Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

FMC Corp. - Chemical Division
Town of Tonawanda, Erie County
Site Number 9-15-025

March 1997

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Acting Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

FMC Corp. - Chemical Division Inactive Hazardous Waste Site
Town of Tonawanda, Erie County, New York
Site No. 9-15-025

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the FMC - Chemical Division Inactive Hazardous Waste Disposal Site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR 300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the FMC Corp. - Chemical Division Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

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

Description of Selected Remedy

Based upon the results of the Preliminary Site Assessment (PSA) and the associated Interim Remedial Measure (IRM) conducted for the FMC Corp. - Chemical Division Site, the NYSDEC **is selecting no further action** as the remedial alternative for the site. The Department also intends to delist the site from the New York State Registry of Inactive Hazardous Waste Disposal Sites.

During the PSA, soils contaminated at levels exceeding the NYSDEC cleanup guidelines were encountered. As an IRM, these soils were excavated and disposed at an approved hazardous waste disposal facility.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

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

3/25/97
Date

Michael J. O'Toole, Jr., Director
Division of Environmental Remediation

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RECORD OF DECISION

FMC Corp. - Chemical Division Inactive Hazardous Waste Site
Town of Tonawanda, Erie County, New York
Site No. 9-15-025
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SECTION 1: SITE LOCATION AND DESCRIPTION

The site is listed in the NYSDEC Registry of Inactive Hazardous Waste Sites as Site No. 915025. It is located on the southwestern portion of the FMC Plant Property. There are two general areas of reported waste disposal; they are designated Sites 1 and 2 respectively, and are shown in Figure 1. These two areas comprise a total of four acres. The particular locations on the two sites that were investigated for the PSA are shown in Figure 2.

As shown in Figure 1, most of the plant compound is located in the eastern quadrant of the intersection of Sawyer Ave. and River Rd. in the Town of Tonawanda. This area of the town is primarily industrial, but there is a nearby marina northwest of the plant on the Niagara River, and there are residential properties on the streets northwest of Sawyer Ave. Riverwalk, an Erie County jogging and walking trail and bicycle path, runs immediately southwest of River Rd. in this area.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

The manufacturing facility was established at this location in 1925, when Buffalo Electro-Chemical Co. (BECCO) built the plant to produce potassium persulfate, hydrogen peroxide and peracetic acid. FMC acquired this plant from BECCO in 1952, and continued production of these three chemicals, along with other similar ones. Until the 1960's, coal-fired boilers provided the process heating. The boilers were then converted to operate on either oil or natural gas. Currently, the Peroxygen Chemicals Division of FMC operates this plant.

The production schedule of this plant, from 1927 through 1977, is shown in Table 1. As noted there, in addition to peracetic acid, the chemicals produced at this plant facility over the years include persulfates, perborates, peroxides and dipicolinic acid.

Reviews of various records, interviews with FMC employees and observations of historic aerial photographs indicate that potentially hazardous wastes were disposed at various locations on Sites 1 and 2. These wastes were reported to include product residues, floor sweepings, paints, and paint solvent.

A substantial fire occurred at the plant in August, 1995 in the persulfate warehouse building, and required significant amounts of water to douse it. As shown in Figure 1, the persulfate warehouse is located northeast of the parking lot that separates the primary plant area from Sites 1 and 2. The waters used to control the fire drained into either the Town of Tonawanda storm sewers or the drainage ditches along Sawyer Ave. and River Rd. None of these waters came in contact with either Sites 1 or 2.

2.2: Remedial History

In the NYSDEC Registry of Inactive Hazardous Waste Sites, this site has been assigned a 2a Classification. This designation is a temporary classification assigned those sites for which the data is inadequate and/or insufficient to assign one of the five permanent classifications. These permanent site classifications range from 1, i.e., causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment - immediate action is required, to 5, i.e. the site is properly closed, no evidence of present or potential adverse impact - no further action is required. In 1989, in order to determine the data required to assign one of these permanent classifications, a Phase I Investigation was conducted for NYSDEC. This investigation concluded that the specific types and characteristics of the wastes disposed at the site, and also their potential for migration from the site would have to be determined. Data collection proposed for this determination included soil samples in the general waste disposal areas, and samples from the nearby sewer lines and the associated sewer pipe bedding materials.

