UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

DE-9J

MAY 07 2003

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Richard P. Fahey, Esq.
Vorys, Sater, Seymour and Pease LLP
52 East Gay Street
P.O. Box 1008
Columbus, Ohio 43216-1008

RE: RCRA 3008(h) Consent Order
Dana Corporation, Boston
Weatherhead Division
OHD 005 039 730

Dear Mr. Fahey:

RCRA-05- 2003 - 0009

This letter is to acknowledge receipt of the Section 3008(h) Administrative Order on Consent signed by Dana Corporation.

A fully executed copy of the Consent Order is enclosed.

Your cooperation in resolving this matter is appreciated.

Sincerely yours,

Joseph M. Boyle

Joseph M. Boyle, Chief
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division

Enclosure

cc: Gary Froshaug, Dana Corporation
Harry Sarvis, OEPA-CO
Gary Deutschman, OEPA-NWDO

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US ENVIRONMENTAL
PROTECTION AGENCY
REGION V

RCRA-05- 2003-0009

U.S. Environmental Protection Agency
RCRA §3008(h) CONSENT ORDER

for

Dana Corporation, Boston Weatherhead Division
U.S. EPA I.D.# OHD 005 039 730

TABLE OF CONTENTS

ATTACHMENTS

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ABBREVIATIONS AND ACRONYMS

AOC	Area of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
CMI	Corrective Measure Implementation
CMS	Corrective Measure Study
DCE	Dichloroethylene
DFFO	Directors Final Findings and Orders
DOCC	Description of Current Conditions
DQO	Data Quality Objective
EPA	United States Environmental Protection Agency
HWMU	Hazardous Waste Management Unit
IM	Interim Measures
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
NPDES	National Pollution Discharge Elimination System
OAC	Ohio Administrative Code
OEPA	Ohio Environmental Protection Agency
ppm	parts per million
ppb	parts per billion
PR	Preliminary Review
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control

RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SOW	Scope of Work
SWMU	Solid Waste Management Unit
TCE	Trichloroethylene
µg/l	micrograms per liter
U.S.C.	United States Code
U.S. EPA	United States Environmental Protection Agency
VAP	Voluntary Action Program
VC	Vinyl chloride
VOC	Volatile Organic Compound
VSI	Visual Site Inspection

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF: Dana Corporation Boston Weatherhead Division 5278 U.S. 24 East Antwerp, Ohio 45813 U.S. EPA I.D.# OHD 005 039 730 RESPONDENT	ADMINISTRATIVE ORDER ON CONSENT U.S. EPA Docket No. RCRA-05- 2003-0009 Proceeding under Section 3008(h) of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §6928(h)

RECEIVED
MAY 01 2003
REGIONAL HEARING CLERK
U.S. ENVIRONMENTAL
PROTECTION AGENCY

I. JURISDICTION

A. This ADMINISTRATIVE ORDER (Order) is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency (U.S. EPA) by Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. §6928(h). The authority vested in the Administrator has been delegated to the Chief of the Enforcement and Compliance Assurance Branch of the Waste, Pesticides and Toxics Division.

B. This Order is issued to Dana Corporation, Boston Weatherhead Division (Respondent), the owner and operator of a facility at 5278 U.S. 24 East, Antwerp, Ohio 45813 (Facility).

C. Respondent consents to and agrees not to contest U.S. EPA's jurisdiction to issue this Order and to enforce its terms. Further, Respondent will not contest U.S. EPA's jurisdiction to:

1. Compel compliance with this Order in any subsequent enforcement proceedings, either administrative or judicial;

2. Require Respondent's full or interim compliance with the terms of this Order; and

3. To impose sanctions for violations of this Order.

II. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Order which are defined in RCRA or in regulations promulgated under RCRA shall have the definitions given to them in RCRA or in such regulations.

Acceptable, in the phrase "In a manner acceptable to U.S. EPA..." shall mean that submittals or completed work meet the terms and conditions of this Order, attachments, scopes of work, approved workplans and/or U.S. EPA's written comments and guidance documents.

Additional Work shall mean any activity or requirement that is not expressly covered by this Order or its attachments but is necessary to fulfill the purposes of this Order as presented in Section III. Statement of Purpose.

Administrative Record shall mean the record compiled and maintained by U.S. EPA supporting this Order.

Area of Concern shall mean any area of the Facility under the control or ownership of the owner or operator where a release to the environment of hazardous waste(s) or hazardous constituents has occurred, is suspected to have occurred, or may occur, regardless of the frequency or duration of the release.

CERCLA shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§9601, et seq.

Comply or compliance may be used interchangeably and shall mean the performance of work required by this Order of a quality approvable by U.S. EPA and in the manner and time specified in this Order or any modification thereof, its attachments or any modification thereof, or written U.S. EPA directives. Respondent must meet both the quality and timeliness components of a particular requirement to be considered in compliance with the terms and conditions of this Order.

Contractor shall include any subcontractor, consultant or laboratory retained to conduct or monitor any portion of the work performed pursuant to this Order.

Corrective Measures shall mean those measures or actions necessary to control, prevent, or mitigate the release or potential release of hazardous waste or hazardous constituents into the environment.

Corrective Measures Implementation or CMI shall mean those activities necessary to initiate, complete, monitor, and maintain the remedies U.S. EPA has selected or may select to protect human health and/or the environment from the release or potential release of hazardous wastes or hazardous constituents into the environment from the facility. The CMI requirements are detailed in the CMI Scope of Work included as Attachment IV.

Corrective Measures Study or CMS shall mean the investigation and evaluation of potential remedies which will protect human health and/or the environment from the release or potential release of hazardous wastes or hazardous constituents into the environment from the Facility. The CMS requirements are detailed in the CMS Scope of Work included as Attachment III.

Data Quality Objectives shall mean the qualitative or quantitative statements expressing acceptable levels of

uncertainty. The Data Quality Objective process is designed to collect data that are scientifically valid, defensible, and of known precision and accuracy relative to the use for which the data are obtained.

Day shall mean a calendar day unless expressly stated to be a business day. Business day shall mean a day other than a Saturday, Sunday, or Federal Holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal Holiday, the period shall run until the end of the next business day.

Environment shall mean the navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Magnuson-Stevens Fishery Conservation and Management Act, and any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States.

EPA or U.S. EPA shall mean the United States Environmental Protection Agency, and any successor Departments or Agencies of the United States.

Facility shall mean all contiguous property under the control of the owner and/or operator.

Hazardous Constituents shall mean those constituents listed in Appendix VIII to 40 C.F.R. Part 261 or any constituent identified in Appendix IX to 40 C.F.R. Part 264.

Hazardous Waste shall mean hazardous waste as defined in §1004(5) of RCRA or 40 C.F.R. §260.10. This term includes hazardous constituents as defined above.

Hazardous Waste Management Unit or HWMU shall mean a contiguous area of land on or in which hazardous waste is placed, or the largest area which there is significant likelihood of mixing hazardous waste constituents in the same area. Examples of hazardous waste management units include a surface impoundment, a waste pile, a land treatment area, a landfill cell, an incinerator, a tank and its associated piping and underlying containment system, and a container storage area. A container alone does not constitute a hazardous waste management unit; the unit includes containers and the land or pad upon which they are placed.

Innovative Treatment Technologies shall mean those technologies for treatment of soil, sediment, sludge, and debris other than incineration or solidification/stabilization and those

technologies for treatment of groundwater contamination that are alternatives to pumping with conventional treatments like air stripping and ultraviolet light oxidation.

Interim Measures or IM shall mean those actions, which can be initiated in advance of implementation of the final corrective action for a facility, to achieve the goal of stabilization. Interim Measures initiate cleanup at a facility and control or eliminate the release or potential release of hazardous waste at or from the Facility. The IM requirements are detailed in the IM Scope of Work included as Attachment I.

RCRA Facility Investigation or RFI shall mean the investigation and characterization of the source(s) of contamination and the nature, extent, direction, rate, movement, and concentration of the source(s) of contamination and releases of hazardous waste, including hazardous constituents, that have been or are likely to be released into the environment from the Facility. The activities required for the RFI are detailed in the RFI Scope of Work included as Attachment II.

Receptors shall mean those humans, animals, or plants and their habitats which are or may be affected by releases of hazardous waste or hazardous constituents from or at the Facility.

Release shall mean any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of hazardous waste or hazardous constituents into the environment.

Scope of Work or SOW shall mean the outline of work Respondent must use to develop all workplans and reports required by this Order as set forth in this Order and its Attachments: I, Interim Measures Scope of Work; II, RCRA Facility Investigation Scope of Work; and III, Corrective Measures Study Scope of Work; and IV, Corrective Measures Implementation Scope of Work. All SOW Attachments and modifications or amendments thereto, are incorporated into this Order and are enforceable parts of this Order.

Solid Waste Management Unit or SWMU shall mean any discernible unit at which solid wastes have been placed at any time irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility where solid wastes have been routinely and systematically released.

Stabilization shall mean controlling or abating immediate threats to human health and/or the environment from releases and/or preventing or minimizing the spread of contaminants while long-term corrective measures alternatives are being evaluated.

Submittal shall include any workplan, report, progress report, or any other written document Respondent is required by this Order to send to U.S. EPA.

Violations of this Order shall mean those actions or omissions, failures or refusals to act by Respondent that result in a failure to meet the terms and conditions of this Order or its Attachments.

Work or Obligation shall mean any activity Respondent must perform to comply with the requirements of this Order and its attachments.

Workplan shall mean the detailed plans prepared by Respondent to satisfy the requirements of the corresponding Scope of Work. The requirements for each workplan are presented in Section VIII: Work to be Performed and/or the Attachments I-IV.

III. STATEMENT OF PURPOSE

In entering into this Order, the mutual objectives of U.S. EPA and Respondent are:

A. To perform Interim Measures (IM) at the Facility to relieve threats to human health and/or the environment;

B. To perform a RCRA Facility Investigation (RFI) to determine fully the nature and extent of any release of hazardous waste at or from the Facility;

C. To perform a Corrective Measures Study (CMS) to identify and evaluate alternatives for the corrective measures necessary to prevent, mitigate, and/or remediate any release of hazardous waste at or from the Facility;

D. To implement the corrective measure or measures selected by U.S. EPA at the Facility; and

E. To perform any other activities necessary to correct or evaluate actual or potential threats to human health and/or the environment resulting from the release or potential release of hazardous waste or hazardous constituents at or from the Facility.

IV. PARTIES BOUND

A. This Order shall apply to and be binding upon U.S. EPA, Respondent and its officers, directors, employees, agents, successors and assigns, heirs, trustees, receivers, and upon all persons, including but not limited to contractors, acting on behalf of Respondent.

B. No change in ownership or corporate or partnership status relating to the Facility will in any way alter Respondent's responsibility under this Order. Any conveyance of title, easement, or other interest in the Facility, or a portion of the Facility, shall not affect Respondent's obligations

under this Order. Respondent will be responsible for and liable for any failure to carry out all activities required of Respondent by the terms and conditions of the Order, regardless of Respondent's use of employees, agents, or contractors to perform any such tasks.

C. Respondent shall provide a copy of this Order to all contractors and laboratories retained to conduct or monitor any portion of the work performed pursuant to this Order within 14 days of the issuance of this Order or the retention of such person(s), whichever occurs later, and shall condition all such contracts on compliance with the terms of this Order.

D. Respondent shall give written notice of this Order to any successor in interest prior to transfer of ownership or operation of the Facility or a portion thereof and shall notify U.S. EPA in writing within 30 days prior to such transfer.

E. Respondent agrees to undertake all actions required by the terms and conditions of this Order, including any portions of this Order incorporated by reference.

F. Respondent waives any rights to request a hearing on this matter pursuant to §3008(b) of RCRA and 40 C.F.R. Part 24,

and consents to the issuance of this Order without a hearing pursuant to §3008(b) of RCRA as a Consent Order issued pursuant to §3008(h) of RCRA.

V. FINDINGS OF FACT AND REGULATORY BACKGROUND

A. Respondent is a corporation doing business in the State of Ohio.

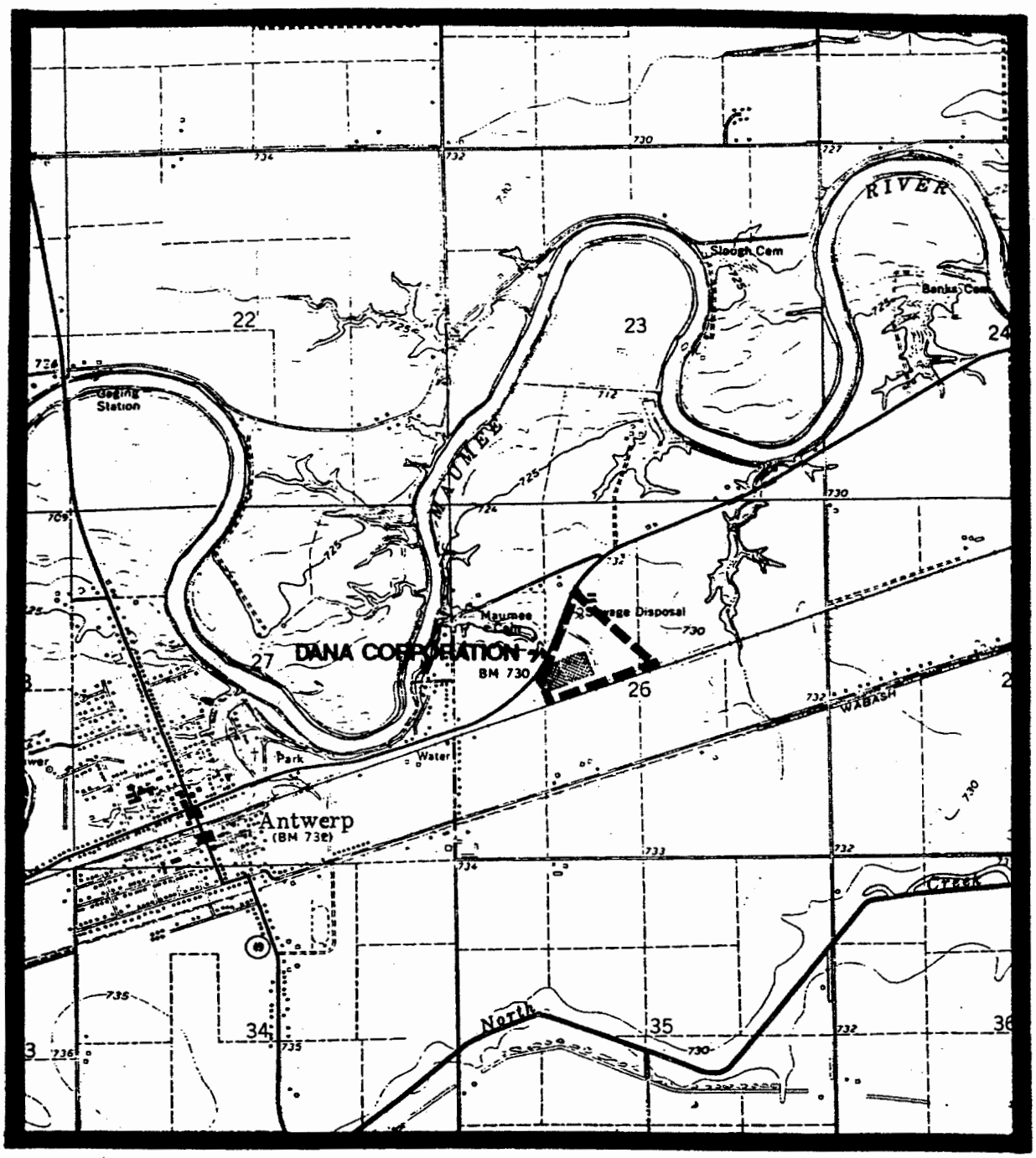
B. Respondent is an owner and/or operator of a hazardous waste management facility located on approximately 26 acres of land at 5278 U.S. 24 East, Antwerp, Ohio 45813 (Facility).

C. Respondent's Facility is described as follows (see figure 1):

1. The Maumee River and a residential area lie approximately 2000 feet west of the Facility. Railroad tracks border the southern boundary and wetlands border the eastern boundary. The area surrounding the Facility is mainly farmland. The Village of Antwerp is located approximately one-mile to the southwest.

2. The property was first developed in 1952. The Facility building has undergone two major expansions, with additions to the east and west of the original building. Respondent manufactures various industrial and automotive small steel hydraulic and hose fittings

Figure 1 Facility Topographic Map



MODIFIED FROM REFERENCE 73

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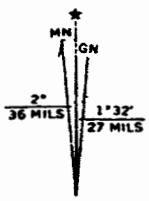
1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 5 FEET

DATUM IS MEAN SEA LEVEL



UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

at the Facility. The fittings are formed, machined, plated, and assembled, using bar stock steel as the main raw material. Respondent represents that manufacturing operations at the Facility are scheduled to cease in April 2003.

3. The Facility generates a variety of waste streams in the manufacturing process. Waste streams include cadmium, zinc, chromates, caustic cleaners, hydrochloric acid, and waste oils. Prior to 1987, trichloroethylene (TCE) was used for degreasing parts before assembly. Waste TCE was stored in an above-ground tank (SWMU 11) prior to off-site shipment. With the exception of cutting oils and caustic cleaner tank bottoms, all process wastes are treated on-site in the Chrome Treatment System (SWMU 13). Treated wastewater is discharged to the Maumee River via NPDES-permitted Outfall 001. Cutting oils and caustic cleaner tank bottoms are collected in 55-gallon drums and disposed off-site.

