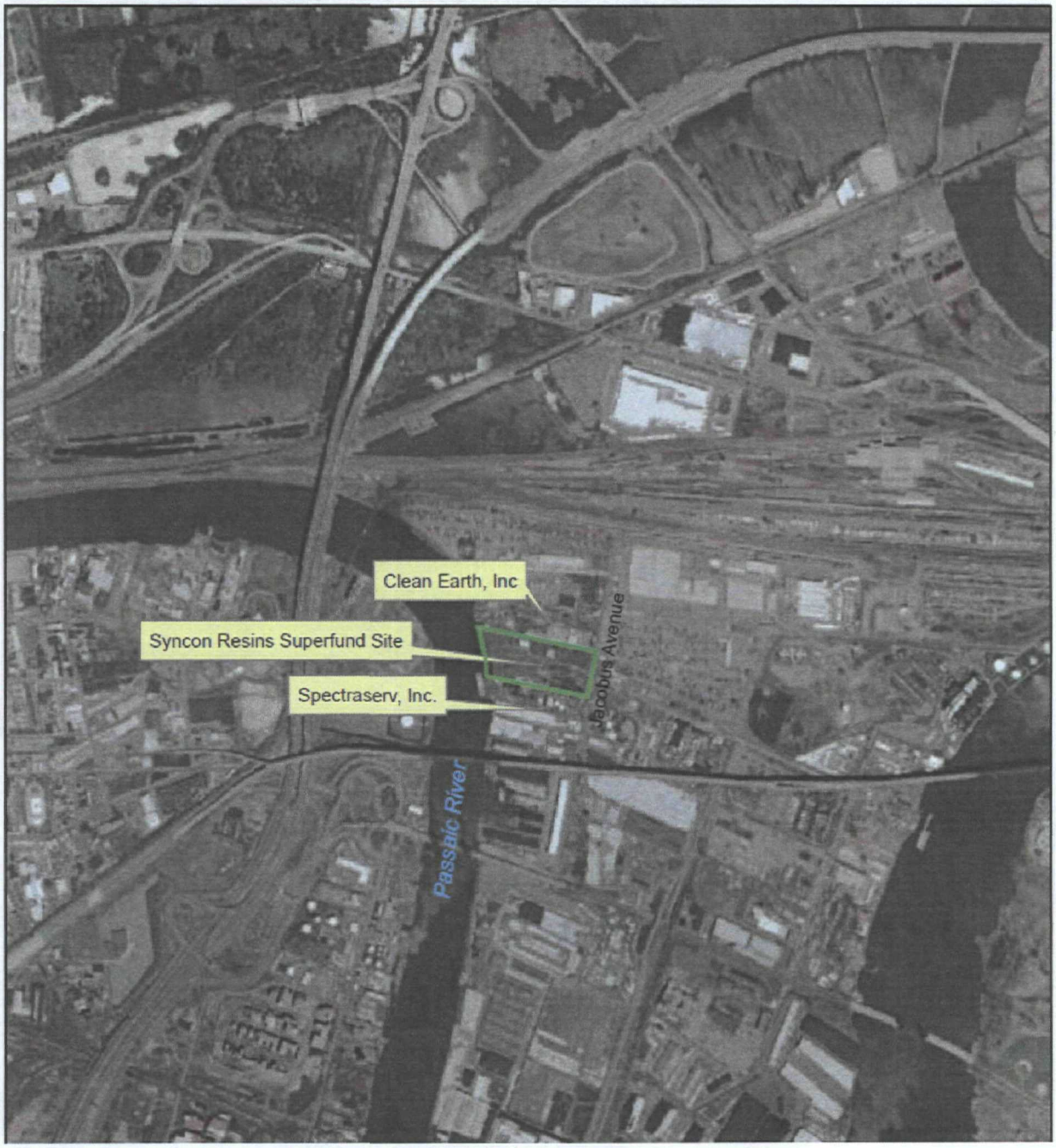


Figure 1 - Aerial View of Kearny