SECTION 3: CURRENT STATUS

In March 1993, NYSDEC scheduled a Preliminary Site Assessment (PSA) for this site in order to conduct the investigations necessary for assigning a permanent classification. Ultimately, FMC agreed to conduct the PSA, and work was begun in November, 1993. The PSA was completed in May, 1996.

3.1: Summary of the Preliminary Site Assessment

In addition to confirming the presence of hazardous wastes on the site, the purpose of the PSA was to define the nature and extent of any contamination resulting from previous activities at the plant, and to characterize the nature of the wastes to determine if they constituted a significant threat to public health or to the environment. The first task of the PSA was to conduct a records search. Next, using the data and information collected from this search, the field investigation and appropriate analyses were conducted. Details of the records search and the investigation and analyses are given in a January 6, 1994 report "Preliminary Site Assessment - Records Search" and a January, 1995 report "Preliminary Site Assessment" respectively.

The PSA investigation determined that there were a total of nine suspected waste disposal locations in the areas of Sites 1 and 2 that required investigation. As shown in Figure 2, these locations included, in both Sites 1 and 2, excavations for waste disposal and, in Site 2, drum staging areas and areas containing stressed vegetation. These nine suspected waste disposal areas were designated Locations A through I, and are shown in Figure 3. To determine the presence and extent of wastes disposed and their hazardous waste characteristics, up to ten test pits were dug at each of these locations. These test pits were extended through the fill layers into the native soils. In the field, soil samples from the test pits were examined visually for evidence of FMC Plant wastes, and were also tested for organic vapors.

3.1.1 Nature of Contamination:

As noted in Table 1, many of the chemicals produced at this plant, in their original state prior to decomposition, are chemical oxidizing agents. As oxidizing agents, these chemicals pose a potential hazard of ignitability. Thus, those samples exhibiting evidence of possible disposal of plant waste(s) were tested for the presence of chemical oxidizing agents. Samples from Locations A, C, D and I were tested. None of these samples exhibited the presence of the oxidizing agents.