4. The local geology of the area the Facility is located on consists of lacustrine and glacial till deposits overlying Devonian-age Dundee Limestone present approximately 45 feet below ground surface. The Dundee

Limestone is a regional aquifer and dependable water source. The uppermost lacustrine deposits are approximately 10 to 15-feet thick and are composed mostly of mottled silty clay. Two glacial till units underlie the lacustrine deposits. The upper till unit consists mainly of thinly bedded clay with some interspersed sand and trace of gravel. The lower till unit is composed mostly of silty clays, with some sands present. The sand content of the lower till increases with depth. Perched groundwater in the lacustrine deposits generally flows to the southeast but is locally influenced by a collection trench installed in the vicinity of the TCE storage pad located at the southern boundary of the building. Deep groundwater in the lower till unit appears to flow to the southwest.

D. Section 3010(a) of RCRA, 42 U.S.C. §6930(a), requires any person who generates or transports waste, or owns or operates a facility for the treatment, storage, or disposal of hazardous waste, to notify U.S. EPA of such activity within 90 days of the promulgation of regulations under Section 3001 of RCRA. U.S. EPA first published regulations concerning the generation, transportation, treatment, storage or disposal of hazardous waste on May 19, 1980.

These regulations are codified at 40 C.F.R. Part 260 through 265. Notification to U.S. EPA of hazardous waste activity was required in most instances no later than August 18, 1980.

E. Section 3005(a) of RCRA requires U.S. EPA to publish regulations requiring each person owning or operating a hazardous waste treatment, storage, or disposal facility to obtain a RCRA permit. Such regulations were published on May 19, 1980, and are codified at 40 C.F.R. Parts 270 and 271. The regulations require that persons who treat, store or dispose of hazardous waste submit Part A of the permit application in most instances no later than November 19, 1980.

F. Section 3005(e) of RCRA provides that an owner or operator of a facility shall be treated as having been issued a permit pending final administrative disposition on the permit application provided that: (1) the facility was in existence on November 19, 1980; (2) the requirements of Section 3010(a) of RCRA concerning notification of hazardous waste activity have been complied with; and (3) and application for a permit has been made. This statutory authority to operate is known as interim status. U.S. EPA

regulations implementing these provisions are found at 40 C.F.R. Part 270.

G. Respondent owned and/or operated the Facility as a hazardous waste management facility on and after November 19, 1980.

H. On August 5, 1980, Respondent filed a notification of hazardous waste activity for its facility with U.S. EPA. Respondent identified itself as an owner/operator of a treatment, storage, and/or disposal facility for hazardous waste and a generator of the following hazardous wastes:

1. Hazardous wastes exhibiting the characteristic of toxicity, ignitability, and corrosivity (hazardous waste codes D000, D001, and D002);

2. Hazardous wastes from non-specific sources (hazardous waste codes F001, F002, F006, F007, F008, F009, and F012); and

3. Commercial chemical products, manufacturing chemical intermediates, off-specification commercial chemical products or manufacturing chemical intermediates (hazardous waste code U228).

I. On November 21, 1980, Respondent filed Part A of the permit application with U.S. EPA. Respondent identified itself as

storing the following hazardous wastes in containers, tanks, and a waste pile at the facility:

1. Hazardous wastes exhibiting the characteristics of ignitability and corrosivity identified at 40 C.F.R. §261.21 and §261.22 (hazardous waste codes D000 and D007);

2. Hazardous wastes from non-specific sources identified at 40 C.F.R. §261.31 (hazardous waste codes F001, F002, F006, F007, F008, F009, and F012); and

3. Commercial chemical products, manufacturing chemical intermediates, off-specification commercial chemical products or manufacturing chemical intermediates identified at 40 C.F.R. §261.33(f) (hazardous waste code U228).

J. In Respondent's November 21, 1980 Part A permit application, Respondent identified itself as treating the following hazardous wastes in tanks at the facility:

1. Hazardous wastes exhibiting the characteristics of ignitability and corrosivity identified at 40 C.F.R. §261.21 and §261.22 (hazardous waste code D007); and

2. Hazardous wastes from non-specific sources identified at 40 C.F.R. §261.31 (hazardous waste code F006, F007, F008, and F009).

K. In a September 24, 1984 letter to U.S. EPA, Respondent requested withdrawal of its Part A permit application and requested that the facility be considered a generator of hazardous waste only.

L. U.S. EPA acknowledged receipt of Respondent's request in a March 25, 1986 letter and stated that because Respondent stored hazardous waste for longer than ninety (90) days since November 19, 1980, Respondent is subject to the closure requirements in 40 C.F.R. 265 Subpart G and subject to the Hazardous Waste and Solid Waste Amendments of 1984. The letter also stated that on November 8, 1984, the Hazardous and Solid Waste Amendments of (HWSA) were enacted to amend RCRA. "Under Sections 206 and 233 of HSWA all facilities "seeking a permit" (taken to mean interim status facilities) must provide for corrective action for all releases of hazardous waste or constituents from any solid waste management unit (SWMUs), regardless of the time at which waste was placed in the unit."

M. In March 1989, A.T. Kearney, Inc. and DPRA Inc. prepared a Preliminary Review/Visual Site Inspection Report (PR/VSI

Report) for the U.S. EPA. The PR/VSI Report listed 32 SWMUs which were identified as follows (see figure 2):

SWMU 1, *Rack Line Trench*: In-floor concrete trench operated since 1979 that houses below-grade pipes used to route used acid, chromate, rinsate, and new acid.

SWMU 2, *West Barrel Line Trench*: In-floor concrete trench operated since 1979 that houses below-grade pipes used to route used acid, chromate, rinsate, and new acid.

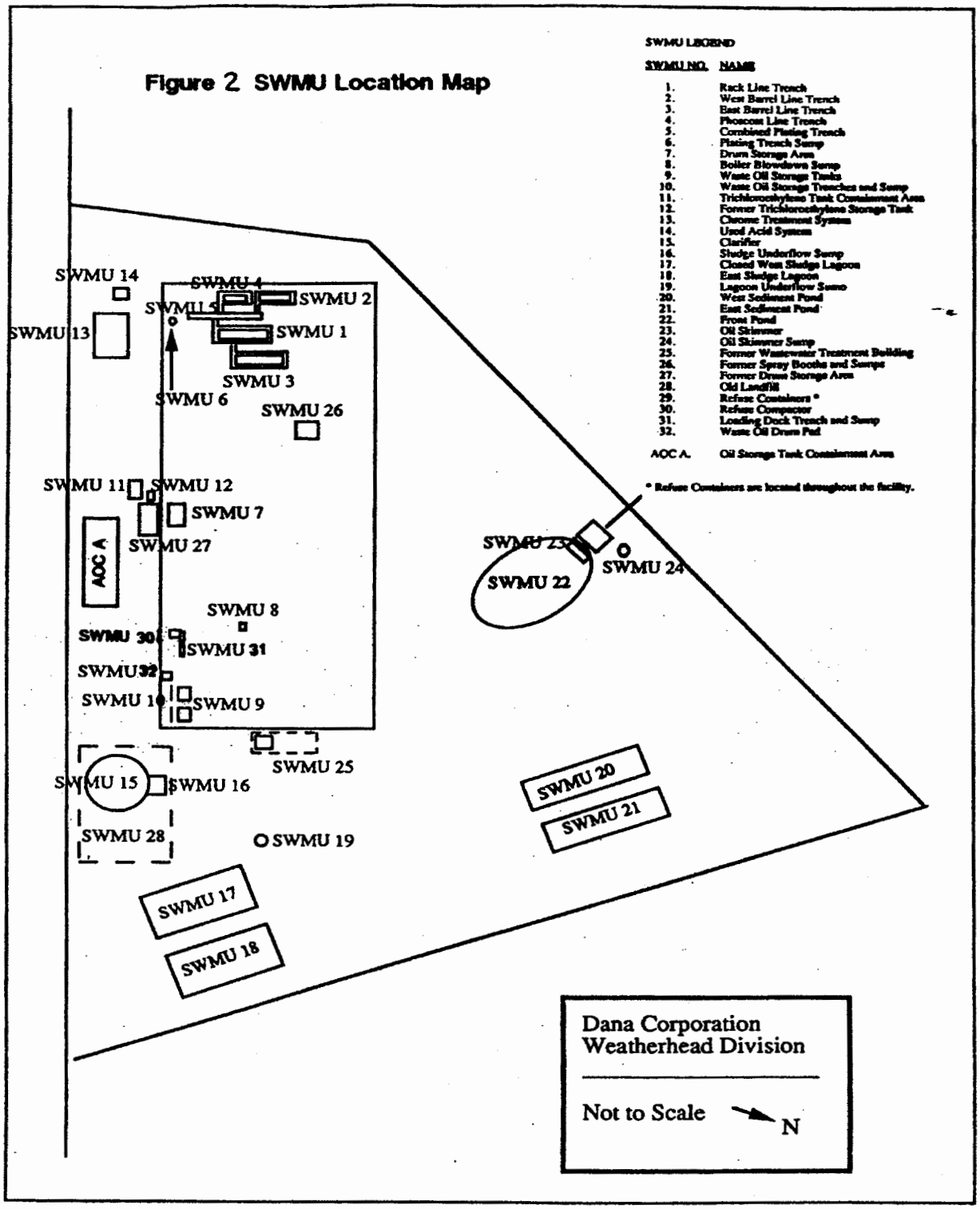
SWMU 3, *East Barrel Line Trench*: In-floor concrete trench operated since 1979 that houses below-grade pipes used to route used acid, chromate, rinsate, and new acid.

SWMU 4, *Phoscoat Line Trench*: In-floor concrete trench operated since 1979 that houses below-grade pipes used to route used acid, chromate, rinsate, and new acid.

SWMU 5, *Combined Plating Trench*: In-floor concrete trench operated since 1979 that houses below-grade pipes used to route used acid, chromate, rinsate, and new acid.

SWMU 6, *Plating Trench Sump*: In-ground concrete cylinder operated since 1979 that collects drainage from the process trenches (SWMUs 1 through 5).

Figure 2 SWMU Location Map



SWMU 7, *Drum Storage Area*: Concrete block room with a concrete floor used to store hazardous and non-hazardous wastes. Began operation in 1985.

SWMU 8, *Boiler Blowdown Sump*: Concrete basin that collects boiler blowdown. Began operation in 1951.

SWMU 9, *Former Waste Oil Storage Tanks*: Two underground storage tanks with a 1,000 gallon capacity each. Began operation in 1979. One tank has been removed and the other is inactive. Waste oil is now collected in 55-gallon drums for disposal off-site.

SWMU 10, *Waste Oil Storage Trenches and Sump*: Concrete trenches used to route waste oil drippings from metal chips to the Former Waste Oil Storage Tanks (SWMU 9). Began operation in 1979.

SWMU 11, *Trichloroethylene (TCE) Tank Containment Area*: Concrete diked structure containing two above-ground tanks. The product TCE tank has a capacity of 1765 gallons and the waste TCE tank has a 3,570 gallon capacity. TCE has been used since 1962. The installation date of the tanks is unknown. The containment dike was built in 1983. TCE has not been used since October 1987 and a RCRA closure plan for the unit is being filed.

SWMU 12, *Former TCE Storage Tank*: A rectangular steel tank with a 1,834 gallon capacity used to store waste TCE prior to construction of the TCE Tank Containment Area (SWMU 11).

SWMU 13, *Chrome Treatment System*: Six in-ground concrete tanks lined with steel used to treat 70,000 gallons of wastewater per day. Is the primary treatment unit for the process wastewater generated at the Facility. Began operation in 1979.

SWMU 14, *Used Acid Tank*: Below grade 1,500 gallon steel tank operated since 1982. Stores used acid for use in the Chrome Treatment System (SWMU 13).

SWMU 15, *Clarifier*: Open-topped concrete cylinder with a capacity of 63,415 gallons. Operated since 1977 and separates sludges from the process wastewater.

SWMU 16, *Sludge Underflow Sump*: In-ground concrete unit with a 3,770 gallon capacity. Used to pump sludges that settle in the clarifier (SWMU 13) to the east sludge lagoon (SWMU 18). Began operation in 1977.

SWMU 17, *Closed West Sludge Lagoon*: Unlined earthen basin used for dewatering zinc hydroxide process sludge and process sludge containing cadmium (F006 waste). Unit was

decommissioned in November 1981. Waste sludge, limestone sand liner, and 6 to 12 inches of underlying clay was removed and disposed off-site. Began operation in 1976. Closure plan was approved by U.S. EPA on March 31, 1988.

SWMU 18, *East Sludge Lagoon*: Unlined earthen basin used for dewatering zinc hydroxide process sludge. Began operation in 1976. Identical in design and function to the closed west sludge lagoon (SWMU 17).

SWMU 19, *Lagoon Underflow Sump*: Concrete in-ground cylinder used to collect water from the sludge lagoons (SWMUs 17 and 18). Collected water is pumped to the sediment ponds (SWMUs 20 and 21). Began operation in 1977.

SWMU 20, *West Sediment Pond*: Unlined earthen settling basin managing wastewater exiting the clarifier (SWMU 15) and the lagoon underflow sump (SWMU 19). Operating from at least 1962.

SWMU 21, *East Sediment Pond*: Unlined earthen settling basin managing wastewater exiting the clarifier (SWMU 15) and the lagoon underflow sump (SWMU 19). Operating from at least 1962.

SWMU 22, *Front Pond*: Collection point for all treated wastewater and stormwater generated at the Facility. Water exits this unit to Outfall 001. Began operation in 1977.

SWMU 23, *Oil Skimmer*: Metal tube used to manually collect floating oil from the front pond (SMWU 22). Began operation in 1977.

SWMU 24, *Oil Skimmer Sump*: Above-ground concrete cylinder used to store oil skimmed from the Front Pond (SMWU 22). Collected oil is taken off-site for recycling or disposal. Began operation in 1977.

SWMU 25, *Former Wastewater Treatment Building*: Units in this building were used to treat wastewater prior to construction of the chrome treatment system (SWMU 13). Ceased operation in 1979.

SWMU 26, *Former Spray Booths and Sumps*: Four booths active only in 1969 and 1970 for spraying parts with primer, paint, and waterwash. The sumps were used to collect wastewater and route it to the wastewater treatment system.

SWMU 27, *Former Drum Storage Area*: Indoor area used to store hazardous waste and PCB wastes on a concrete floor. The Ohio Environmental Protection Agency (OEPA) considered

the unit closed in April 1985. The start-up date is unknown.

SWMU 28, *Old Landfill*: This disposal area began operations in 1955 and is suspected to have managed cyanide-bearing wastes, plant trash, and demolition debris. Closed in 1963 or 1965. Unit is unlined and wastes buried in clay from 5 to 8-feet deep.

SWMU 29, *Refuse Containers*: Trash collection of waste paper, glass, metal shavings, plastics, and food wastes throughout the plant.

SWMU 30, *Refuse Compactor*: Hydraulic compression device connected to a semi-trailer used to manage trash from the refuse containers (SWMU 29). Start-up date is unknown.

SWMU 31, *Loading Dock Trench and Sump*: Concrete trench used to collect liquids dripping from vehicles loading and unloading. Liquids are handled by the storm sewer system. Operational since plant opened in 1951.

SWMU 32, *Waste Oil Drum Pad*: Concrete pad located indoors used to store drums containing oil drippings from metal shavings. The drums replaced the waste oil storage tanks (SWMU 9) in 1989.

N. In the PR/VSI Report, the Oil Storage Containment Area was identified as an Area of Concern (AOC). The AOC was described as consisting of five above-ground steel tanks containing process oils surrounded by an 18-inch high concrete dike. Oil-stained soil was noted inside and outside of the diked area.

O. The PR/VSI Report describes the Drum Storage Area (SWMU 7), TCE Tank Containment Area (SWMU 11), Former TCE Storage Tank (SWMU 12), Closed West Sludge Lagoon (SWMU 17), East Sludge Lagoon (SWMU 18), and Former Drum Storage Area (SWMU 27) as RCRA-regulated units. Closure certifications for the Closed West Sludge Lagoon (SWMU 17) and the Former Drum Storage Area (SWMU 27) have been accepted by OEPA.

P. On August 29, 1989, Respondent submitted an initial closure plan for the waste TCE tank storage system to OEPA. The waste TCE tank storage system ("TCE storage system") consists of two steel tanks and associated transfer lines. One of the waste TCE tanks is situated within a concrete containment dike area and the second waste TCE tank is situated on the ground north of the diked containment area. The TCE storage system comprises SWMUs 11 and 12 identified in the PR/VSI Report.

Q. On April 12, 1990, Respondent submitted a modified closure plan for the TCE storage system. On March 19, 1991, OEPA approved with modifications, Respondent's closure plan for the TCE storage system. On February 14, 1992, Respondent notified OEPA that certain closure activities had been completed at the TCE storage system. The activities include proper disposal of liquids in the tanks; removal, decontamination, and proper disposal of the tanks and associated piping; disassembly and proper disposal of the degreasing unit; substantial completion of soil testing with results showing significant impact of TCE and the need for additional testing; decontamination of the concrete diking; and initial testing of shallow groundwater with results showing TCE and dichloroethylene (DCE) contamination.

R. On December 23, 1992, because of soil contamination found in the area of the TCE storage system, Respondent submitted an amended closure plan that included construction of a groundwater collection trench and air stripper at the TCE storage system. On July 11, 1994, OEPA approved with modifications, Respondent's amended closure plan.

S. On December 20, 1996, OEPA notified Respondent that the time frames for meeting the conditions in its July 11, 1994

approval of the amended closure plan were exceeded and requirements were never met for conditions 2 and 3.