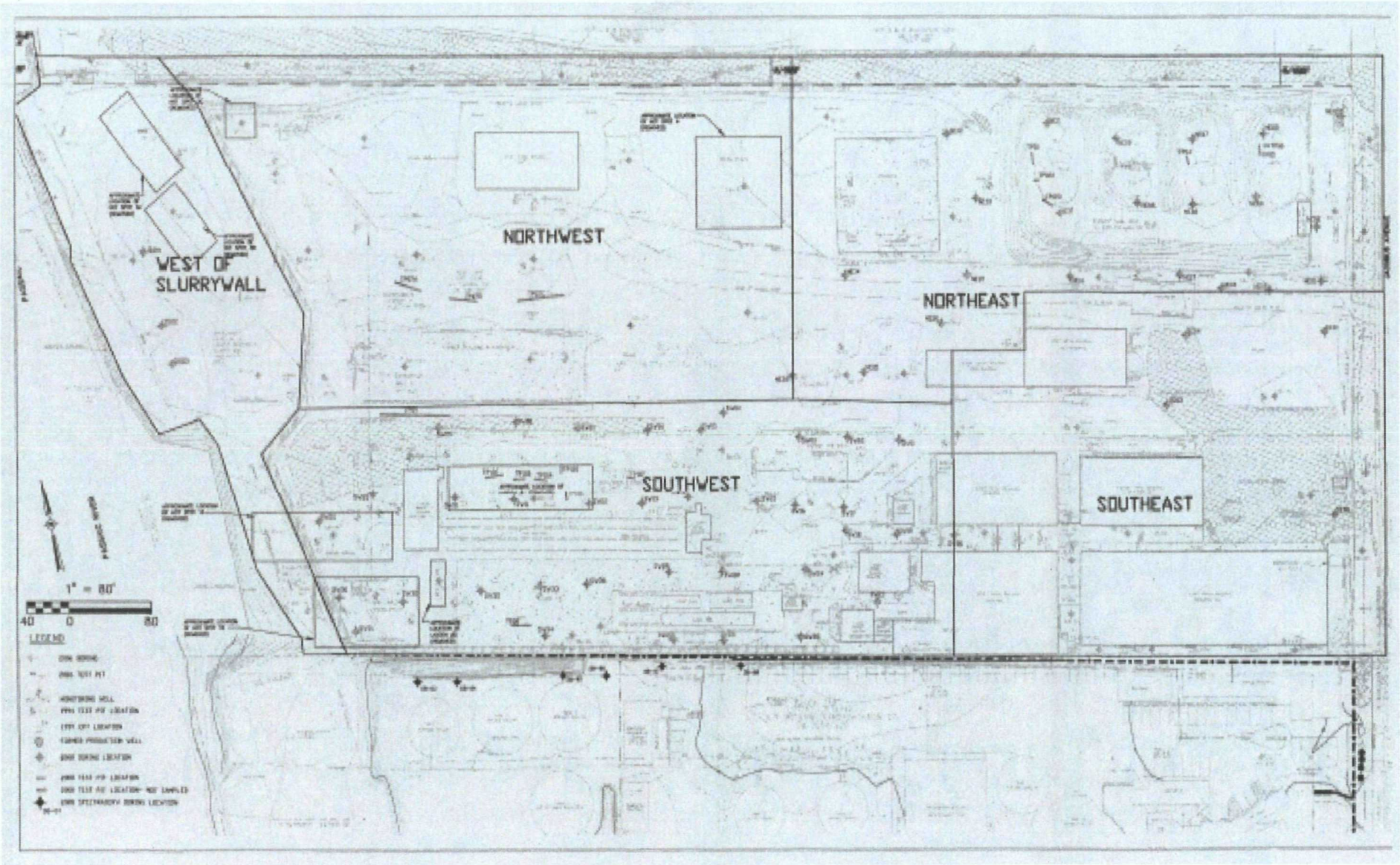


Figure 2 - Site Layout

Figure 3 - Aerial View of the Syncon Resins Site