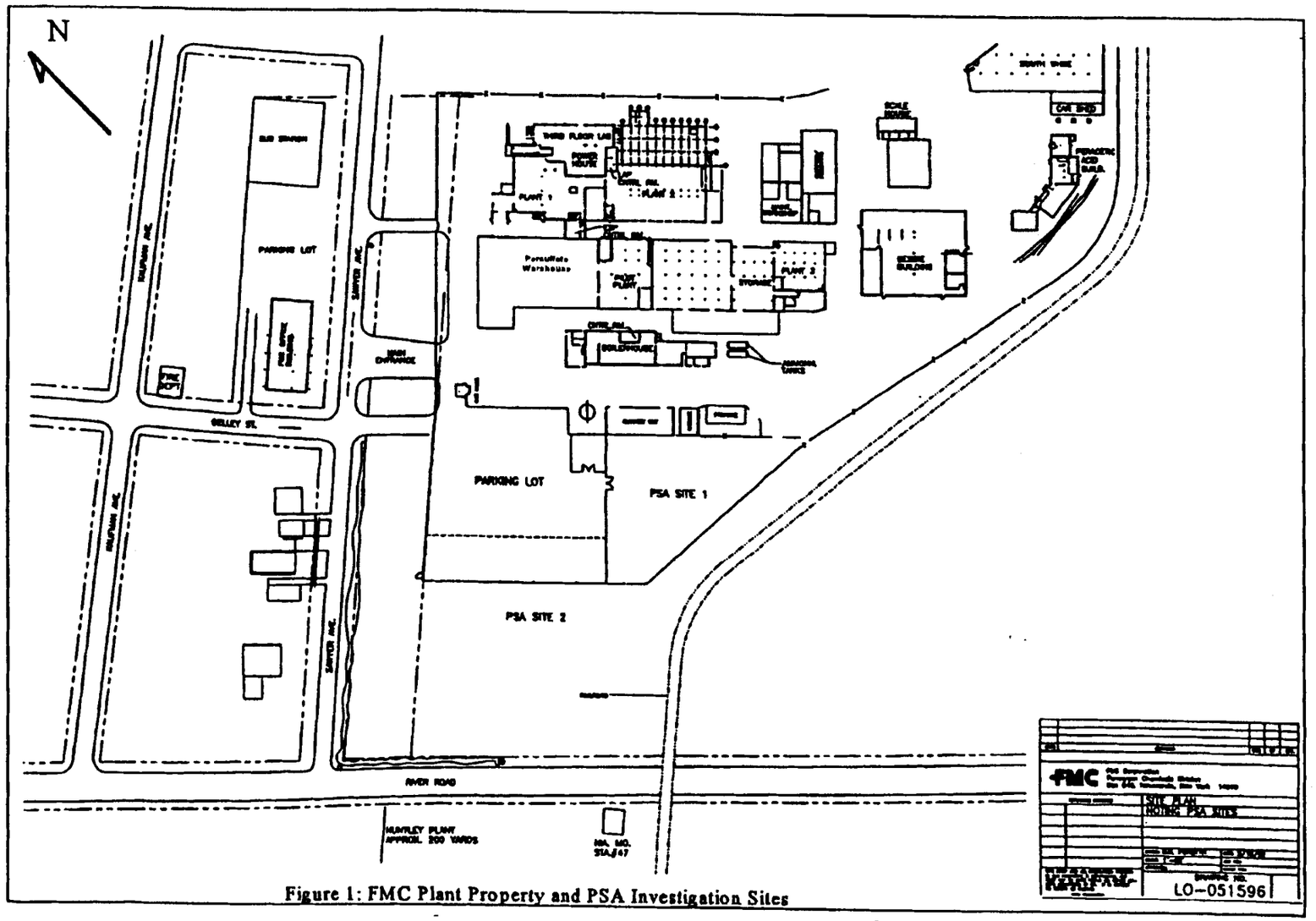

Figure 1: FMC Plant Property and PSA Investigation Sites

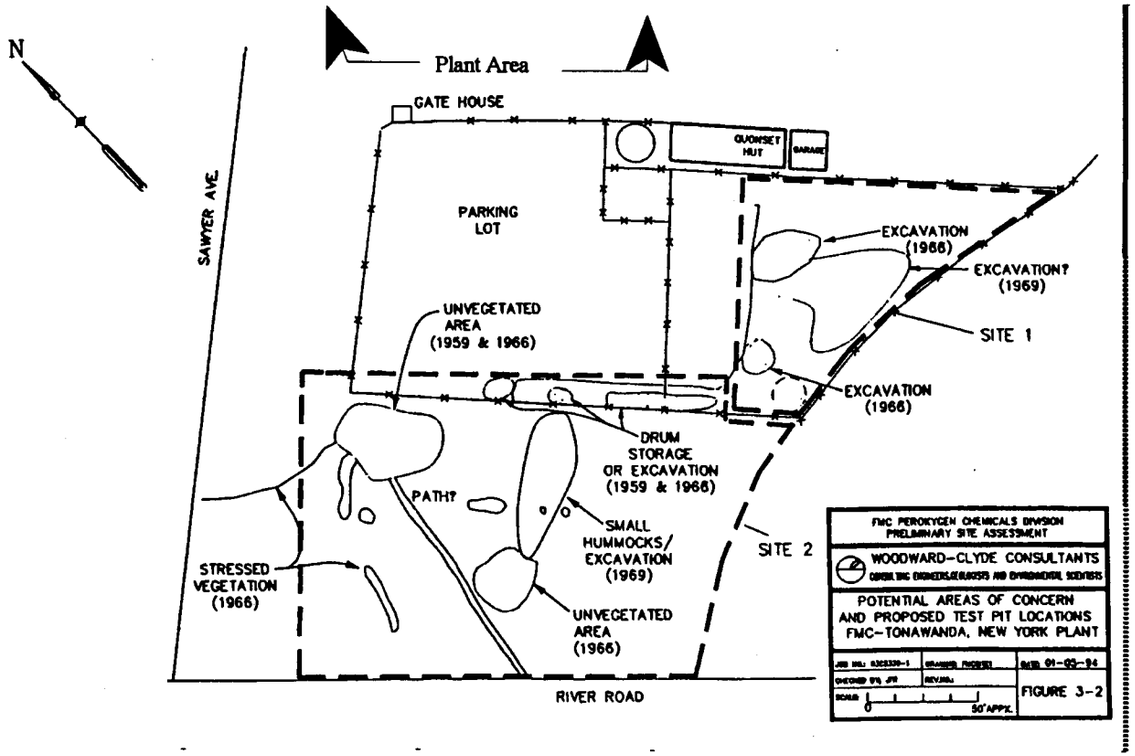
N
Plant Area
GATE HOUSE
QUONSET HUT
GARAGE
SAWYER AVE.
PARKING LOT
EXCAVATION (1966)
EXCAVATION? (1969)
SITE 1
UNVEGETATED AREA (1959 & 1966)
EXCAVATION (1966)
DRUM STORAGE OR EXCAVATION (1959 & 1966)
PATH?
SMALL HUMMOCKS/ EXCAVATION (1969)
SITE 2
STRESSED VEGETATION (1966)
UNVEGETATED AREA (1966)
RIVER ROAD
FMC PEROXYGEN CHEMICALS DIVISION
PRELIMINARY SITE ASSESSMENT
WOODWARD-CLYDE CONSULTANTS
POTENTIAL AREAS OF CONCERN AND PROPOSED TEST PIT LOCATIONS FMC-TONAWANDA, NEW YORK PLANT
DATE 01-03-94
FIGURE 3-2
0
50' APPX.