T. On April 7, 1997, OEPA received Respondent's amended partial closure plan for the TCE storage system. On October 31, 1997, OEPA notified Respondent of deficiencies in the amended partial closure plan (or second amended closure plan).

U. On January 8, 1999, Respondent requested a time extension for submitting the second amended closure plan. On March 4, 1999, OEPA notified Respondent that it was denying a time extension request to extend the closure period for the TCE storage system and that Respondent had failed to meet the closure requirements found at OAC 3745-66-13(B) and had not complied with all conditions of the amended closure plan as approved by OEPA on July 11, 1994.

V. On April 1, 1999, Respondent submitted a revised closure plan for the TCE storage system intended to replace previous closure plan submittals. The revised closure plan was a "closure in-place" rather than a "clean closure". The revised closure plan included construction of a concrete cap over the TCE storage system and groundwater monitoring of the mixed bedrock/outwash zone.

W. In September 1999, Respondent's contractor compiled data documenting the hazardous wastes that have been released from the Facility into groundwater and soil.

1. Analyses performed on groundwater samples obtained in 1992, 1994, and 1997 from monitoring wells screened at 4 to 9-feet below ground surface in perched groundwater in the immediate vicinity of the TCE storage system (MW-24, MW-25, and MW-26) found the following maximum concentrations of volatile organic compounds (VOCs): 200,000 µg/l (ppb) of total 1,2-dichloroethylene (1,2-DCE), 300,000 µg/l (ppb) of cis-1,2-dichloroethylene (cis-1,2-DCE), 1,400 µg/l (ppb) of trans-1,2-dichloroethylene (trans-1,2-DCE), 110,000 µg/l (ppb) of trichloroethylene (TCE), and 9,300 µg/l (ppb) of vinyl chloride (VC).

2. Analyses performed on groundwater samples obtained in 1992 and 1997 from monitoring wells screened at 4 to 9-feet below ground surface in perched groundwater to the east of the TCE storage system (MW-27, MW-28, MW-29, MW-30, MW-31, MW-32, and MW-35) found the following maximum concentrations of VOCs: 43,000 ppb of total 1,2-DCE, 35,000 ppb of cis-1,2-DCE, 250 ppb of trans-1,2-DCE, 18,000 ppb of TCE, and 8,300 ppb of VC.

3. Analyses performed on groundwater samples obtained in 1992 and 1997 from a monitoring well screened at 8 to 13-feet below ground surface in perched groundwater just south of the TCE storage system (MW-37) found the following maximum concentrations of VOCs: 149,000 ppb of total 1,2-DCE, 110,000 ppb of cis-1,2-DCE, 32,000 ppb of TCE, and 19,000 ppb of VC.

4. Analyses performed on groundwater samples obtained in 1997 from a monitoring well screened at 7 to 17-feet below ground surface in perched groundwater to the east of the TCE storage system (MW-18) found the following maximum concentrations of VOCs: 7,700 ppb of total 1,2-DCE, 7,700 ppb of cis-1,2-DCE, and 50,000 ppb of TCE.

5. Analyses performed on groundwater samples obtained in 1991, 1997, and 1998 from monitoring wells screened at 40 to 45-feet below ground surface in deep groundwater to the east of the TCE storage system (MW-19 and MW-20) found the following maximum concentrations of VOCs: 870 ppb of total 1,2-DCE, 870 ppb of cis-1,2-DCE, 1,600 ppb of TCE, and 44 ppb of VC. These contaminant concentrations significantly exceed (by 12 to 320 times) the Maximum Contaminant Levels (MCL) established for groundwater in order to protect human health (i.e.,

70 ppb for cis-1,2-DCE, 5 ppb for TCE, and 2 ppb for VC).

6. The vertical and horizontal extent of contaminated groundwater in the vicinity of the TCE storage system, as defined by the data above is at least down to the top of the Dundee Limestone aquifer and extends over at least a 4-acre area.

7. Significant TCE concentrations in soil sampled in the minimum 4-acre contaminated area are provided in the following table. The degradation products of TCE (i.e., 1,2-DCE and VC) are also present in the soil. The maximum concentration for 1,2-DCE is 67 mg/kg (ppm) and is 1.6 mg/kg (ppm) for VC. Concentrations of TCE and VC in soil exceed U.S. EPA preliminary remediation goals developed to protect industrial workers from unacceptable exposure to contaminated soil through combined inhalation and ingestion pathways.

Boring/Trench Number	Sample Date	Sample Depth	TCE in mg/kg (ppm)
B-17	5/5/92	11.5'-14'	1,200
B-19	5/6/92	4'-6.5'	360
B-110	4/17/97	4'	910
B-112	4/21/97	1'	580
B-113	4/18/97	5'	450
B-116	4/22/97	8'	3,100
B-117	4/16/97	5'	360
B-119	4/16/97	5'	430
TP-06	6/28/94	4'-5'	320
TP-12	8/16/94	8'-10'	290
TP-13	8/16/94	14'-15'	730
TP-14B	8/17/94	14'-15'	270

X. The hazardous wastes identified in paragraph X include vinyl chloride which is a known human carcinogen (Group A cancer group) and trichloroethylene which is a probable human carcinogen (Group B cancer group). These hazardous wastes may pose a threat to human health and the environment.

Y. Releases of hazardous wastes from the Facility have migrated to soil and have migrated into the local aquifer. The Maumee River is located approximately 2000-feet west of he Facility. The Village of Antwerp community water supply system is located approximately one-mile west of the

Facility. The Village of Antwerp uses groundwater as its water source and serves 1,700 people.

Z. On May 2, 2000, OEPA proposed a Directors Final Findings and Orders (DFFO) to Respondent to address contamination at the Facility from the TCE storage system. The DFFO required submission of an amended closure plan and site-wide corrective action.

AA. On May 16, 2000, Respondent's counsel replied that the site was being cleaned up under the Voluntary Action Program (VAP).

BB. OEPA did not make a final determination that Respondent was or was not eligible to participate in Ohio's VAP.

CC. On June 28, 2002, OEPA sent Respondent's counsel the Director's Final Findings and Orders (DFFO) for Respondent's consideration. The DFFO provided for performance-based (streamlined) corrective action and required submission of an amended closure plan for the TCE storage system.

DD. On July 16, 2002, Respondent's counsel replied to the DFFO and expressed disagreement with OEPA's position that all of the site must be placed into corrective action.

EE. On August 1, 2002, OEPA referred Respondent's Facility to U.S. EPA for enforcement of corrective action requirements.

VI. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above and after consideration of the Administrative Record, the Chief of the Enforcement and Compliance Assurance Branch, Waste, Pesticides and Toxics Division, Region 5, U.S. EPA has made the following conclusions of law and determinations:

A. Respondent is a "person" within the meaning of Section 1004(15) of RCRA, 42 U.S.C. §6903(15);

B. Respondent's facility is a "facility" within the meaning of §3005(e) of RCRA, 42 U.S.C. §6925(e), and §3008(h) of RCRA, 42 U.S.C. §6928(h).

C. Pursuant to §3010 of RCRA, 42 U.S.C. §6930, Respondent notified U.S. EPA of its hazardous waste activity.

D. Respondent's hazardous waste activity constituted "treatment, storage, or disposal" of hazardous waste within the meaning of RCRA.

E. Certain wastes and constituents found at the Facility are hazardous wastes and/or hazardous constituents pursuant to §§1004(5) and 3001 of RCRA, 42 U.S.C. §§6903(5) and 6921, 40 C.F.R. 260.10, and 40 C.F.R. Part 261 and Part 264.

F. Pursuant to §3005 of RCRA, 42 U.S.C. §6925, Respondent was required to obtain a permit or interim status.

G. Respondent never obtained a RCRA permit for the treatment, storage or disposal of hazardous waste.

H. Pursuant to §3005 of RCRA and 40 C.F.R. 270.10(e), Respondent was required to submit its Part A permit application by November 19, 1980. Respondent submitted its Part A permit application on November 21, 1980. Respondent did not submit a timely Part A permit application.

I. Respondent is an owner or operator of a facility required to have a permit under §3005 of RCRA that should be or should have been operating under interim status subject to §3005(e) of RCRA, 42 U.S.C. §6925(e).

J. There is or has been a release of hazardous wastes or hazardous constituents into the environment from the Facility within the meaning of §3008(h) of RCRA, 42 U.S.C. §6928(h).

K. Respondent is liable for corrective action pursuant to §3008(h) of RCRA.

L. The actions required by this Order are necessary to protect human health and/or the environment.

VII. PROJECT COORDINATOR

A. Within fifteen (15) days of the effective date of this Order, U.S. EPA and Respondent shall each designate a Project Coordinator. Respondent shall notify U.S. EPA in writing of the Project Coordinator it has selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Order and for designating a person to act in his or her absence. The U.S. EPA Project Coordinator will be U.S. EPA's designated representative for the Facility. To the maximum extent practicable, all communications between Respondent and U.S. EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to this Order shall be directed through the Project Coordinators.

B. Respondent shall provide at least fourteen (14) days written notice prior to changing a Project Coordinator.

C. The absence of the U.S. EPA Project Coordinator from the Facility shall not be cause for the stoppage of work.

VIII. WORK TO BE PERFORMED

A. Pursuant to §3008(h) of RCRA, Respondent agrees to and is hereby ordered to perform the acts specified in this section, in the manner and by the dates specified herein. All work and/or submittals required by this Order are

subject to U.S. EPA approval in accordance with Section IX. Agency Approvals/Proposed Contractors. All work undertaken pursuant to this Order shall be performed in a manner consistent with, at a minimum: the attached Scopes of Work; all U.S. EPA-approved Interim Measures (IM) Workplan and Report, RCRA Facility Investigation (RFI) Workplan and Report, Corrective Measures Study (CMS) Workplan and Report, Corrective Measures Implementation (CMI) Conceptual Design, Plans and Reports, and all other Workplans; RCRA and other applicable Federal laws and their implementing regulations; and applicable U.S. EPA guidance documents. Guidance may include, but is not limited to, documents listed in Attachment VI.

B. **Interim Measures**

1. Within 30 days of the effective date of this Order, Respondent shall submit to U.S. EPA an Interim Measures (IM) Workplan for implementation of the IMs specifically required by this Order as provided for in Attachment I. The IM Workplan shall be developed in a manner consistent with the IM Scope of Work contained in Attachment I. These IMs are to be used to achieve the initial goal of stabilization.

2. In the event Respondent identifies an immediate or potential threat to human health and/or the environment, Respondent shall notify the U.S. EPA Project Coordinator orally within 48 hours of discovery, and notify U.S. EPA in writing within seven days of such discovery summarizing the immediacy and magnitude of the potential threat(s) to human health and/or the environment. In the event Respondent discovers new releases of hazardous wastes and/or hazardous constituents, or discovers new SWMUs, HWMUs, or AOCs not previously identified, Respondent shall notify U.S. EPA within 14 days of such discovery summarizing the immediacy and magnitude of the potential threat(s) to human health and/or the environment.

3. If U.S. EPA identifies an immediate or potential threat to human health and/or the environment; discovers new releases of hazardous wastes; or discovers new SWMUs, HWMUs, or AOCs not previously identified, U.S. EPA will notify Respondent in writing.

4. Within 30 days of receiving U.S. EPA's written notification or request, Respondent shall submit to the

U.S. EPA an IM Workplan in accordance with the IM Scope of Work contained in Attachment I.

5. If U.S. EPA determines that immediate action is required to address an immediate or potential threat to human health and/or the environment, U.S. EPA's Project Coordinator may orally require Respondent to act prior to:

   a. Respondent's receipt of U.S. EPA's written notification;

   b. U.S. EPA's receipt of the IM Workplan; or

   c. U.S. EPA's approval of the IM Workplan.

C. **RCRA Facility Investigation**

1. Within 60 days of the effective date of this Order, Respondent shall submit to U.S. EPA a Description of Current Conditions (DOCC) Report. The DOCC Report shall be developed in a manner consistent with the RFI Scope of Work in Attachment II and shall include a description of work and investigations performed to-date by Respondent. The DOCC Report is for U.S. EPA's review and comment and not subject to Section IX: Agency Approvals/Proposed Contractor.

2. Respondent shall submit to U.S. EPA a Workplan for a RCRA Facility Investigation (RFI) within 60 days of receipt of U.S. EPA's comments on the DOCC Report. The RFI Workplan shall be developed in a manner consistent with the RFI Scope of Work contained in Attachment II.

3. The RFI Workplan shall detail the methodology Respondent shall use to:

   a. Gather additional data as needed to make decisions on stabilization during the early phase of the RFI;

   b. Identify and characterize all known and suspected sources of contamination;

   c. Define the degree and extent of contamination necessary to conduct an assessment of the risk to human health and the environment from the contaminants at the Facility;

   d. Characterize the potential pathways of contaminant migration;

   e. Identify actual or potential human and/or ecological receptors; and

f. Gather data necessary to support the development of alternatives from which a corrective measure will be selected by U.S. EPA.

4. Respondent shall include a specific schedule for implementation of all activities in the RFI Workplan.

5. Respondent shall submit a RFI Report to U.S. EPA for approval in accordance with the U.S. EPA-approved RFI Workplan schedule.

D. **Corrective Measures Study**

1. Respondent shall submit to U.S. EPA a Corrective Measures Study (CMS) Workplan within 60 days of U.S. EPA approval of the RFI Report. The CMS Workplan shall be developed in a manner consistent with the CMS Scope of Work contained in Attachment III.

2. The CMS Workplan shall provide, at a minimum, the following information: a description of the general approach to the CMS and potential remedies; a statement of the overall objectives of the study; the specific plans for evaluating remedies to ensure compliance with Media Cleanup Standards[1] (MCS) at the point(s) of

[1] Media Cleanup Standards are described in Attachment II: RFI Scope of Work, and Attachment III: CMS Scope of Work.

compliance; the proposed format for the presentation of information; and a justification for each corrective measure that Respondent proposes to study to achieve the MCS.

3. The CMS shall detail the methodology for developing and evaluating potential corrective measures necessary to remedy any contamination at or from the Facility. The CMS shall identify the potential corrective measures, including any innovative technologies, that may be used for the containment, treatment and/or disposal of contamination.

4. Respondent shall submit to U.S. EPA a Corrective Measures Study (CMS) Report in accordance with the U.S. EPA-approved CMS Workplan schedule. The CMS Report shall be developed in a manner consistent with the CMS Scope of Work contained in Attachment III.

5. U.S. EPA will provide the public with an opportunity to review and comment on the final draft of the Corrective Measures Study Report and a description of U.S. EPA's proposed corrective measure(s), including U.S. EPA's justification for proposing such corrective measure(s) (Statement of Basis) and an opportunity for a public

meeting regarding U.S. EPA's proposed cleanup standards and remedy for the Facility.

6. Following the public comment period, U.S. EPA may approve the CMS Report and select a final corrective measure(s) or require Respondent to revise the CMS Report and/or perform additional corrective measures studies.

7. U.S. EPA will notify Respondent of the final corrective measure(s) selected by U.S. EPA in the Final Decision and Response to Comments. The notification will include U.S. EPA's reasons for selecting the corrective measure(s). Upon U.S. EPA's selection of any necessary corrective measure(s), Respondent shall conduct a Corrective Measures Implementation (CMI) in a manner consistent with the CMI Scope of Work contained in Attachment IV.

E. **Corrective Measures Implementation**

1. Respondent shall submit to U.S. EPA a CMI Workplan within sixty (60) days of U.S. EPA's decision on the corrective measure(s).

2. The CMI Workplan shall be designed to facilitate the design, construction, operation, maintenance, and

monitoring of corrective measures at the Facility in a manner consistent with the CMI Scope of Work contained in Attachment IV.

3. Respondent shall submit CMI reports to U.S. EPA in accordance with the U.S. EPA-approved CMI Workplan schedule.

F. **Additional Work**

1. U.S. EPA may determine or Respondent may propose that certain tasks, including investigatory work, engineering evaluation, or procedure/methodology modifications, are necessary in addition to or in lieu of the tasks included in any U.S. EPA-approved workplan, when such additional work is necessary to meet the purposes set forth in Section III. Statement of Purpose.

2. U.S. EPA will notify Respondent in writing and specify the basis for its determination that additional work is necessary.

3. Within 30 days after receipt of such determination, Respondent shall have the opportunity to meet or confer with U.S. EPA to discuss the additional work.

4. If required by U.S. EPA, Respondent shall submit for U.S. EPA approval a workplan for the additional work. U.S. EPA shall specify the contents of such workplan. Such workplan shall be submitted within 30 days of receipt of U.S. EPA's determination that additional work is necessary or according to an alternative schedule established by U.S. EPA if a meeting or conference is held as set forth in paragraph F.3.

5. Upon approval of a workplan by U.S. EPA, Respondent shall implement it in accordance with the schedule and provisions contained therein.

IX. AGENCY APPROVALS/PROPOSED CONTRACTOR

A. Agency Approvals

1. U.S. EPA will provide Respondent with its written approval, approval with conditions and/or modifications, or disapproval with comments for any workplan, report (except progress reports or the DOCC Report), specification, or schedule submitted pursuant to or required by this Order. U.S. EPA will provide a statement of reasons for any approval with conditions and/or modifications or disapproval with comments.

2. Within 45 days of receipt of U.S. EPA's disapproval with comments, Respondent shall revise and submit an

approvable workplan, report, specification, or schedule in accordance with U.S. EPA's written comments. Revised submittals are subject to U.S. EPA approval, approval with conditions and/or modifications, or disapproval with comments.