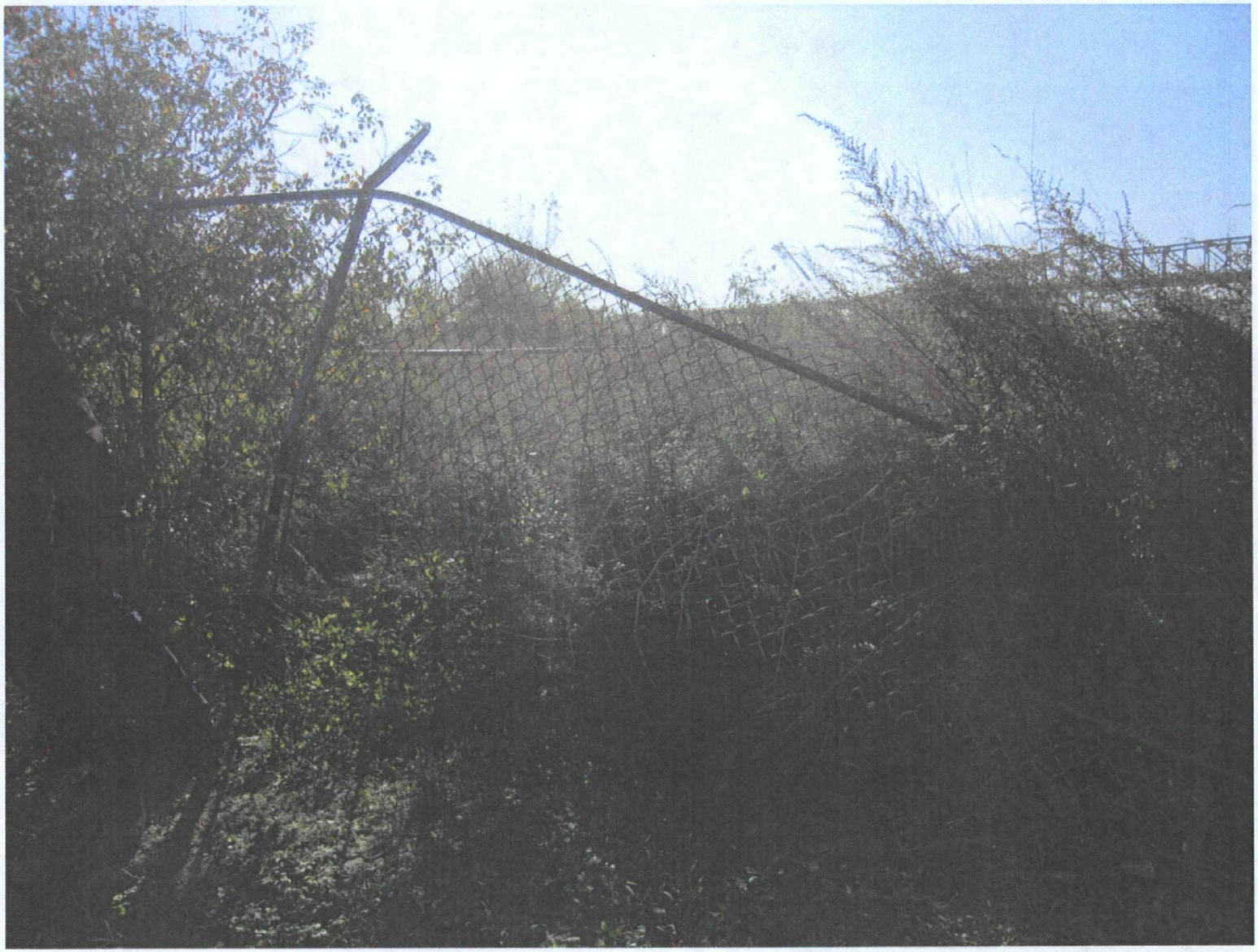


Figure 4 - Damaged Fence

Figure 5 - Gap in Fence