Figure 2

Table 1
Schedule of Production
1927 - 77

Chemical	Years Produced	Stability
Ammonium Persulfate*	1951 - 77	Gradually Decomposes
Potassium Persulfate*	1927 - 77	Gradually Decomposes
Sodium Persulfate*	1961 - 77	Gradually Decomposes
Sodium Perborate Tetrahydrate	1952 - 77	Decomposition Promoted by Moisture and Temperature
Sodium Perborate Monohydrate*	1964 - 77	Decomposes
Hydrogen Peroxide*	1927 - 70	Decomposes Violently if Impurities are Present
Peracetic Acid*	1927 - 77	Decomposes
Calcium Peroxide*	1958 - 77	Decomposes in Moist Air
Zinc Peroxide*	1958 - 77	Gradually Decomposed by Water
Sodium Carbonate Peroxide*	1958 - 65, 1975	Decomposes
Magnesium Peroxide*	1958 - 68	Gradually Decomposes
Urea Peroxide*	1958 - 68	Decomposed by Water at Approximately 40°C
Sodium Pyrophosphate Peroxide*	1958 - 68	
Dipicolinic Acid	1958 - 70, 1972 - 75, 1977	Stable

* In its original state prior to decomposition, this compound is a chemical oxidizing agent; it exhibits ignitability characteristics according to provisions of CFR 261.21

Table 2
Analytical Results in Parts per Million (ppm)

Chemical Compound	Sample Number		
	D-4 Waste	A-5 Waste	Cleanup Goal
Benzo(a)anthracene	1.1	NA	0.224
Chrysene	1.3	NA	0.4
Benzo(a)pyrene	0.31	NA	0.061
Dibenz(a,h)anthracene	0.14	NA	0.014
Total PCB's	27	16,000	1 (Surface) 10 (Subsurface)

Notes:

NA: Denotes Sample Not Analyzed for the Given Compound

ND: Denotes Compound Not Detected in the Given Sample at the Method Detection Limit