3. Any such disapproval with comments of a revised workplan, report, specification, or schedule shall be deemed a violation of this Order.

4. Upon receipt of U.S. EPA's written approval or approval with conditions and/or modifications, Respondent shall commence work and implement any approved workplan in accordance with the schedule and provisions contained therein.

5. Any U.S. EPA-approved report, workplan, specification, or schedule shall be deemed incorporated into this Order. Prior to this written approval, no workplan, report, specification, or schedule shall be construed as approved and final. Oral advice, suggestions, or comments given by U.S. EPA representatives will not constitute an official approval, nor shall any oral approval or oral assurance of approval be considered as binding, except for such oral authorization set forth in Section VIII, paragraph B.5.

B. **Proposed Contractor**

1. All work performed pursuant to this Order shall be under the direction and supervision of a professional engineer, hydrologist, geologist, or environmental scientist with expertise in hazardous waste or contaminated soil and groundwater site cleanup. Respondent's contractor shall have the technical expertise sufficient to adequately perform all aspects of the work for which it is responsible.

2. Respondent shall notify U.S. EPA in writing of the name, title, and qualifications of the principal engineer, hydrologist, geologist, or environmental scientist to be used in carrying out the terms of this Order within 14 days of the effective date of this Order.

3. Respondent shall identify whether any contractor is on the List of Parties Excluded for Federal Procurement or Non-Procurement Programs. U.S. EPA reserves the right to disapprove, with cause, Respondent's contractor at any time during the period that the Order is effective. For purposes of this paragraph, cause includes but is not limited to, contractors on the List of Parties

Excluded for Federal Procurement or Non-procurement Programs.

4. If U.S. EPA disapproves a contractor, with cause as defined above, then Respondent must, within 30 days of receipt from U.S. EPA of written notice of disapproval, notify U.S. EPA, in writing, of the name, title and qualifications of any replacement.

X. QUALITY ASSURANCE

A. Respondent shall follow U.S. EPA guidance for sampling and analysis, including but not limited to, the Region 5 RCRA Quality Assurance Project Plan Policy contained in Attachment V. Workplans shall contain quality assurance/quality control (QA/QC) and chain of custody procedures for all sampling, monitoring, and analytical activities. Any deviations from the QA/QC and chain of custody procedures in approved workplans must be approved by U.S. EPA prior to implementation; must be documented, including reasons for the deviations; and must be reported in the applicable report.

B. The name(s), addresses, and telephone numbers of the analytical laboratories Respondent proposes to use must be specified in the applicable workplan(s).

C. All workplans required under this Order shall include data quality objectives (DQO) for each data collection activity to ensure that data of known and appropriate quality are obtained and that data are sufficient to support their intended use(s).

D. Respondent shall monitor to ensure that high quality data is obtained by its consultant or contract laboratories. Respondent shall ensure that laboratories it uses perform analyses according to the latest approved edition of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846 Third Edition inclusive of Final updates I, II, IIa, IIb, III, and any subsequent updates), or other methods deemed satisfactory to U.S. EPA. If methods other than U.S. EPA methods are to be used, Respondent shall specify all such protocols in the applicable workplan (e.g., RFI).

E. U.S. EPA may reject any data that does not meet the requirements of the approved workplan or U.S. EPA analytical methods and may require re-sampling and additional analyses. Historical validated data that Respondent demonstrates is of sufficient quality to meet the DQOs will be considered acceptable data for the purposes of this Order.

F. Respondent shall ensure that laboratories it uses for analyses participate in a QA/QC program equivalent to that which is followed by U.S. EPA.

G. U.S. EPA may conduct a performance and QA/QC audit of the laboratories chosen by Respondent before, during, or after sample analyses. Upon request by U.S. EPA, Respondent shall have its laboratory analyze performance evaluation samples provided by U.S. EPA to demonstrate laboratory performance. If the audit reveals significant deficiencies, as determined by U.S. EPA, in a laboratory's performance or QA/QC, re-sampling and additional analyses may be required.

XI. SAMPLING AND DATA/DOCUMENT AVAILABILITY

A. Respondent shall submit to U.S. EPA upon written request, the results of all sampling and/or tests or other data generated by divisions, agents, or contractors pursuant to this Order.

B. Notwithstanding any other provisions of this Order, the United States retains all of its information gathering and inspection authorities and rights, including the right to bring enforcement actions related thereto, under RCRA, CERCLA, and any other applicable statutes or regulations.

C. Respondent shall notify U.S. EPA in writing at least 14 days prior to beginning each separate phase of field work approved under any workplan required by this Order.

D. If Respondent believes it must commence emergency field activities without delay, Respondent may seek emergency telephone authorization from the U.S. EPA Project Coordinator or, if the U.S. EPA Project Coordinator is unavailable, their Section Chief, to commence such activities immediately.

E. At the request of U.S. EPA, Respondent shall provide or allow U.S. EPA or its authorized representative to take split or duplicate samples of all samples collected by Respondent pursuant to this Order. Similarly, at the request of Respondent, U.S. EPA shall allow Respondent or its authorized representative(s) to take split or duplicate samples of all samples collected by U.S. EPA under this Order.

F. Respondent may assert a business confidentiality claim covering all or part of any information submitted to U.S. EPA pursuant to this Order. Any assertion of confidentiality must be accompanied by information that satisfies the items listed in 40 C.F.R. §2.204(e)(4) or such claim shall be deemed waived. Information determined by

U.S. EPA to be confidential shall be disclosed only to the extent permitted by 40 C.F.R. Part 2.

G. If no such confidentiality claim accompanies the information when it is submitted to U.S. EPA, the information may be made available to the public by U.S. EPA without further notice to Respondent.

H. Physical or analytical data shall not be deemed confidential.

XII. ACCESS

A. U.S. EPA, its contractors, employees, and/or any duly designated U.S. EPA representatives are authorized to enter and freely move about the Facility pursuant to this Order for the purposes of, inter alia:

1. Interviewing Facility personnel and contractors;

2. Inspecting records, operating logs, and contracts related to the Facility;

3. Reviewing the progress of Respondent in carrying out the terms of this Order;

4. Conducting such tests, sampling, or monitoring as U.S. EPA deems necessary;

5. Using a camera, sound recording, or other documentary type equipment; and

6. Verifying the reports and data submitted to U.S. EPA by Respondent.

B. The Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Order.

C. To the extent that work being performed pursuant to this Order must be done beyond the Facility property boundary, Respondent shall use its best efforts to obtain access agreements necessary to complete work required by this Order from the present owner(s) of such property within 30 days of the date that the need for access becomes known to Respondent. Best efforts as used in this paragraph shall include, at a minimum, a certified letter from Respondent to the present owner(s) of such property requesting access agreement(s) to permit Respondent and its authorized representatives access to such property, and if necessary the payment of reasonable compensation in consideration of granting access. Any such access agreement shall provide for access by U.S. EPA and its representatives. Respondent

shall insure that U.S. EPA's Project Coordinator has a copy of any access agreement(s).

D. In the event that agreements for access are not obtained within 30 days of approval of any workplan for which access is required, or of the date that the need for access became known to Respondent, Respondent shall notify U.S. EPA in writing within 14 days thereafter of both the efforts undertaken to obtain access and the failure to obtain access agreements.

E. U.S. EPA may, at its discretion, assist Respondent in obtaining access. In the event U.S. EPA obtains access, Respondent shall undertake U.S. EPA-approved work on such property.

F. As provided in Section XXI. Indemnification of the United States Government, the United States and the U.S. EPA do not assume any liability for any claims or causes of action arising from activities of Respondent or Respondent's representatives on property within or property beyond the Facility boundary.

G. Nothing in this section limits or otherwise affects U.S. EPA's right of access and entry pursuant to applicable law, including RCRA and CERCLA.

H. Nothing in this section shall be construed to limit or otherwise affect Respondent's liability and obligation to perform corrective action including corrective action beyond the Facility boundary, notwithstanding the lack of access.

XIII. RECORD PRESERVATION

A. Respondent shall retain, during the pendency of this Order and for a minimum of 6 years after its termination, all data, records, and documents now in its possession or control or which come into its possession or control which relate to this Order or to hazardous waste management and/or disposal at the Facility. Respondent shall notify U.S. EPA in writing 90 days prior to the destruction of any such records, and shall provide U.S. EPA with the opportunity to take possession of any such records. Such written notification shall reference the effective date, caption, and docket number of this Order and shall be addressed to:

Project Coordinator for Dana Corporation,
Boston Weatherhead Division
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division (DE-9J)
U.S. EPA, Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

B. Respondent shall within 30 days of retaining or employing any agent, or contractor for the purpose of carrying out the terms of this Order, enter into an agreement with any such

agents or contractors whereby such agents or contractors will be required to provide Respondent a copy of all documents produced pursuant to this Order.

C. All documents pertaining to this Order shall be stored by the Respondent in a centralized location at the Facility to afford ease of access by U.S. EPA or its representatives.

XIV. REPORTING AND DOCUMENT CERTIFICATION

A. Beginning with the first full month following the effective date of this Order, and throughout the period that this Order is effective, Respondent shall provide U.S. EPA with monthly progress reports. Progress reports are due by the tenth day of each month (reports previous month's progress). The progress reports shall conform to requirements in the relevant scope of work contained in the Attachments. U.S. EPA may adjust the frequency of progress reports to be consistent with site-specific activities.

B. Three copies of all documents submitted pursuant to this Order shall be in writing and shall be hand-delivered, sent by certified mail, return receipt requested, or by overnight express mail to the U.S. EPA Project Coordinator designated pursuant to Section VII of this Order.

C. One copy of all documents submitted pursuant to this Order shall be in writing and shall be hand-delivered, sent by certified mail, return receipt requested, or by overnight express mail to: Ohio Environmental Protection Agency, Northwest District Office, 347 North Dunbridge Road, Bowling Green, Ohio 43402.

D. Any report or other document submitted by Respondent pursuant to this Order which makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Order shall be certified by a responsible corporate officer of Respondent or a duly authorized representative. A responsible corporate officer means: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation.

E. The certification required by paragraph D above, shall be in the following form:

"I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to evaluate the information submitted. I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified

personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: _____
Name: _____
Title: _____
Date: _____

XV. DELAY IN PERFORMANCE/STIPULATED PENALTIES

A. Unless there has been a written modification by U.S. EPA of a compliance date, an approved workplan condition, or excusable delay as defined in Section XVII: Force Majeure and Excusable Delay, if Respondent fails to comply with any term or condition set forth in this Order in the time or manner specified herein, Respondent shall pay stipulated penalties as set forth below upon written demand from U.S. EPA:

1. For failure to commence, perform, and/or complete field work in a manner acceptable to U.S. EPA or at the time required pursuant to this Order: $3,500 per day for the first seven days of such violation, $6,500 per day for the eighth through twenty-first day of such violation, and $10,000 per day for each day of such violation thereafter;

2. For failure to complete and submit any workplans or reports (other than progress reports) in a manner acceptable to U.S. EPA or at the time required pursuant to this Order, or for failure to notify U.S. EPA of immediate or potential threats to human health and/or the environment, new releases of hazardous waste and/or new solid waste management units not previously identified, as required by this Order: $3,500 per day for the first seven days of such violation, $6,500 per day for the eighth through twenty-first day of such violation, and $10,000 per day for each day of such violation thereafter;

3. For failure to complete and submit other written submittals not included in paragraph A.2. of this section in a manner acceptable to U.S. EPA or at the time required pursuant to this Order: $1,750 per day for the first seven days of such violation, $3,250 per day for the eighth through twenty-first day of such violation, and $5,000 per day for each day of such violation thereafter;

4. For failure to comply with any other provisions of this Order in a manner acceptable to U.S. EPA: $1,750 per day for the first seven days of such violation, $3,250

per day for the eighth through twenty-first day of such violation, and $5,000 per day for each day of such violation thereafter.

B. Penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the day of correction of the violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Order. Penalties shall continue to accrue regardless of whether U.S. EPA has notified the Respondent of a violation.

C. All penalties owed to the United States under this section shall be due and payable within thirty (30) days of the Respondent's receipt from U.S. EPA of a written demand for payment of the penalties. Such a written demand will describe the violation and will indicate the amount of penalties due.

D. Interest shall begin to accrue on any unpaid stipulated penalty balance beginning on the thirty-first (31) day after Respondent's receipt of U.S. EPA's demand letter. Interest shall accrue at the Current Value of Funds Rate established by the Secretary of the Treasury. Pursuant to 31 U.S.C. §3717, an additional penalty of 6% per annum on any unpaid

principal shall be assessed for any stipulated penalty payment which is overdue for 90 or more days.

E. All penalties shall be made payable by certified or cashier's check to the United States of America and shall be remitted to:

U.S. Department of Treasury
Attention: U.S. EPA, Region 5,
Office of the Comptroller
P.O. Box 70753
Pittsburgh, PA 15251

F. All such checks shall reference the name of the Facility, the Respondent's name and address, and the U.S. EPA docket number of this action. Copies of all such checks and letters forwarding the checks shall be sent simultaneously to the U.S. EPA Project Coordinator.

G. Respondent may dispute U.S. EPA's assessment of stipulated penalties by invoking the dispute resolution procedures under Section XVI: Dispute Resolution. The stipulated penalties in dispute shall continue to accrue, but need not be paid, during the dispute resolution period. Respondent shall pay stipulated penalties and interest, if any, in accordance with the dispute resolution decision and/or agreement. Respondent shall submit such payment to U.S. EPA

within seven (7) days of receipt of such resolution in accordance with paragraph E of this section.

H. Neither the invocation of dispute resolution nor the payment of penalties shall alter in any way Respondent's obligation to comply with the terms and conditions of this Order.

I. The stipulated penalties set forth in this section do not preclude U.S. EPA from pursuing any other remedies or sanctions which may be available to U.S. EPA by reason of Respondent's failure to comply with any of the terms and conditions of this Order.

J. No payments under this section shall be tax deductible for Federal tax purposes.

XVI. DISPUTE RESOLUTION

A. The parties shall use their best efforts to resolve informally and in good faith, all disputes or differences of opinion. The parties agree that the procedures contained in this section are the sole procedures for resolving disputes arising under this Order. If Respondent fails to follow any of the requirements contained in this section then it shall have waived its right to further consideration of the disputed issue.

B. If Respondent disagrees, in whole or in part, with any written decision (Initial Written Decision) by U.S. EPA pursuant to this Order, Respondent's Project Coordinator shall notify the U.S. EPA's Project Coordinator of the dispute. The Project Coordinators shall attempt to resolve the dispute informally.

C. If the Project Coordinators cannot resolve the dispute informally, Respondent may pursue the matter formally by placing its objections in writing. Respondent's written objections must be directed to the U.S. EPA's Project Coordinator and copied to U.S. EPA's Regional Counsel. This written notice must be mailed to such person(s) within fourteen (14) days of Respondent's receipt of the Initial Written Decision. Respondent's written objection must set forth the specific points of the dispute, the position Respondent claims should be adopted as consistent with the requirements of this Order, the basis for Respondent's position, and any matters which it considers necessary for U.S. EPA's determination.

D. U.S. EPA and Respondent shall have fourteen (14) days from U.S. EPA's receipt of Respondent's written objections to attempt to resolve the dispute through formal negotiations. This time period may be extended by U.S. EPA for good cause.

During such time period, (Negotiation Period) Respondent may request a conference with Chief of the Enforcement Compliance Assurance Branch to discuss the dispute and Respondent's objections. U.S. EPA agrees to confer in person or by telephone to resolve any such disagreement with the Respondent as long as Respondent's request for a conference will not extend the Negotiation Period.

E. If the parties are unable to reach an agreement within the Negotiation Period, Respondent has the right to submit any additional written arguments and evidence, not previously submitted, to the Director of the Waste, Pesticides and Toxics Division. Based on the record, U.S. EPA shall provide to Respondent its written decision on the dispute (U.S. EPA Dispute Decision) which shall include a response to Respondent's arguments and evidence. Such decision shall be incorporated into and become an enforceable element of this Order, but will not be considered final Agency action for purposes of judicial review.

F. Except as provided in Section XV: Delay in Performance/Stipulated Penalties, the existence of a dispute as defined in this section and U.S. EPA's consideration of matters placed into dispute shall not excuse, toll, or suspend any compliance obligation or deadline required

pursuant to this Order during the pendency of the dispute resolution process.

G. Any agreement to resolve the dispute reached by the parties pursuant to this section shall be in writing and shall be signed by both parties. The written agreement shall specify which provisions of the U.S. EPA Dispute Decision are superseded and/or modified. If the written agreement is not signed by Respondent within seven (7) days after the resolution of the dispute it shall be null and void and the U.S. EPA Dispute Decision shall be incorporated into and become an enforceable element of this Order, but will not be considered final Agency action for purposes of judicial review.

XVII. FORCE MAJEURE AND EXCUSABLE DELAY

A. Force majeure, for purposes of this Order, is defined as any event arising from causes not foreseen and beyond the control of Respondent or any person or entity controlled by Respondent, including but not limited to Respondent's contractors, that delays or prevents the timely performance of any obligation under this Order despite Respondent's best efforts to fulfill such obligation. The requirement that Respondent exercise "best efforts to fulfill such obligation" shall include, but not be limited to, best

efforts to anticipate any potential force majeure event and address it before, during, and after its occurrence, such that any delay or prevention of performance is minimized to the greatest extent possible.

B. Force majeure does not include increased costs of work to be performed under this Order, financial inability to complete the work, plant shutdown, work stoppages or other labor disputes.

C. If any event occurs or has occurred that may delay the performance of an obligation under this Order, whether or not caused by a force majeure event, Respondent shall contact by telephone and communicate orally with U.S. EPA's Project Coordinator, or in their absence, their supervisor, within 48 hours of when Respondent first knew or should have known that the event might cause a delay. If Respondent wishes to claim a force majeure event, then within five (5) days thereafter, Respondent shall provide to U.S. EPA in writing:

1. The anticipated duration of the delay;

2. All actions taken or to be taken to prevent or minimize the delay;

3. All other obligations affected by the event, and what measures, if any, taken or to be taken, to minimize the effect of the event on those obligations;

4. A schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay;

5. Respondent's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and

6. A statement as to whether, in the opinion of Respondent, such event may cause or contribute to endangerment to public health or the environment.

D. Respondent shall include with any notice all available documentation supporting its claim, if any, that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure for that event. Respondent shall be deemed to have notice of any circumstances of which its contractors had or should have had notice.

E. If U.S. EPA determines that the delay or anticipated delay is attributable to a force majeure event, the time for

performance of such obligation under this Order that is affected by the force majeure event will be extended by U.S. EPA for such time as U.S. EPA determines is necessary to perform such obligation. U.S. EPA will notify Respondent in writing the length of the extension, if any.

F. An extension of the time for performance of such obligation affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation, unless Respondent can demonstrate that more than one obligation was affected by the force majeure event.

G. If U.S. EPA disagrees with Respondent's assertion of a force majeure event, U.S. EPA will notify Respondent in writing and Respondent may elect to invoke the dispute resolution provision, and shall follow the time frames set forth in Section XVI: Dispute Resolution. In any such proceeding, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or the anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of this section. If

Respondent satisfies this burden, the time for performance of such obligation will be extended by U.S. EPA for such time as is necessary to complete such obligation.

XVIII. RESERVATION OF RIGHTS

A. U.S. EPA expressly reserves all rights that it may have, including the right both to disapprove of work performed by Respondent pursuant to this Order and to request that Respondent perform tasks in addition to those stated in the Scopes of Work.

B. U.S. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights, remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of this Order, including without limitation the assessment of penalties under Section 3008(h)(2) of RCRA, 42 U.S.C. §6928(h)(2). This Order shall not be construed as a covenant not to sue, release, waiver, or limitation of any rights, remedies, power and/or authorities, civil or criminal, which U.S. EPA has under RCRA, CERCLA, or any other statutory, regulatory, or common law enforcement authority of the United States.

C. Compliance by Respondent with the terms of this Order shall not relieve Respondent of its obligations to comply with

RCRA or any other applicable local, State, or Federal laws and regulations.

D. This Order shall not limit or otherwise preclude the Agency from taking additional enforcement action pursuant to Section 3008(h) of RCRA or other available legal authorities should the Agency determine that such actions are warranted and necessary to protect human health and the environment.

E. This Order is not intended to be nor shall it be construed to be a permit. This Order does not relieve Respondent of any obligation to obtain and comply with any local, State, or Federal permits.

F. U.S. EPA reserves the right to perform any portion of the work ordered herein or any additional site characterization, feasibility study, and response/corrective actions as it deems necessary to protect human health and the environment. U.S. EPA may exercise its authority under CERCLA to undertake removal actions or remedial actions at any time. In any event, U.S. EPA reserves its right to seek reimbursement from Respondent for such additional costs incurred by the United States. Notwithstanding compliance with the terms of this Order, Respondent is not released from liability, if any, for the costs of any response actions taken by U.S. EPA.

XIX. OTHER CLAIMS AND PARTIES

A. Nothing in this Order shall constitute or be construed as a release from, or an admission of any claim, cause of action, demand or defense in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of, or relating in any way to, the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, contaminants found at, taken to or taken from the Facility.

B. The Respondent waives any claims or demands for compensation or payment under §§106(b), 111, and 112 of CERCLA against the United States or the Hazardous Substance Superfund established by 26 U.S.C. §9507 for, or arising out of, any activity performed or expense incurred pursuant to this Order. Additionally, this Order does not constitute any decision on preauthorization of funds under §111(a)(2) of CERCLA.

XX. OTHER APPLICABLE LAWS

A. All actions required to be taken pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, State, and Federal laws and regulations.

B. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

XXI. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

A. Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent or its officers, employees, agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Order.

B. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of Respondent or the United States under their various contracts.

XXII. FINANCIAL RESPONSIBILITY

A. Respondent shall provide financial assurance for the implementation of Corrective Measure(s) within ninety (90) days of U.S. EPA's selection of the final Corrective Measure(s). Respondent shall establish the financial assurance from among one or more of the following:

1. A trust fund;

2. A surety bond;

3. A letter of credit;

4. Insurance; or

5. A financial test and corporate guarantee.

B. The wording and terms of the financial assurance instrument(s) shall be subject to approval by the U.S. EPA.

XXIII. MODIFICATION

A. This Order may only be modified by mutual agreement of U.S. EPA and Respondent. Any agreed modifications shall be in writing, be signed by both parties, shall have as their effective date, the date on which they are signed by U.S. EPA, and shall be incorporated into this Order.

B. Any reports, plans, specifications, schedules, and attachments required by this Order are, upon written approval by U.S. EPA, incorporated into this Order.

C. Unless there is an approved modification as provided in paragraph D of this section, any noncompliance with such U.S. EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Order and shall subject Respondent to the stipulated penalty provisions included in Section XV of this Order. In the

event of an inconsistency between the terms of this Order and any plans, specifications, schedules, attachments, or reports, the terms of this Order shall control.

D. Any request by Respondent for a compliance date modification and/or revision of an approved workplan requirement must be made in writing and be received by U.S. EPA at least 10 days prior to applicable deadline. Such requests must provide justification for any proposed compliance date modification or workplan revision. U.S. EPA has no obligation to approve such requests, but if it does so, such approval and the modification or revision must be in writing from the U.S. EPA Project Coordinator.

E. Any approved compliance date modification shall be incorporated by reference into the Order. Such a modification would not alter other due dates, unless so stated by U.S. EPA in its written approval, modification, or revision.

F. No informal advice, guidance, suggestions or comments by U.S. EPA regarding reports, plans, specifications, schedules or any other writing submitted by the Respondent will be construed as relieving Respondent of its obligation to obtain written approval, if and when required by this Order.

XXIV. SEVERABILITY

If any provision or authority of this Order or the application of this Order to any party or circumstances is held by any judicial or administrative authority to be invalid, the application of such provisions to other parties or circumstances and the remainder of the Order shall remain in force and shall not be affected thereby.

XXV. SURVIVABILITY/PERMIT INTEGRATION

A. Except as otherwise expressly provided in this section, this Order shall survive the issuance or denial of a RCRA permit for the Facility, and this Order shall continue in full force and effect after either the issuance or denial of such permit. Accordingly, Respondent shall continue to be liable for the performance of obligations under this Order notwithstanding the issuance or denial of such permit.

B. If the Respondent is issued a RCRA permit for this Facility that expressly incorporates all or a part of the requirements of this Order, or expressly states that its requirements are intended to replace some or all of the requirements of this Order, Respondent may request a modification of this Order and shall, with written U.S. EPA approval, be relieved of liability under this Order for those specific obligations.

XXVI. SUBMITTAL SUMMARY

Table 1, as follows, is a summary of the major deadlines required by this Order. To the extent that this section is inconsistent with any other section of this Order, such other section rather than this summary shall prevail.

Table 1

Submittal Summary

SECTION	ACTION	DUE DATE
IV.D	Notify U.S. EPA of transfer of ownership	30 days prior to such scheduled transfer
VII.A	Designate a Project Coordinator and notify U.S. EPA in writing	Within 15 days of the effective date of the Order
VIII.B.1 and B.4	Submit IM Workplan	Within 30 days of the effective date of the Order and if necessary, within 30 days of receipt of U.S. EPA's request/ determination or upon written request
VIII.C.1	Submit DOCC Report	Within 60 days of the effective date of this Order
VIII.C.2	Submit RFI Workplan	Within 60 days of receipt of U.S. EPA comments on the DOCC Report
VIII.C.5	Submit RFI Report	As scheduled in approved RFI Workplan
VIII.D.1	Submit CMS Workplan	Within 60 days of receipt of U.S. EPA approval of RFI Report
VIII.D.4	Submit CMS Report	As scheduled in approved CMS Workplan

Table 1

Submittal Summary

SECTION	ACTION	DUE DATE
VIII.E.1	Submit CMI Workplan	Within 60 days of notification of U.S. EPA's selection of corrective measure(s)
VIII.E.3	Submit CMI Report	As scheduled in approved CMI Workplan
VIII.F.4	Submit workplan for additional work	If necessary, within 30 days of receipt of U.S. EPA determination
IX.A.2	Revise and Submit document disapproved with comments	Within 45 days of receipt of U.S. EPA's document disapproval or disapproval with comments
IX.B.2	Notify U.S. EPA in writing of proposed contractor(s)	Within 14 days of the effective date of the Order
XI.C	Notify U.S. EPA prior to beginning each separate phase of field work	14 days prior to beginning field activities
XII.C	Obtain access agreements	If necessary, within 30 days of approval of workplan where access is required
XIII.A	Notify U.S. EPA prior to destruction of documents or records that relate to this Order	90 days prior to destruction
XIV.A	Submit monthly progress reports	On the tenth day of each month

XXVII. TERMINATION AND SATISFACTION

A. The provisions of this Order shall be deemed satisfied upon Respondent's and U.S. EPA's execution of an "Acknowledgment of Termination and Agreement to Record Preservation and Reservation of Rights" (Acknowledgment). U.S. EPA will prepare the Acknowledgment for Respondent's signature. The Acknowledgment will specify that Respondent has demonstrated to the satisfaction of U.S. EPA that the terms of this Order, including any additional tasks determined by U.S. EPA to be required pursuant to this Order, have been satisfactorily completed. Respondent's execution of the Acknowledgment will affirm Respondent's continuing obligation:

1. To preserve all records as required in Section XIII. Record Preservation; and

2. To recognize U.S. EPA's reservation of rights as required in Section XVIII. Reservation of Rights, after all other requirements of the Order are satisfied.

B. Acknowledgment required by this section shall be as provided in Attachment VII.

XXVIII. EFFECTIVE DATE

The effective date of this Order shall be the date on which it is signed by U.S. EPA. Because the Order was entered with the consent of both parties, Respondent waives its right to request a public hearing pursuant to Section 3008(b) of RCRA, 42 U.S.C. §6928(b).

IT IS SO AGREED:

BY: _____ 4/25/03
(Respondent) Date
Vice President-Treasurer
Dana Corporation

IT BEING SO AGREED, IT IS HEREBY ORDERED THIS 1st DAY OF May, 2003

BY: _____ May 1, 2003
Joseph M. Boyle, Chief Date
Enforcement and Compliance Assurance Branch
Waste, Pesticides and Toxics Division
U.S. EPA, Region 5

U.S. EPA I.D. No. OHD 005 039 730

RCRA-05- 2003 - 0007

RCRA-05- 2003 - 0009

ATTACHMENT I

INTERIM MEASURES SCOPE OF WORK

ATTACHMENT I

Scope Of Work For Interim Measures

Purpose

Interim Measures (IM) are actions to control and/or eliminate releases hazardous wastes and/or hazardous constituents at or from the Facility prior to the implementation of final corrective measure(s). Interim measures must be used whenever possible to achieve the goal of stabilization. The Respondent must furnish all personnel, materials and services necessary for, or incidental to, performing the IMs.

Scope

Interim Measures are one possible step in the corrective action program. Interim Measures consist of the following components, which for clarity have been designated as sections.

Section I: Interim Measure Tasks

A. Task I - Contaminant Source Control/Removal

B. Task II - Groundwater Plume Characterization and Containment

C. Task III - Water Use Survey/Sampling

Section II: Interim Measures Workplan

A. Interim Measures Objectives

B. Health and Safety Plan

C. Public Involvement Plan

D. Quality Assurance Project Plan

E. Data Management and Reporting Plan

Section III: Interim Measures Design Program

A. Design Plans and Specifications

B. Operations and Maintenance Plan

C. Project Schedule

Section I: Interim Measure Tasks

Interim Measures (IM) are deemed necessary in order to control the documented releases of hazardous wastes and/or hazardous constituents at the Facility and to determine the water supplies and their quality in the vicinity of the Facility. Respondent must perform the following three tasks:

A. Task I - Contaminant Source Control/Removal

Releases of hazardous wastes at the Facility to environmental media have been documented in Section V of the Order. Residual contamination in the area of the former TCE storage tank area is an ongoing source of contaminants migrating to groundwater. Respondent must prepare an IM Workplan to control and/or remove this contaminant source.

The IM Workplan must be submitted to U.S. EPA for review and approval within 30 days of the effective date of this Order. At a minimum, the IM Workplan must meet the requirements of Section II below, including the necessary criteria for determining the ongoing source areas that are contributing to groundwater and surface water contamination. The workplan must include a schedule for field investigations, the proposed source control and/or removal actions, and the requisite implementation designs as required in Section III below.

Respondent must ensure that the performance of the contaminant source control/removal task will be capable of meeting all applicable risk-based standards for the environmental media of concern, taking into consideration current and future use land scenarios. For groundwater, Respondent must demonstrate that the contaminant source control/removal task, together with the implementation of corrective measures, will result within a reasonable period of time, with the attainment of applicable maximum contaminant levels (MCLs) for groundwater at and in the vicinity of the Facility.

Respondent must store, treat or dispose of contaminated soil and water generated during contaminant source control/removal in a manner that complies with the substantive standards of RCRA. Any discharge to navigable waters or disposal of contaminated water must comply with all relevant local, State, and Federal requirements.

B. Task II - Groundwater Plume Characterization and Containment

U.S. EPA, Region 5 policy requires groundwater to meet MCLs as the target cleanup level unless cumulative risk or technical impracticability dictate otherwise. EPA's goal is to return useable ground waters to their maximum beneficial use within a reasonable timeframe. In conjunction with Task I above, within 30 days of the effective date of this Order, Respondent must submit an IM Workplan, including a task-specific Project Management Plan, Health and Safety Plan, Public Involvement Plan, Quality Assurance Project Plan, Data Management and Reporting Plan, Design Plan, Operation and Maintenance Plan, and Construction Quality Assurance Plan, consistent with Sections II, III, and IV, to U.S. EPA for approval.

The workplan must specify the field investigations necessary to characterize groundwater contamination in the vicinity of the former TCE tank storage area, and the design, installation, and operation of a system capable of meeting the proposed interim target cleanup levels, including the technical basis for such levels, for contaminants associated with the Facility in groundwater both on-site and off-site. Based on the results of Task I field investigations and necessary groundwater sampling and characterization, Respondent must propose the necessary designs and construction quality assurance program as required in Sections III and IV below.

Respondent must store, treat or dispose of any contaminated groundwater pumped or collected from the subsurface in a manner that complies with the substantive standards of RCRA, or must arrange for off-site treatment, storage or disposal in compliance with RCRA. Any discharge to navigable waters or disposal of contaminated groundwater must comply with all relevant local, State, and Federal requirements.

C. Task III - Water Use Survey/Sampling

Respondent must prepare an IM Workplan capable of determining all users of groundwater within a one-mile radius of the Facility, or further if deemed necessary by U.S. EPA. Based on historical data and hydrogeological information, including data and information generated pursuant to the IM Workplan for Tasks I and II above, Respondent must propose and implement the water use survey/sampling program, as approved by U.S. EPA.

The IM Workplan for the water use survey/sampling program must be submitted to U.S. EPA for review and approval within 30 days of the effective date of this Order. At a minimum, the IM Workplan

must meet the requirements of Section II below. The workplan must include a schedule for field investigations and a target parameter list based on known and reasonably expected contaminants of concern associated with wastes managed at the Facility. The workplan must also outline the actions necessary to address contamination found to be impacting or potentially impacting water users in the vicinity of the Facility.

The rationale for selecting wells from the survey to be sampled must be based on, but not be limited to:

1. Well records from the Ohio Department of Natural Resources, the Ohio Environmental Protection Agency, the Paulding County Health Department, and local well drillers;

2. Canvassing of private residences;

3. Aquifer usage;

4. Proximity to SWMUs and known releases;

5. Groundwater flow patterns determined in previous studies;

6. Potential influences from drawdown;

7. Number of individuals utilizing the well; and

8. Public usage (i.e., school, church, community, etc.).

In the event that permission can not be obtained to sample the selected water wells, Respondent must demonstrate its best efforts in accordance with Section XII of the Order.

Section II: Interim Measures Workplan

For the IM tasks required above and for additional interim measures proposed by the Respondent and/or determined to be necessary by U.S. EPA, Respondent must prepare an Interim Measures Workplan. The Workplan must include the development of several plans which must be prepared concurrently.

A. Interim Measures Objectives

The Workplan must specify the objectives of the interim measures, demonstrate how the interim measures will abate releases and threatened releases, and to the extent possible, be consistent and integrated with any long-term solution at the facility. The Interim Measures Workplan will include a discussion of the technical approach, engineering design, engineering plans, schedules, budget, and personnel. The Workplan will also include a description of qualifications of personnel performing or directing the interim measures, including contractor personnel. This plan must also document the overall management approach to the interim measures and whether a Quality Assurance Project Plan and Data Management and Reporting Plan are required for the IM.

B. Health and Safety Plan

The Respondent must submit a Health and Safety Plan to U.S. EPA for review, although it does not require approval by U.S. EPA.