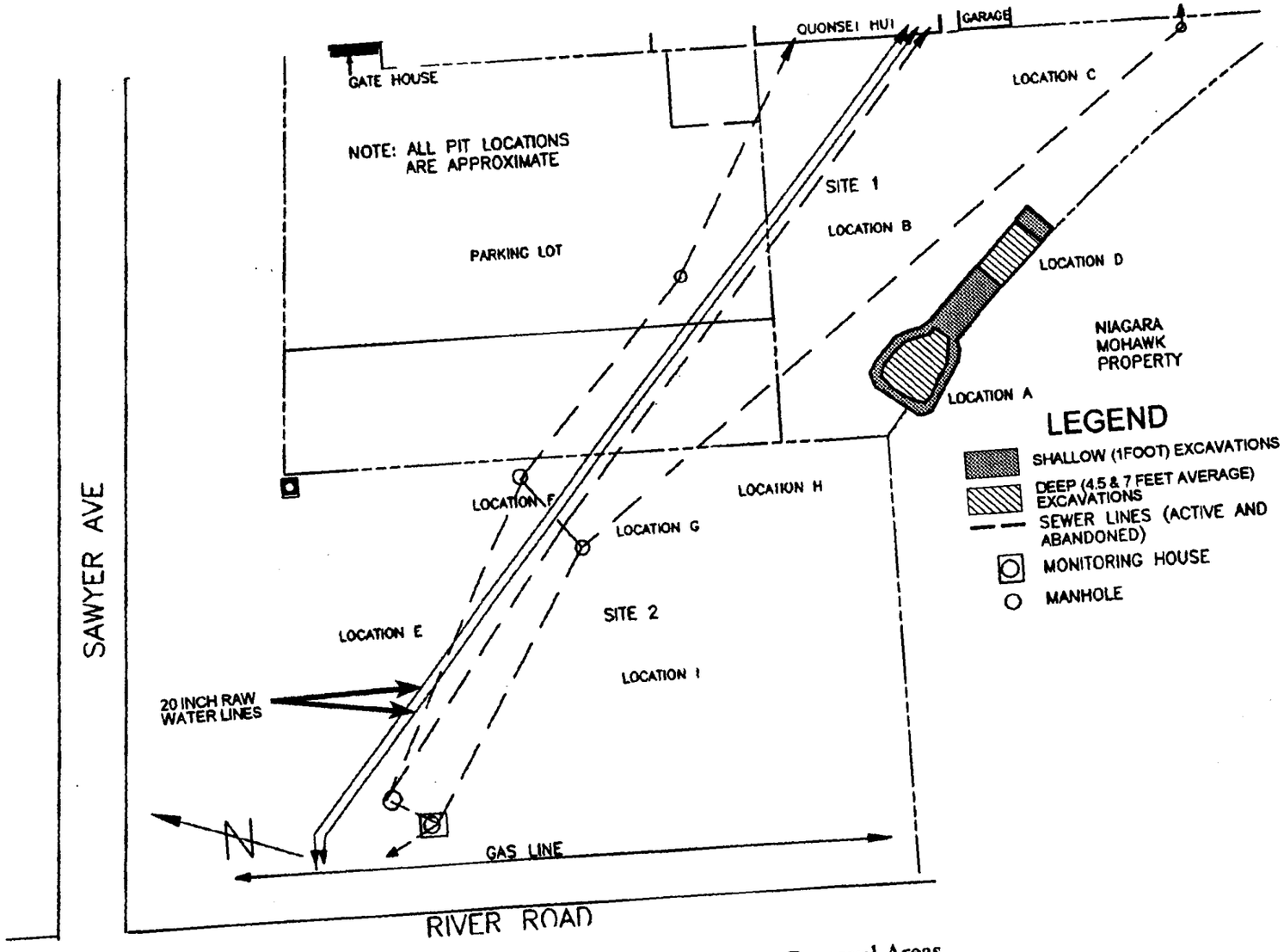

Figure 3: PSA Investigation and Waste Removal Areas

During the PSA investigation, groundwater was not encountered within the depths of the test pits. The fill at the site overlying the native soils were found to be the only media that contained contaminated material resulting from the manufacturing activities conducted at the FMC Plant.

The native soils encountered in the bottoms of all the test pits were clays with permeabilities ranging from 2×10^{-7} to 1×10^{-6} centimeters per second. Clays with low permeabilities such as these inhibit migration of waste or leachate into the underlying bedrock groundwaters. Previous geotechnical investigations in this area indicate that the thickness of this clay layer is in the order of 50 feet and underlies the entire site. These factors, along with the very low solubility of the contaminants, and the relatively small amount of contamination involved, lead to the conclusion that groundwater is not a medium of concern at the site.