1. Major elements of the Health and Safety Plan may include:

- Facility description, including availability of resources such as roads, water supplies, electricity and telephone services;
- Description of the known hazards and evaluation of the risks associated with the incident and with each activity conducted;
- A list of key personnel and alternates responsible for site safety, response operations, and for protection of human health;
- Description of the levels of protection to be worn by personnel;
- Delineation of the work area;

- Procedures to control site access;
- Description of decontamination procedures for personnel and equipment;
- Site emergency procedures;
- Emergency medical care for injuries and toxicological problems;
- Description of requirements for an environmental surveillance program;
- Routine and special training required for response personnel; and
- Procedures for protecting workers from weather-related problems;

2. The Facility Health and Safety Plan must be consistent with:

- NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
- U.S. EPA Order 1440.1 - Respiratory Protection;
- U.S. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
- Facility Contingency Plan;
- U.S. EPA Standard Operating Safety Guide (1984);
- OSHA regulations particularly in 29 CFR 1910 and 1926;
- State and local regulations; and
- Other U.S. EPA guidance as provided.

C. Public Involvement Plan

All Public Involvement Plans prepared by the Respondent must be submitted to U.S. EPA for comment and approval prior to use. Respondents must never appear to represent or speak for the U.S. EPA before the public, other government officials, or the media.

Public Involvement activities that may be required of the Respondent include the following:

- Conducting an open house or informal meeting (i.e., availability session) in a public location where people can talk to Agency officials and Respondent on a one-to-one basis;

- Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the U.S. EPA prior to public distribution);

- Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and

- Maintaining an easily accessible repository (such as a town hall or public library or the Facility itself, in some limited circumstances) of information on the facility-specific corrective action program, including the order, approved workplans, and/or other reports.

A schedule for community relations activities must be included in the Public Involvement Plan.

D. Quality Assurance Project Plan

Respondent must prepare a plan to document all monitoring procedures, sampling, field measurements and sample analysis performed during interim measures so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QAPP must be prepared in accordance with Attachment VI. If necessary, a pre-QAPP meeting will be held prior to preparation of the QAPP. Participants should include the Respondent, their QAPP preparer, laboratory representatives, EPA Project Coordinator, and EPA Quality Assurance representatives.

A performance audit may be conducted by U.S. EPA on the laboratory selected by the Respondent.

E. Data Management and Reporting Plan

Respondent must develop and initiate a Data Management and Reporting Plan to document and track interim measures data and results. This plan must identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan must also provide the format to be used to present the raw data and conclusions of the interim measures.

Section III: Interim Measures Design Program

A. Design Plans and Specifications

The Respondent must develop clear and comprehensive design plans and specifications which include but are not limited to the following:

1. Discussion of the design strategy and the design basis, including:

   - Compliance with all applicable or relevant environmental and public health standards; and
   - Minimization of environmental and public impacts.

2. Discussion of the technical factors of importance including:

   - Use of currently accepted environmental control measures and technology;
   - The constructibility of the design; and
   - Use of currently acceptable construction practices and techniques.

3. Description of assumptions made and detailed justification of these assumptions.

4. Discussion of the possible sources of error and references to possible operation and maintenance problems.

5. Detailed drawings of the proposed design including:

   - Qualitative flow sheets;
   - Quantitative flow sheets;
   - System layout; and
   - Utility locations.

6. Tables listing materials, equipment and specifications.

7. Tables giving material balances.

8. Appendices including:

- Sample calculations (one example presented and explained clearly for significant or unique design calculations);

- Derivation of equations essential to understanding the report; and

- Results of laboratory or field tests.

General correlations between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications, the Respondent must coordinate and cross-check the specifications and drawings and complete the proofing of the edited specifications and required cross-checking of all drawings and specifications.

B. Operation and Maintenance Plan

The Respondent must prepare an Operation and Maintenance Plan to cover both implementation and long-term maintenance of the interim measure. The plan must be composed of the following elements as appropriate to the specific interim measure:

1. Equipment start-up and operator training

The Respondent must prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up and operation of the treatment systems and training covering appropriate operational procedures once the start-up has been successfully accomplished.

2. Description of normal operation and maintenance (O&M), including:

- Description of tasks for operation;

- Description of tasks for maintenance;

- Description of prescribed treatment or operation conditions;

- Schedule showing frequency of each O&M task; and

- Common and/or anticipated remedies.

3. Description of routine monitoring and laboratory testing, including:

- Description of monitoring tasks;
- Description of required laboratory tests and their interpretation;
- Required QA/QC; and
- Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.

4. Description of equipment, including:

- Equipment identification;
- Installation of monitoring components;
- Maintenance of site equipment; and
- Replacement schedule for equipment and installed components.

5. Records and reporting mechanisms required, including:

- Operating logs;
- Laboratory records;
- Mechanism for reporting emergencies;
- Personnel and maintenance records; and
- Monthly/annual reports, as appropriate, to Federal/State agencies.

The Operation and Maintenance Plan must be submitted with the Final Design Documents or as approved in the Interim Measures Workplan.

C. Project Schedule

The Respondent must develop a detailed Project Schedule for construction and implementation of the interim measure(s) which identifies timing for initiation and completion of all critical path tasks. Respondent must specifically identify dates for completion of the project and major interim milestones which are

enforceable terms of this Order. A Project Schedule must be submitted simultaneously with the Final Design Documents.

D. Final Design Documents

The Final Design Documents must consist of the Final Design Plans and Specification (100%) complete, the final Draft Operation and Maintenance Plan, and Project Schedule. The Respondent must submit the final documents 100% complete with reproducible drawings and specifications. The quality of the design documents should be such that the Respondent would be able to include them in a bid package and invite contractors to submit bids for the construction project.

Section IV: Interim Measure Construction Quality Assurance Plan

A. Construction Quality Assurance Objectives

In the CQA plan, the Respondent must identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements; and documentation. The responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the interim measure should be described fully in the CQA plan. The Respondent must identify a CQA officer and the necessary supporting inspection staff.

B. Inspection Activities

The observations and tests that will be used to monitor the construction and/or installation of the components of the interim measure(s) must be summarized in the CQA plan. The plan must include the scope and frequency of each type of inspection. Inspections must verify compliance with all environmental requirements and include, but not be limited to air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection should also ensure compliance with all health and safety procedures. In addition to oversight inspections, the Respondent must conduct the following activities:

1. Preconstruction inspection and meeting

The Respondent must conduct a preconstruction inspection and meeting to:

- Review methods for documenting and reporting inspection data;
- Review methods for distributing and storing documents and reports;
- Review work area security and protocol;
- Discuss any appropriate modifications of the construction quality assurance plan to ensure that site-specific considerations are addressed; and

- Conduct a site walk-around to verify that the design criteria, plans, and specifications are understood and to review material and equipment storage locations.

The preconstruction inspection and meeting must be documented by a designated person and minutes should be transmitted to all parties.

2. Prefinal inspection

Upon preliminary project completion, Respondent must notify U.S. EPA for the purposes of conducting a prefinal inspection. The prefinal inspection will consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the U.S. EPA approved interim measure. Any outstanding construction items discovered during the inspection will be identified and noted. Additionally, treatment equipment will be operationally tested by the Respondent will certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The prefinal inspection report should outline the outstanding construction items, actions required to resolve items, completion date for these items, and date for final inspection.

3. Final Inspection

Upon completion of any outstanding construction items, the Respondent must notify U.S. EPA for the purpose of conducting a final inspection. The final inspection will consist of a walk-through inspection of the project site. The prefinal inspection will be used as a checklist with the final inspection focusing on the outstanding items that have been resolved.

4. Sampling and Testing Requirements

The sampling and testing activities, sample size, sample and test locations, frequency of testing, acceptance and rejection criteria, and plans for correcting problems should be presented in the CQA.

C. Documentation

Reporting requirements for CQA activities must be described in detail the CQA plan. This must include such items as daily summary reports, inspection data sheets, problem identification and interim measures reports, design acceptance reports and final documentation. Provisions for the final storage of all records must be presented in the CQA plan.

Section V: Reports

A. Progress

The Respondent must at a minimum provide the U.S. EPA with signed, monthly progress reports containing:

1. A description and estimate of the percentage of the interim measures completed;

2. Summaries of *all* findings;

3. Summaries of *all* changes made in the interim measures during the reporting period;

4. Summaries of *all* contacts with representatives of the local community, public interest groups, or State government during the reporting period;

5. Summaries of *all* problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

B. Interim Measures Workplan

The Respondent must submit an Interim Measures Workplan as described in Sections I, II, III, and IV.

C. Final Design Documents

The Respondent must submit the Final Design Documents as described in Section III.

D. Draft Interim Measures Report

At the completion of the IM construction (except for long-term operations, maintenance and monitoring), the Respondent must submit an Interim Measures and Implementation Report to U.S. EPA. The Report must document that the project is consistent with the design specifications, and that the interim measures are

performing adequately. The Report must include, but not be limited to, the following elements:

1. Synopsis of the interim measures and certification of the design and construction;

2. Explanation of any modifications to the plan and why these were necessary for the project;

3. Listing of criteria, established before the interim measures were initiated, for judging the functioning of the interim measures and also explaining any modification to these criteria;

4. Results of IM system monitoring, indicating that interim measures will meet or exceed the performance criteria; and

5. Explanation of the operation and maintenance (including monitoring) to be undertaken at the facility.

This report must include the inspection summary reports, inspection data sheets, problem identification and corrective measure reports, block evaluation reports, photographic reporting data sheets, design engineers' acceptance reports, deviations from design and material specifications (with justifying documentation) and as-built drawings.

E. Final Interim Measures Report

The Respondent must finalize the Interim Measures Work Plan and the Interim Measures Implementation Report incorporating comments received on draft submissions.

Section VI: Proposed Schedule

The Respondent will provide U.S. EPA with IM submittals according to the following schedule:

Facility Submission	Due Date
Interim Measures Workplan -Interim Measures Objectives -Health and Safety Plan -Public Involvement Plan -Quality Assurance Project Plan -Data Management and Reporting Plan -Construction QA Plan	Within 30 days of the effective date of this Order for Tasks I, II, and III or within 30 days of EPA's request/determination or upon written request
Final Design Documents -Design Plans and Specs -O&M Plan -Project Schedule	As outlined in the approved IM workplan
Draft Interim Measures Report	In accordance with the project schedule approved in the IM Workplan
Final Interim Measures Report	45 days after receipt of U.S. EPA comments on Draft IM Report
Progress Reports	Monthly

ATTACHMENT II

RCRA FACILITY INVESTIGATION SCOPE OF WORK

ATTACHMENT II

Scope of Work for a RCRA Facility Investigation

Purpose

The purpose of the RCRA Facility Investigation (RFI) is to determine the nature and extent of releases of hazardous waste or constituents from regulated units, solid waste management units, areas of concern, and other source areas at and from the Facility and to gather all necessary data to support a Corrective Measures Study. The Respondent must furnish all personnel, materials, and services necessary for, or incidental to, performing the RFI.

Scope

The RCRA Facility Investigation is one step in the corrective action program. The RFI consists of the following components, which for clarity have been designated as sections.

Section I: Description of Current Conditions (DOCC)

A. Facility Background

B. Preliminary Assessment of Nature and Extent of Contamination

C. Implementation of Interim/Stabilization Measures

Section II: RFI Workplan

A. Purpose/Objectives

B. Project Management Plan

C. Quality Assurance Project Plan

D. Data Management and Reporting Plan

E. Health and Safety Plan

F. Public Involvement Plan

G. Schedule for Facility Investigation

Section III: Facility Investigation

A. Purpose/Objectives

B. Environmental Setting

C. Source Characterization

D. Contamination Characterization

E. Potential Receptor Identification

Section IV: Investigation Results and Analysis

A. Data Analysis

B. Analysis of Risk

C. Media Cleanup Standards

Section V: Progress Reports

Section VI: Proposed Schedule

Section I: Description of Current Conditions

The Respondent must submit to U.S. EPA for review and comment, a report (as set forth below) providing the background information on the Facility, contamination, and interim measures. The Respondent must indicate in the applicable section if some of this information is not available. This report must contain information that is consistent with the data gathered during the RFA. The current condition report must be submitted concurrently with the submission of the IM Workplan.

A. Facility Background

The Respondent's report must summarize the regional location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage, or disposal of solid and hazardous waste. The Respondent's report must include:

1. *Maps*. All maps must be of sufficient detail and accuracy to locate and report all current and future work performed at the site. Aerial photographs may be used with solid waste management units, areas of concern, and other source areas superimposed on them. Maps must depict the following:

- General geographic location;
- Property lines, with the owners of all adjacent property clearly indicated;
- Topography and surface drainage depicting all waterways, wetlands, flood plains, water features, drainage patterns, and surface-water containment areas;
- All tanks, buildings, utilities, paved areas, easements, rights-of-way, and other features;
- All solid or hazardous waste treatment, storage, or disposal areas active after November 19, 1980;
- All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on or after November 19, 1980;
- All known past and present product and waste underground tanks or piping;

- Surrounding land uses (residential, commercial, industrial, agricultural, recreational);

- The location of all municipal, public, private and industrial wells, along with all monitoring wells, at the Facility and within a 1-mile radius of the Facility. These wells must be clearly labeled and ground and top of casing elevations and construction details included, if available (these elevations and details may be included as an attachment); and

- Wind rose and meteorology.

2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the facility.

3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, State, or Federal response units or private parties), including any inspection reports or technical reports generated as a result of the response.

4. A summary of past permits applied for and/or received, any enforcement actions and their subsequent responses and a list of documents and studies prepared for the facility. This may include information from previous and/or present owner/operators, if available.

5. A general description of major habitat types (e.g., grasslands, forests, lakes, streams, wetlands) located in and adjacent to the facility. In delineating wetlands, the U.S. Fish and Wildlife Service's National Wetland Inventory maps should be consulted. The U.S. Army Corps of Engineers should be consulted and wetlands should be delineated using the Federal Manual for Identifying and Delineating Jurisdictional Wetlands.

6. A general description of plants and animals at and adjacent to the facility, including the following: qualitative observations of resident plants and animals (birds, mammals, fish, stream benthos, etc.); and classification of vegetation community types. Threatened and endangered species possibly on or near the facility should be identified as early as possible.

B. Preliminary Assessment of Nature and Extent of Contamination

The Respondent must prepare and submit for U.S. EPA review, a preliminary report describing the existing information on the nature and extent of contamination.

1. The Respondent's report must summarize all possible source areas of contamination. This, at a minimum, must include all RCRA-regulated units, solid waste management units, areas of concern, spill areas, and other suspected source areas of contamination. For each area, the Respondent must identify the following:

- Location of unit/area (to be depicted on facility map provided in Section I.A.1);
- Quantities of solid and hazardous wastes (both managed and spilled or released), if available;
- Type of hazardous waste or constituents (both causing or potentially causing contamination), to the extent known;
- Identification of areas where additional information is necessary; and
- The results of previous investigations.

2. Respondent must prepare a preliminary assessment and description of the existing degree and extent of contamination. This must include:

- For each medium where the Order identifies a release (e.g., soil, groundwater, surface water, sediments, etc.), a description of the existing extent of contamination. This description must include all available monitoring data and qualitative information on the locations and levels of contamination at the facility (both on-site and off-site). Include biodata (e.g., fishkills, distressed vegetation, abnormal individuals of a species, carcasses, tissue studies, etc.). Include a general assessment of the data quality, a map showing the location of all existing sampling points and potential source areas and contour maps showing any existing ground water plumes at the facility. Highlight potential ongoing release areas that would warrant use of

interim measures (see Section I.C., Implementation of Interim/Stabilization Measures); and

- A list and brief description of all previous investigations that have occurred at the facility, who they were conducted for (i.e., agency) and agency contacts.

3. The Respondent must submit a report that identifies the potential impact(s) on human health and the environment, including potential exposure pathways, migration routes, and potential receptors for all relevant land use scenarios related to the sources of contamination identified as relevant in paragraph 1 above. A preliminary site-conceptual model should be created to illustrate these pathways, routes, and receptors. The report must include, at a minimum:

- All potential migration pathways, including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, foodwebs, meteorology, air quality, chemistry, fate and transport characteristics associated with affected media, and natural attenuation, as appropriate;

- Physical properties of known contaminants;

- An assessment of whether off-site migration of contaminants has occurred or is likely to occur;

- An assessment of media-specific potential human exposure pathways (e.g., ingestion, inhalation, dermal contact), including groundwater and surface water use;

- Identification of current and future land use;

- Identification of current or potential receptors at risk including demography and identification of possible sensitive subpopulations (e.g., schools, homes for the elderly, hospitals, and ecosystems).

C. Implementation of Interim/Stabilization Measures

The Respondent's report must document past, present, or proposed interim/stabilization measures at the facility. This must include:

- Objectives of the interim/stabilization measures: how the measure is mitigating a potential threat to human health and the environment and/or is consistent with and integrated into any long-term solution at the facility;

- Design, construction, operation, and maintenance requirements;

- Schedules for design, construction and monitoring;

- Schedule for progress reports; and

- Data in support of the potential need for future interim measures or related to any assessment undertaken to determine the need for future interim/stabilization measures.

Section II: RFI Workplan

A. Purpose/Objectives

The Respondent must prepare an RFI Workplan. The purpose of the RFI Workplan is to present to U.S. EPA the specific plans to characterize the nature and extent of contamination. The RFI Workplan must include the development of several plans, which will be prepared concurrently. During the RCRA Facility Investigation, it may be necessary to revise the RFI Workplan to increase or decrease the detail of information collected to accommodate facility-specific situations.