Visual evidence of waste disposal was encountered only at Locations A and D. The approximate extent of the waste disposed in these two areas was determined by observation of the soils in the respective areas of the test pits. Field tests of soil samples from these test pits revealed high levels of organic vapors. Analytical laboratory samples were taken from Test Pit A-5 (e.g. Test Pit No. 5 in Location A) and from Test Pit D-4. For each of the test pits, a sample was taken from the waste (fill) layer and also the underlying native soils.

To determine if the waste and native soils from Locations A and D contained hazardous waste at levels of concern, the PSA analytical data was compared to either the NYSDEC TAGM 4046 soil cleanup guidelines or the Toxicity Characteristic Regulatory Level given in 6 NYCRR Part 371, as applicable. The results of the soil analyses and the remediaiton procedure are summarized in the sections that follow. More complete information can be found in the January, 1995 PSA Report.

3.1.2 Extent of Contamination

The following chemical analyses were performed on the waste and soil samples:

Waste: Toxicity Characteristic Leaching Procedure (TCLP) volatile organic compounds, TCLP metals and polychlorinated biphenyl compounds (PCB's); and

Soil: Target Compound List (TCL) volatile organic compounds and TCLP metals.

In addition, given the oily/tarry appearance of the wastes sample from Location D, both the waste and underlying soil sample from this location were analyzed for TCL semi-volatile organic compounds.

Table 2 lists the chemical compounds encountered at levels that exceeded the cleanup guidelines in the waste. There were no compounds in the soil samples that exceeded either the cleanup guidelines or the regulatory level.

Total PCB's were found at levels that exceeded the cleanup goals in both waste samples. Of primary concern was the high level of total PCB's, i.e. 16,000 ppm, found in Waste Sample A-5. Total PCB's at 27 ppm were found in Waste Sample D-4. The soil cleanup goal for total PCB's is 1 ppm for surface soils and 10 ppm for subsurface soils. Upon consideration of the potential public health and environmental exposure routes, it was determined that the areas of Locations A and D required remediation.

3.2 Interim Remedial Measure

An Interim Remedial Measure (IRM) consists of activities which can be readily executed without extensive investigation or evaluation. An IRM is intended to be a component of the remediation, and can constitute the entire remedy. In the PSA for this site, it was determined that there were no hazardous wastes present other than at Locations A and D. Thus, FMC proposed in their January, 1995 PSA Report to conduct further PSA Investigations to characterize the vertical and horizontal extent of hazardous wastes in these two areas. These investigations were undertaken in July, 1995. Based on the findings of these supplemental PSA Investigations, FMC proposed to conduct an IRM to excavate the contaminated soils and waste, and dispose of them at the Chemical Waste Management Landfill at Model City, NY, an approved hazardous waste disposal facility. The IRM removal action was conducted in the Fall of 1995 concurrent with clean-up efforts necessitated by the August, 1995 plant fire. The details of the procedures followed for this excavation and disposal operation are given in a December, 1995 report "Preliminary Site Assessment - Additional Investigation and Remedial Measures Program."

PCB levels were the indicator parameters used to determine the specific areas within Locations A and D to be excavated. Initial excavations to the native soil layer were made at the two locations, and the soils in the open excavation tested for the presence of PCB's at levels exceeding the 10 ppm cleanup goal for subsurface soils. If the test results indicated the levels of PCB's were above 10 ppm, the excavation was expanded and the newly exposed soils tested. This procedure was repeated until any PCB's remaining in the soils of the open excavation were below 10 ppm. The final excavation areas are shown in Figure 3. A deep excavation was dug at each of the two locations. In addition, shallow excavations essentially surrounding these two deep excavations were also dug.

The final deep excavation for Location A was irregularly shaped, with a maximum length of approximately 36 feet, a maximum width of approximately 24 feet and an average depth of 4 ½ feet. For Location D, the final deep excavation was approximately 26 feet long by 13 feet wide, with an average depth of 7 feet.