B. Project Management Plan

The Respondent must prepare a Project Management Plan (PMP) which will include a discussion of the technical approach, schedules, and personnel. The PMP will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan must also document the overall management approach to the RFI.

C. Quality Assurance Project Plan

Respondent must prepare a plan to document all monitoring procedures, sampling, field measurements and sample analysis performed during the investigations so as to ensure that all information, data, and resulting decisions are technically sound, statistically valid, and properly documented. The QAPP must be prepared in accordance with Attachment VI.

A performance audit may be conducted by U.S. EPA on the laboratories selected by Respondent. The audit will be completed and laboratories approved for use on the project prior to the start of field work for the RFI. In the alternative, U.S. EPA may require Respondent to purchase performance evaluation samples selected by U.S. EPA and have the samples analyzed at the selected laboratories.

D. Data Management and Reporting Plan

Respondent must develop and initiate a Data Management and Reporting Plan to document and track investigation data and results. This plan must identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan must also provide the format to be used to present the raw data and conclusions of the interim measures.

E. Health and Safety Plan

The Respondent must submit a Health and Safety Plan to U.S. EPA for review, although it does not require approval by U.S. EPA.

1. Major elements of the Health and Safety Plan may include:

- Facility description, including availability of resources such as roads, water supplies, electricity and telephone services;
- Description of the known hazards and evaluation of the risks associated with the incident and with each activity conducted;
- A list of key personnel and alternates responsible for site safety, response operations, and for protection of human health;
- Description of the levels of protection to be worn by personnel;
- Delineation of the work area;
- Procedures to control site access;
- Description of decontamination procedures for personnel and equipment;
- Site emergency procedures;
- Emergency medical care for injuries and toxicological problems;
- Description of requirements for an environmental surveillance program;
- Routine and special training required for response personnel; and
- Procedures for protecting workers from weather-related problems;

2. The Facility Health and Safety Plan must be consistent with:

- NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);
- U.S. EPA Order 1440.1 - Respiratory Protection;
- U.S. EPA Order 1440.3 - Health and Safety Requirements for Employees engaged in Field Activities;
- Facility Contingency Plan;
- U.S. EPA Standard Operating Safety Guide (1984);
- OSHA regulations particularly in 29 CFR 1910 and 1926;
- State and local regulations; and
- Other U.S. EPA guidance as provided.

F. Public Involvement Plan

The Public Involvement Plan (PIP) prepared by the Respondent must be submitted to U.S. EPA for comment and approval prior to use. Respondents must never appear to represent or speak for the U.S. EPA before the public, other government officials, or the media.

Public involvement activities that may be required of the Respondent include the following:

- Conducting an open house or informal meeting (i.e., availability session) in a public location where people can talk to Agency officials and Respondent on a one-to-one basis;
- Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the U.S. EPA prior to public distribution);
- Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and
- Maintaining an easily accessible repository (such as a town hall or public library or the Facility

itself, in some limited circumstances) of information on the facility-specific corrective action program, including the order, approved workplans, and/or other reports.

A schedule for community relations activities must be included in the PIP.

G. Schedule for Facility Investigation

1. Sampling

2. Analysis

3. Reports

4. Public Involvement Activities

5. Laboratory or Bench-Scale Studies

Section III: Facility Investigation

A. Purpose/Objectives

The Facility Investigation phase of the RFI is the first step of the implementation process. Prior to this implementation phase, all documentation and reports for the Description of Current Conditions and RFI Workplan are drafted and submitted to U.S. EPA for review. The Respondent must have approval prior to implementing the procedures outlined in the RFI Workplan. Throughout the RFI implementation phase, it is critical that the Respondent comply with report submission requirements. The Respondent must submit both progress reports and a draft RFI Report to U.S. EPA for review. Respondent must develop in final format the RFI Report, which will incorporate any applicable comments, including conditions and/or modifications, received on the draft report.

To the extent necessary to protect human health and the environment, Respondent must conduct those additional investigations (including sampling) as approved in the RFI Workplan to: characterize the facility (Environmental Setting); define the source (Source Characterization); define the degree and three dimensional extent of contamination (Contamination Characterization); and identify actual or potential receptors (Potential Receptors Identification).

The investigations must result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative(s) during the CMS and/or IMs.

B. Environmental Setting

The Respondent must collect information to supplement and verify existing information on the environmental setting at the facility (when information already submitted to U.S. EPA is not sufficient). The U.S. EPA may request additional information not included on the following lists. The Respondent must characterize the following areas:

1. Hydrogeology

   The Respondent must conduct a program to evaluate hydrogeologic conditions at the facility. This program must provide the following information:

   - A description of the regional and facility-specific geologic and hydrogeologic

characteristics affecting groundwater flow beneath the facility, including:

- Regional and facility-specific stratigraphy including: description of strata including strike and dip, and identification of stratigraphic contacts;

- Structural geology including: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.);

- Depositional history;

- Areas and amounts of recharge and discharge;

- Influence of tidal actions on groundwater flow regimes near large rivers;

- Regional and facility-specific groundwater flow patterns; and

- Seasonal variations in the groundwater flow regime.

• An analysis of topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis.)

• A representative and accurate classification and description of the hydrogeologic units based on field data, tests, and cores that may be part of the migration pathways at the facility (i.e., the aquifers and any intervening saturated and unsaturated zones), including, but not limited to:

- Hydraulic conductivity, intrinsic permeability [particularly when non-aqueous phase liquids (NAPLs) are present], and porosity (total and effective);

- Lithology, grain size, sorting, degree of cementation;

- An interpretation of hydraulic interconnections between saturated zones; and

- The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).

- Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units that may be part of the migration pathways identifying:

  - Sand and gravel in unconsolidated deposits;

  - Zones of fracturing or channeling in consolidated and unconsolidated deposits;

  - Zones of higher permeability or low permeability that might direct and restrict the flow of contaminants;

  - The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs;

  - Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration, including perched zones of saturation; and

  - All other geologic formations, or parts thereof, yielding a significant amount of groundwater.

- Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the potential contaminant source, a representative description of water level or fluid pressure monitoring including:

  - Water level contour and/or potentiometric maps;

  - Hydrologic cross sections showing vertical flow gradients;

  - The flow system, including the vertical and horizontal components of flow; and

- Any temporal changes in hydraulic gradients, (due to tidal or seasonal influences, etc.)

- A description of man-made influences that may affect the hydrogeology of the site, identifying:

  - Active and inactive local water-supply and production wells with an approximate schedule of pumping; and

  - Man-made hydraulic structures (sewers, pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).

2. Soils

The Respondent must conduct a program to characterize the soil and rock units potentially affected by contaminant release(s). Such characterization must include, but not be limited to, the following information:

- Where remediation by removal of soils is the only corrective measure option, provide map(s) and perpendicular cross sections showing:

  - The extent of contamination as necessary to support a baseline risk assessment for determining if a CMS is needed or for supporting the selection of corrective measures during the CMS;

  - Depth of groundwater; and

  - The consistency and distribution of soils [using the Unified Soil Classification System (ASTM D 2487)];

- Where remediation by removal is the likely option, and it is necessary to determine the extent of migration (e.g., to assess the mobility of wastes from an unlined surface impoundment or landfill), provide the following in addition to the requirements immediately above:

- Depth to bedrock and the characteristics of the bedrock including discontinuities such as faults, fissures, joints, fractures, sinkholes, etc.;

- A detailed soil survey conducted according to USDA Soil Conservation Service (SCS) procedures including:

  -- USDA Textural Soil Classification and soil profiles showing stratifications or zones which may affect or direct the subsurface flow;

  -- Hydraulic conductivity and the SCS hydrologic group classification of A, B, C or D;

  -- Relative permeability (only if the waste may have changed the soil's hydraulic conductivity, such as concentrated organics);

  -- Storage capacity (if excavated soil will be stored);

  -- Shrink-swell potential (where extreme dry weather could lead to the formation of cracks);

  -- Potential for contaminant transport via erosion, using the Universal Soil Loss Equation;

  -- Soil sorptive capacity;

  -- Cation exchange capacity;

  -- Soil organic content; and

  -- Soil pH.

- The following contaminant characteristics must be included:

  -- Physical state;

  -- Viscosity;

-- pH;

-- pKa;

-- Density;

-- Water solubility;

-- Henry's Law Constant;

-- K_{ow};

-- Biodegradability; and

-- Rates of hydrolysis, photolysis and oxidation.

- Where in-situ soil treatment will likely be the remediation, the above information and the following additional information must be provided:

  - Bulk density;

  - Porosity;

  - Grain size distribution;

  - Mineral content;

  - Soil moisture profile;

  - Unsaturated hydraulic conductivity;

  - Effect of stratification on unsaturated flow; and

  - Infiltration and evapotranspiration.

3. Surface Water and Sediment

The Respondent must conduct a program to characterize the surface water bodies that are likely to be affected by releases from the Facility. Such characterization must include the following activities and information:

- Description of the temporal and permanent surface water bodies including:

- For lakes: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;

- For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;

- For rivers, streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100-year event);

- For wetlands obtain any available delineation;

- Containment measures in place (e.g., levees, concrete lining, etc.)

- Drainage patterns; and

- Evapotranspiration rates.

• Description of the chemistry of the natural surface water and sediments. This includes determining:

- pH;

- total dissolved solids;

- total suspended solids;

- biological oxygen demand;

- alkalinity;

- conductivity;

- dissolved oxygen profiles;

- nutrients (NH_3, NO_3 /NO_2, PO_4^{-3});

- chemical oxygen demand;

- total organic carbon; and

- concentrations of the site-specific contaminants of concern.

- Description of sediment characteristics including:
  - Deposition area;
  - Thickness profile; and
  - Physical parameters (e.g., grain size, density, ion exchange capacity, etc.).

4. Air

Respondent must provide information characterizing the climate in the vicinity of the facility. Such information must include:

- A description of the following parameters:
  - Annual and monthly rainfall averages;
  - Monthly temperature averages and extremes;
  - Wind speed and direction;
  - Relative humidity/dew point;
  - Atmospheric pressure;
  - Evaporation data;
  - Development of inversions; and
  - Climate extremes that have been known to occur in the vicinity of the facility, including frequency of occurrence.
- A description of topographic and man-made features that affect air flow and emission patterns, including:
  - Ridges, hills, or mountain areas;
  - Canyons or valleys;
  - Surface water bodies (e.g., rivers, lakes, etc.);
  - Wind breaks and forests; and
  - Buildings.

C. Source Characterization

The Respondent must collect analytical data to characterize the wastes and the areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition (containment or nature of disposal); and any facility characteristics that may affect or have affected a release (e.g., facility security, engineered barriers). This must include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area/Area of Concern Characteristics:

   - Location of unit/disposal area;
   - Type of unit/disposal area;
   - Design features;
   - Operating practices (past and present) including the history of releases;
   - Period of operation;
   - Age of unit/disposal area;
   - General physical conditions; and
   - Method used to close or remediate the unit/disposal area.

2. Waste Characteristics:

   - Type of waste placed in the unit;
     - Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);
     - Quantity; and
     - Chemical composition.
   - Physical and chemical characteristics;
     - Physical form (solid, liquid, gas);

- Physical description (e.g., powder, oily sludge);
- Temperature;
- pH;
- General chemical class (e.g., acid, base, solvent);
- Molecular weight;
- Density;
- Boiling point;
- Viscosity;
- Solubility in water;
- Cohesiveness of the waste;
- Vapor pressure; and
- Flash point.

• Migration and dispersal characteristics of the waste;

- Sorption;
- Biodegradability, bioconcentration, biotransformation;
- Photodegradation rates;
- Hydrolysis rates; and
- Expected chemical transformations.

The Respondent must document the procedures used in making the above determinations.

D. Contamination Characterization

The Respondent must collect analytical data on environmental media, including ground water, soils, surface water, sediment, and air likely to be affected by releases from the facility.

This data must be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes to the extent necessary to assess the impact to human health and the environment. Data must include:

- time and location of sampling;
- media sampled;
- concentrations found;
- conditions during sampling; and
- the identity of the individuals performing the sampling and analysis.

The Respondent must address the following types of contamination at the facility:

1. Groundwater Contamination

The Respondent must conduct a groundwater investigation to characterize any plumes of contamination at the facility. This investigation must, provide the following information:

- A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility;
- The horizontal and vertical direction of contaminant movement;
- The velocity of contaminant movement;
- The horizontal and vertical concentration profiles of constituents of concern (approved by U.S. EPA as derived from Appendix IX) constituents in the plume(s);
- An evaluation of factors influencing the plume movement; and
- An extrapolation of future contaminant movement.

The Respondent must document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Respondent must conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation must include the following information:

- A description of the vertical and horizontal extent of contamination;
- A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, hydrolysis, photolysis, oxidation and other factors that might affect contaminant migration and transformation;
- Site-specific contaminant concentrations;
- Velocity and direction of contaminant movement; and
- An extrapolation of future contaminant movement.

The Respondent must document the procedures used in making the above determinations.

3. Surface Water and Sediment Contamination

The Respondent must conduct a surface water and sediment investigation to characterize contamination in surface water bodies resulting from contaminant releases at the facility. The Respondent is also required to characterize contamination from storm water runoff. The investigation must include the following information:

- A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;
- The horizontal and vertical direction of contaminant movement;
- The contaminant velocity;

- An evaluation of the physical, biological, and chemical factors influencing contaminant movement;

- An extrapolation of future contaminant movement; and

- A description of the chemical and physical properties of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Respondent must document the procedures used in making the above determinations.

4. Air Contamination

The Respondent must conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere that are not subject to an effective Federal or State permit. This investigation must provide the following information:

- A description of the horizontal and vertical direction and velocity of contaminant movement;

- The rate and amount of the release; and

- The chemical and physical composition of the contaminants(s) released, including horizontal and vertical concentration profiles.

The Respondent must document the procedures used in making the above determinations.

E. Potential Receptor Identification

The Respondent must collect data describing the human populations and environmental systems that currently or potentially are at risk of contaminant exposure from the facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be required by U.S. EPA. The following characteristics must be identified:

1. Local uses and possible future uses of groundwater:

- Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, public and industrial) and

- Location of groundwater users including wells and discharge areas.

2. Local uses and possible future uses of surface waters characterized in the "Environmental Setting" or "Contamination Characterization" Sections above:

- Domestic and municipal (e.g., potable and lawn/gardening watering);

- Recreational (e.g., swimming, fishing);

- Agricultural;

- Industrial; and

- Environmental (e.g., fish and wildlife propagation).

3. Authorized or unauthorized human use of or access to the facility and adjacent lands, including but not limited to:

- Recreation;

- Hunting;

- Residential;

- Commercial;

- Zoning; and

- Relationship between population locations and prevailing wind direction.

4. A demographic profile of the people who use or have access (authorized or unauthorized) to the facility and adjacent land, including, but not limited to: age; sex; sensitive subgroups; and environmental justice concerns.

5. A description of the ecological characteristics of the facility and adjacent areas, including habitat and species present and expected to be present. Data required for this may include the following:

- Chemical sampling in potentially exposed habitats and reference sites.

- Toxicity testing.

- Tissue analyses.

- Biological community assessment.

- Habitat assessment of aquatic and terrestrial habitats on or potentially affected by the facility.

- Revised assessment of ecological impacts on receptors. Impacts should include those occurring at individual level (e.g., mortality, growth and reproductive impairments) and those occurring at higher levels of biological organization (i.e., at population, community, and ecosystem levels).

6. A description of the biota in surface water bodies on, adjacent to, or affected by the facility.

7. A description of any State and Federal endangered or threatened species (both proposed and listed) near the Facility.

Section IV: Investigation Results and Analysis

The Respondent must prepare an analysis and summary of all facility investigations and their results. The investigation data should be sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination to the extent necessary to protect human health and/or the environment, potential threat to human health and/or the environment, and to support the Corrective Measures Study and/or IMs.

A. Data Analysis

The Respondent must analyze all facility investigation data outlined in Section III and prepare a report on the type and extent of contamination at the facility which has not been eliminated from further investigation by the screening methods used, including sources and migration pathways. The report must describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative for the area as well as in relation to applicable screening levels.

B. Analysis of Risk

Respondent may determine as necessary an analysis of risk at the facility. This analysis would include ecological as well as human health risk and must be consistent with applicable guidance provided in Attachment VII. Risk may be evaluated at several milestones within the process, as developed in the U.S. EPA-approved RFI Workplan.

All activities in conducting corrective action pursuant to this Order will allow for risk screening steps to be conducted with the data available at the risk assessment phase as well as within the RFI and CMS as appropriate. Generally, a screening risk assessment would be conducted during the RFI with additional, more detailed analysis, including appropriate cumulative risk, occurring as more data becomes available. The highest level of risk analysis may occur later in the CMS stage.

C. Media Cleanup Standards

The Respondent must provide information as required to support U.S. EPA's selection/development for media cleanup standards (MCSs) of any releases that may have adverse effects on human health and the environment due to migration of waste constituents. MCSs are generally to be developed using risk assessment and are to contain such terms and provisions as

necessary to protect human health and the environment, including the provisions stated below.

1. Groundwater Cleanup Standards

The Respondent must provide information to support U.S. EPA's selection/development of groundwater cleanup standards for all of the constituents of concern found in the groundwater during the Facility Investigation (Section III). The groundwater cleanup standards must consist of:

- The MCL value for any constituents for which an MCL has been promulgated under the Safe Drinking Water Act;
- Background concentration of the constituent in the ground water; or
- An alternate standard [e.g., an alternate concentration limit (ACL) for a regulated unit] to be approved by U.S. EPA.