Next, surface soil contamination adjacent to the deep excavations was addressed by excavating the contaminated soils to a depth of one foot. These shallower excavations were begun at the edges of the deep excavations. Similar to the procedure for the deep ones, the newly exposed soils in these shallow excavations were tested for the presence of PCB's at levels exceeding the cleanup goal of one ppm for surface soils, and the excavation(s) expanded as necessary. The final shallow excavation for Location A was approximately 754 square feet, and extended along the west, north and east sides of the deep excavation. For Location D, the final shallow excavation was approximately 481 square feet, and extended along the south and east sides of the deep one. For the entire area between the two deep excavations, a shallow excavation approximately 42 feet long by 16 feet wide was dug.

Coincidental to the PCB's removed by this excavation project, the other chemicals listed in Table 2 that had been encountered in the waste samples were also removed. For the entire excavation project, a total of approximately 285 cubic yards of contaminated soils were removed from this site for disposal at the Model City Landfill.

The open excavations were backfilled with uncontaminated soils that had been excavated from two construction projects in the Town of Grand Island and the City of Buffalo respectively. There are no records of any hazardous waste disposal activities at either of these two sites.

3.3 Summary of Human Exposure Pathways:

An exposure pathway consists of the circumstances that lead to an individual's coming into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

As part of the PSA, the types of human exposures that could have brought about added health risks to persons at or around the site, had the waste and contaminated soils not been addressed, were considered. If the contaminated soils and waste had been allowed to remain at the site, an exposure pathway could have been completed in the general area of Locations A and D had activities, such as excavating an underground utility line, been conducted there. Such excavations would give rise to the potential for inhalation of contaminated particles or dermal contact with the contaminated soils by construction personnel.

3.4 Summary of Environmental Exposure Pathways:

Also considered in the PSA were the types of environmental exposures that could have occurred, had the PCB contaminated soils been left on the site. The one pathway for environmental exposure identified was the potential of contaminated surface soils being eroded from the site into the adjacent drainage ditches, and these contaminants ultimately washing into the Niagara River.

SECTION 4: ENFORCEMENT STATUS

The NYSDEC and the FMC Corporation entered into a Consent Order on November 22, 1993. This Order obligated FMC to implement a PSA. This PSA has been completed in accordance with the Consent Order, and has been approved by NYSDEC.

SECTION 5: SUMMARY OF THE REMEDIAL GOALS AND SELECTED ACTION

The selected remedy for any site should, at a minimum, eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous waste present at the site. The State believes that the remediation now in place, i.e., the IRM described in Section 4.2, has accomplished this objective. Cleanup goals established for this project were met and confirmed by subsequent analyses. Based upon the results of the previous investigations as well as the PSA, and also upon the IRM conducted at the site, the **NYSDEC is selecting no further action** as the preferred remedial alternative for the site. The Department will also delist the site from the New York State Registry of Inactive Hazardous Waste Disposal Sites.

Community Acceptance - Concerns of the community regarding the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised. Primarily, these comments consisted of questions on the significance of the results of the PSA or the IRM. There were no comments that were unsupportive of the proposal to delist this site.

SECTION 6: HIGHLIGHTS OF COMMUNITY PARTICIPATION

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

- A repository for documents pertaining to the site was established.
- A site mailing list was established which included nearby property owners, local commissions, political officials and media, and other interested parties.
- A Public Meeting was held on March 12, 1997 to present the results of the investigations, the IRM, and the proposed remedy.
- In March, 1997 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

Appendix A
Responsiveness Summary
FMC Corp. - Chemical Division Inactive Hazardous Waste Site

Summary of the Selected Remediation Alternative

The goal of an NYSDEC remediation program is to eliminate or mitigate all significant threats to the public health or the environment presented by the hazardous waste present at the site. The State believes that the remediation now in place, i.e. the IRM described in Section 4.2, has accomplished this objective. Cleanup goals established for this project were met and confirmed by subsequent analyses. Based upon the results of the previous investigations as well as the PSA, and also upon the IRM conducted at the site, the **NYSDEC is selecting no further action** as the remedial alternative for the site. The Department will also delist the site from the New York State Registry of Inactive Hazardous Waste Disposal Sites.

Questions and Issues Raised during the March 12, 1997 Public Meeting, Held at the Sheridan Parkside Community Building Auditorium, 169 Seridan Parkside Dr., Town of Tonawanda, NY

The questions and issues raised at the Public Meeting, where the Proposed Remedial Action Plan (PRAP) was presented, are given below. They are grouped according to the topic discussed, and not necessarily in the order they were raised.

- Question 1: What was the source of the PCBs (polychlorinated biphenyls)?
  - Answer: There is no record that specifically notes disposal of PCBs at the PSA Sites of the FMC Plant Property shown in Figure 1 of this document. The only materials recorded as disposed at these two sites were manufacturing product residues, floor sweepings, paint and paint solvent. It appears reasonable that the PCBs encountered during the PSA investigations were part of these plant refuse materials.

- Question 2: What was the maximum PCB concentration found?
  - Answer: During the PSA, laboratory analyses were performed on samples from two of the test pits: A-5 and D-4 (See Sections 3.1.1 and 3.1.2 of this document). Total PCBs found in the samples were 16,000 parts per million (ppm) and 27 ppm respectively.

- Question 3
  a) Are there any other sources of contamination on the site?
  b) Did you look for other sources or was deeper digging done to check for other sources of the PCBs?
  c) You found nothing else?
  - Answer: In addition to review of files, reports and other such documentation on this NYSDEC Listed Hazardous Waste Site, the nine locations of possible waste disposal at the two PSA Sites were determined from study of historic aerial photographs and interviews with current and former FMC employees. As noted in Section 3.1 of this document and in Section 4.1.1 of the January 1995 PSA, up to ten test pits in these nine locations, for a total of 75 pits, were dug. The depths of these test pits were extended through all the layers of fill, where any wastes

would have been disposed, into the native, or virgin, soil layers. As noted in Section 3.1.1 of this document, only Locations A and D, where the IRM excavations were ultimately conducted, exhibited substantial evidence of waste disposal. A synopsis of the specific fill materials encountered at each of the nine locations is given in Section 5.1 of the January 1995 PSA.

- Question 4: After the cleanup (IRM excavation of the contaminated materials) was done (at Locations A and D), was confirmatory testing done?

  - Answer: Progressive excavations at Locations A and D, where the PCBs were found, were conducted. After the initial excavations to the native soil layer were made, laboratory (confirmatory) analyses of samples from the open excavation were tested for PCBs. If the test results indicated the levels of PCBs were above the cleanup goal of 10 ppm for subsurface soils, the excavation was expanded and the newly exposed soils tested. This procedure was repeated until any PCBs remaining in the soils of the open excavation were below 10 ppm. Next, surface soil contamination adjacent to the deep excavations was addressed by excavating these contaminated soils to a depth of one foot. Similar to the procedure for the deep ones, the newly exposed soils in these shallow excavations were tested for the presence of PCBs at levels exceeding the cleanup goal of one ppm for surface soils, and the excavation(s) expanded until the PCBs remaining in the soils of the shallow excavations were below one ppm (See Section 3.2 of this document).

- Question 5
  a) Is the problem solved?
  b) Does it (the site) pose any health threats now that it's been dug up?

  - Answer: With the completion of the IRM, as described in Section 3.2 of this document, all known health hazards (See Section 3.3) and threats to the environment (See Section 3.4) have been removed from this site.

Appendix B
Administrative Record

The documents listed below are the references used for the preparation of this Record of Decision.

Ecology and Environment Engineering, P.C. for NY State DEC, June, 1989: Phase I Investigation

Woodward Clyde Consultants, January 6, 1994: Preliminary Site Assessment Records Search

Woodward Clyde Consultants, May 11, 1994: Preliminary Site Assessment Work Plan

Woodward Clyde Consultants, January, 1995: Preliminary Site Assessment

Woodward Clyde Consultants, December, 1995: Preliminary Site Assessment; Additional Investigation and Remedial Measures Program

Proposed Remedial Action Plan, February 1997; prepared by the NYS Department of Environmental Conservation.

Record of Decision, March 1997; prepared by the NYS Department of Environmental Conservation.

Order on Consent, Index #B9-0431-93-06, FMC Corporation, Peroxygen Chemicals Division, Respondent; November 22, 1993; prepared by NYS Department of Environmental Conservation.