2. Soil Cleanup Standards

The Respondent must provide information to support U.S. EPA's selection/development of soil cleanup standards. U.S. EPA may require the following information to support the standards selected/developed:

- The volume and physical and chemical characteristics of the wastes in the unit;
- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing contaminant migration;
- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;
- The patterns of precipitation in the region;
- The existing quality of surface soils, including other sources of contamination and their cumulative impacts on surface soils;

- The potential for contaminant migration and impact to the underlying groundwater;

- The patterns of land use in the region;

- The potential for health risks caused by human exposure to hazardous waste and/or hazardous constituents; and

- The potential for risk to wildlife and vegetation caused by exposure to hazardous waste and/or hazardous constituents.

3. Surface Water and Sediment Cleanup Standards

The Respondent must provide information to support U.S. EPA's selection/development of surface water and sediment cleanup standards. U.S. EPA may require the following information to support the standards selected/developed:

- The volume and physical and chemical characteristics of the wastes in the unit;

- The effectiveness and reliability of containing, confining, and collecting systems and structures in preventing contaminant migration;

- The hydrologic characteristics of the unit and the surrounding area, including the topography of the land around the unit;

- The patterns of precipitation in the region;

- The quantity, quality, and direction of groundwater flow;

- The proximity of the unit to surface waters;

- The current and potential uses of nearby surface waters and any water quality standards established for those surface waters;

- The existing quality of surface waters, including other sources of contamination and their cumulative impacts on surface waters;

- The potential for risk to wildlife and vegetation caused by exposure to hazardous waste and/or hazardous constituents;

- The patterns of land use in the region; and

- The potential for health risks caused by human exposure to hazardous waste and/or hazardous constituents.

4. Air Cleanup Standards

The Respondent must provide information to support U.S. EPA's selection/development of air cleanup standards. U.S. EPA may require the following information to support the standards selected/developed:

- The volume and physical and chemical characteristics of the wastes in the unit, including its potential for the emission and dispersal of gases, aerosols and particulates;

- The effectiveness and reliability of systems and structures to reduce or prevent emissions of hazardous constituents to the air;

- The operating characteristics of the unit:

- The atmospheric, meteorological, and topographic characteristics of the unit and the surrounding area;

- The existing quality of the air, including other sources of contamination and their cumulative impact on the air;

- The potential for health risks caused by human exposure to hazardous waste and/or hazardous constituents; and

- The potential for risk to wildlife and vegetation caused by exposure to hazardous waste and/or hazardous constituents.

5. Other Relevant and Applicable Cleanup Standards

The Respondent must identify, as necessary based on site-specific factors, all relevant and applicable standards for

the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Ohio Water Quality Standards, water quality criteria, health advisories, proposed MCL's, etc.).

Section V: Progress Reports

The Respondent will, at a minimum, provide the U.S. EPA with signed monthly progress reports. These reports are required to contain the following information, but U.S. EPA requirements are not limited to this list:

1. A description and estimate of the percentage of the RFI completed;

2. Summaries of *all* findings in the reporting period, including results of any sampling and analysis;

3. Summaries of *all* changes made in the RFI during the reporting period;

4. Summaries of *all* contacts with representatives of the local community, public interest groups or State government during the reporting period;

5. Summaries of *all* contacts made regarding access to off-site property;

6. Summaries of *all* problems encountered during the reporting period;

7. Actions being taken to rectify problems;

8. Changes in relevant personnel during the reporting period;

9. Projected work for the next reporting period; and

10. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

Section VI: Proposed Schedule

The Respondent will provide U.S. EPA with RFI submittals according to the following schedule:

Facility Submission	Due Date
Description of Current Conditions (Section I)	60 days after the effective date of the Order
RFI Workplan (Section II)	60 days of receipt of U.S. EPA comments on the DOCC Report
Draft RFI Report (Sections III and IV)	As scheduled in the approved RFI Workplan
Final RFI Report	45 days after receipt of comments on the Draft RFI Report
Progress Reports on Sections I through IV	Monthly

ATTACHMENT III

CORRECTIVE MEASURES STUDY SCOPE OF WORK

ATTACHMENT III

Scope of Work for a Corrective Measures Study

Purpose

The purpose of the Corrective Measures Study (CMS) portion of the RCRA corrective action process is to identify and evaluate potential remedial alternatives for the releases that have been identified at and/or from the Facility that pose an unacceptable risk to human health and/or the environment.

Scope

A Corrective Measures Study Report is, unless otherwise specified by U.S. EPA, a required element of the CMS. The CMS consists of the following components:

Section I: Corrective Measures Study Report

A. Introduction/Purpose

B. Description of Current Conditions

C. Media Cleanup Standards

D. Identification, Screening and Development of Corrective Measure Alternatives

E. Evaluation of A Final Corrective Measure Alternative

F. Recommendation by Respondent for a Final Corrective Measure Alternative

G. Public Involvement Plan

Section II: Progress Reports

Section III: Proposed Schedule

Section I: Corrective Measures Study Report

The CMS Report must include the following elements:

A. Introduction/Purpose

The Respondent must describe the purpose of the document and provide a summary description of the project.

B. Description of Current Conditions

The Respondent must include a brief summary/discussion of any new information that has been discovered since the RFI current conditions report was provided. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measures alternative(s).

C. Media Cleanup Standards

The Respondent may propose media cleanup standards. The standards must be based on promulgated Federal and State standards, risk derived standards, all data and information gathered during the corrective action process (e.g., from interim measures, RCRA Facility Investigation, etc.), and/or other applicable guidance documents. If no other guidance exists for a given contaminant and media, the Respondent must propose and justify a media cleanup standard.

D. Identification, Screening, and Development of Corrective Measure Alternatives

1. Identification: List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the corrective action objectives. The Respondent should consider including a table that summarizes the available technologies. Depending on the site-specific situation, U.S. EPA may require the Respondent to consider additional technologies.

The Respondent should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies. Innovative technologies are defined as those technologies utilized for remediation other than incineration, solidification/stabilization, and pumping with conventional treatment for contaminated groundwater. Innovative treatment technologies may require extra effort

to gather information, to analyze options, and to adapt the technology to the site-specific situation. Treatability studies and on-site pilot scale studies may be necessary for evaluating innovative treatment technologies.

2. Screening: When, the Respondent is required to, or chooses to, evaluate a number of corrective measures technologies. The Respondent will evaluate the technology limitations to show why certain corrective measures technologies may prove unfeasible to implement given existing waste and site-specific conditions.

Likewise, if only one corrective measure alternative is being analyzed, the Respondent must indicate any technological limitations given waste and site-specific conditions at the facility for which it is being considered. The Respondent should consider including a table that summarizes these findings.

3. Corrective Measure Development: As required by U.S. EPA, the Respondent must assemble the technologies that pass the screening step into specific alternatives that have potential to meet the corrective action objectives for each media. Options for addressing less complex sites could be relatively straight-forward and may only require evaluation of a single or limited number of alternatives.

Each alternative may consist of an individual technology or a combination of technologies used in sequence (i.e., treatment train). Depending on the site-specific situation, different alternatives may be considered for separate areas of the facility. List and briefly describe each corrective measure alternative.

E. Evaluation of a Final Corrective Measure Alternative

For each remedy which warrants a more detailed evaluation, including those situations when only one remedy is being proposed, the Respondent must provide detailed documentation of how the potential remedy will comply with each of the standards listed below. These standards reflect the major technical components of remedies including cleanup of releases, source control and management of wastes that are generated by remedial activities. The specific standards are provided below.

1. Protect human health and the environment.

2. Attain media cleanup standards set by the U.S. EPA.

3. Control the source of releases so as to reduce or eliminate, to the extent practicable, further releases that may pose a threat to human health and the environment.

4. Comply with any applicable standards for management of wastes.

5. Other Factors.

In evaluating the selected alternative or alternatives the Respondent must prepare and submit information that documents that the specific remedy will meet the standards listed above. The following guidance should be used in completing this evaluation. This guidance provides examples of the types of information that would be supportive; U.S. EPA may require additional information.

1. Protect Human Health and the Environment

Corrective action remedies must be protective of human health and the environment. Remedies may include those measures that are needed to be protective, but are not directly related to media cleanup, source control, or management of wastes. An example would be a requirement to provide alternative drinking water supplies in order to prevent exposures to releases from an aquifer used for drinking water purposes. Another example would be a requirement for the construction of barriers or for other controls to prevent harm arising from direct contact with waste management units. Therefore, the Respondent must include a discussion on what types of short term remedies are appropriate for the particular facility in order to meet this standard. This information should be provided in addition to a discussion of how the other corrective measure alternatives meet this standard.

2. Attain Media Cleanup Standards Set by U.S. EPA

Remedies will be required to attain media cleanup standards set by U.S. EPA which may be derived from existing State or Federal regulations (e.g. groundwater standards) or other standards. The media cleanup standards for a remedy will often play a large role in determining the extent of and technical approaches to the remedy. In some cases, certain technical aspects of the remedy, such as the practical capabilities of

remedial technologies, may influence the media cleanup standards that are established.

As part of the necessary information for satisfying this requirement, the Respondent must address whether the potential remedy will achieve the preliminary remediation objective as identified by U.S. EPA as well as other, alternative remediation objectives that may be proposed by the Respondent. The Respondent must also include an estimate of the time frame necessary for each alternative to meet these standards.

3. Control the Sources of Releases

A critical objective of any remedy must be to stop further environmental degradation by controlling or eliminating further releases that may pose a threat to human health and the environment. Unless source control measures are taken, efforts to clean up releases may be ineffective or, at best, will essentially involve a perpetual cleanup. Therefore, an effective source control program is essential to ensure the long-term effectiveness and protectiveness of the corrective action program.

The source control standard is not intended to mandate a specific remedy or class of remedies. Instead, the Respondent is encouraged to examine a wide range of options. This standard should not be interpreted to preclude the equal consideration of using other protective remedies to control the source, such as partial waste removal, capping, slurry walls, in-situ treatment/stabilization and consolidation.

As part of the CMS Report, the Respondent must address the issue of whether source control measures are necessary, and if so, the type of actions that would be appropriate. Any source control measure proposed should include a discussion on how well the method is anticipated to work given the particular situation at the facility and the known track record of the specific technology.

4. Comply With Any Applicable Standards for Management of Wastes.

The Respondent must include a discussion of how the specific waste management activities will be conducted

in compliance with all applicable State or Federal regulations (e.g., closure requirements, land disposal restrictions).

5. Other Factors

There are five general factors that will be considered as appropriate by U.S. EPA in selecting/approving a remedy that meets the four standards listed above. These factors represent a combination of technical measures and management controls for addressing the environmental problems at the facility. The five general decision factors include:

a. Long-term reliability and effectiveness;

b. Reduction in the toxicity, mobility or volume of wastes;

c. Short-term effectiveness;

d. Implementability; and

e. Cost.

U.S. EPA may request the Respondent to provide additional information to support the use of these factors in the evaluation of viable remedial alternatives. Examples of the types of information that may be requested are provided below:

a. Long-term Reliability and Effectiveness

Demonstrated and expected reliability is a way of assessing the risk and effect of failure. The Respondent may consider whether the technology or a combination of technologies have been used effectively under analogous site conditions, whether failure of any one technology in the alternative would have an immediate impact on receptors, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site (e.g., heavy rain storms, flooding, earthquakes, etc.).

Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper

system operation and maintenance, but the technology eventually may require replacement. Each corrective measure alternative should be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the level of effectiveness can be maintained.

b. Reduction in the Toxicity, Mobility or Volume of Wastes

As a general goal, remedies will be preferred that employ techniques, such as treatment technologies, that are capable of eliminating or substantially reducing the inherent potential for the wastes in SWMUs (and/or contaminated media at the facility) to cause future environmental releases or other risks to human health and the environment. There may be some situations where achieving substantial reductions in toxicity, mobility or volume may not be practical or even desirable. Examples might include large, municipal-type landfills, or wastes such as unexploded munitions that would be extremely dangerous to handle, and for which the short-term risks of treatment outweigh potential long-term benefits.

Estimates of how much the corrective measures alternatives will reduce the waste toxicity, volume, and/or mobility may be helpful in applying this factor. This may be done through a comparison of initial site conditions to expected post-corrective measure conditions.

c. Short-term Effectiveness

Short-term effectiveness may be particularly relevant when remedial activities will be conducted in densely populated areas, or where waste characteristics are such that risks to workers or to the environment are high and special protective measures are needed. Possible factors to consider include fire, explosion, exposure to hazardous substances and potential threats associated with treatment, excavation, transportation, and redisposal or containment of waste material.

d. Implementability

Implementability will often be a determining variable in shaping remedies. Some technologies will require State or local approvals prior to construction, which may increase the time necessary to implement the remedy. In some cases, State or local restrictions or concerns may necessitate eliminating or deferring certain technologies or remedial approaches from consideration in remedy selection. Information to consider when assessing implementability may include:

1. The administrative activities needed to implement the corrective measure alternative (e.g., permits, rights of way, off-site approvals, etc.) and the length of time these activities will take;

2. The constructibility, time for implementation, and time for beneficial results;

3. The availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials; and

4. The availability of prospective technologies for each corrective measure alternative.

e. Cost

The relative cost of a remedy may be an appropriate consideration, especially in those situations where several different technical alternatives to remediation will offer equivalent protection of human health and the environment, but may vary widely in cost. However, in those situations where only one remedy is being proposed, the issue of cost would not need to be considered. Cost estimates could include costs for: engineering, site preparation, construction, materials, labor, sampling/analysis, waste management/disposal, permitting, health and safety measures, training, operation and maintenance, etc.

F. Recommendation by Respondent for a Final Corrective Measure Alternative

In the CMS Report, the Respondent may recommend a preferred remedial alternative for consideration by U.S. EPA. Such a recommendation should include a description and supporting rationale for the proposed remedy, consistent with the remedial standards and the decision factors discussed above. Such a recommendation is not required and the U.S. EPA still retains the role of remedy selection.

G. Public Involvement Plan

After the CMS has been performed by the Respondent and the U.S. EPA has selected a preferred alternative for proposal in the Statement of Basis, it is the agency's policy to request public comment on the Administrative Record and the proposed corrective measure(s). Changes to the proposed corrective measure(s) may be made after consideration of public comment. U.S. EPA may also require that the Respondent perform additional corrective measures studies. If the public is interested, a public meeting may be held. After consideration of the public's comments on the proposed corrective measure, the agency develops the Final Decision and Response to Comments to document the selected corrective measure, the agency's justification for such selection, and the response to the public's comment. Additional public involvement activities may be necessary, based on site-specific circumstances.

Section II: Progress Reports

The Respondent will, at a minimum, provide U.S. EPA with signed monthly progress reports. These reports are required to contain the following information, but U.S. EPA requirements are not limited to this list:

1. A description and estimate of the percentage of the CMS completed;

2. Summaries of *all* findings in the reporting period, including results of any pilot studies;

3. Summaries of *all* changes made in the CMS during the reporting period;

4. Summaries of *all* contacts with representative of the local community, public interest groups or State government during the reporting period;

5. Summaries of *all* contacts made regarding access to off-site property;

6. Summaries of *all* problems encountered during the reporting period;

7. Actions being taken to rectify problems;

8. Changes in relevant personnel during the reporting period;

9. Projected work for the next reporting period; and

10. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

Section III: Proposed Schedule

The Respondent will provide the U.S. EPA with CMS submittals according to the following schedule:

Facility Submission	Due Date
Draft CMS Workplan (Section I)	Within 60 days of U.S. EPA approval of the RFI Report
Draft CMS Report (Section I)	In accordance with the U.S. EPA-approved CMS Workplan Schedule
Final CMS Report (Section I)	45 days after Public and U.S. EPA Comments on the Draft Final CMS
Progress Reports on Sections I	Monthly

ATTACHMENT IV

CORRECTIVE MEASURES IMPLEMENTATION SCOPE OF WORK

ATTACHMENT IV

Scope of Work for Corrective Measures Implementation

Purpose

The purpose of the Corrective Measures Implementation (CMI) program is to design, construct, operate, maintain and monitor the performance of the Corrective Measures selected by U.S. EPA and other measures/additional work determined necessary by U.S. EPA pursuant to this Order such that the performance standards are achieved and maintained. The Respondent must furnish all personnel, materials and services necessary for the implementation of the Corrective Measures.

Scope

The CMI program must consist of the following components:

Section I: Corrective Measures Implementation Work Plan

A. Program Management Plan

B. Public Involvement Plan

C. Health and Safety Plan

D. Quality Assurance Project Plan (if necessary)

E. Sampling and Analysis Plan (if necessary)

F. Surveys (if necessary)

Section II: Corrective Measures Design

A. Preliminary Design (if necessary)

B. Prefinal and Final Designs

C. Operation and Maintenance Plan (if necessary)

D. Cost Estimate

E. Project Schedule

F. Construction Quality Assurance Objectives

Section III: Corrective Measures Construction

A. Responsibility and Authority

B. Construction Quality Assurance Personnel Qualifications

C. Inspection Activities

D. Sampling Requirements

E. Documentation

Section IV: Other Reports and Submissions

A. Progress

B. Construction Completion Report

C. Attainment of Groundwater Performance Standards Report (if necessary)

D. Completion of Work Report (if necessary)

E. Institutional Controls (if necessary)

Section V: Proposed Schedule

Section I: Corrective Measures Implementation (CMI) Work Plan

The Respondent must prepare and submit a CMI Work Plan which includes the development and implementation of several plans, which must be prepared concurrently. Respondent must submit a draft CMI Work Plan within 60 days of notification of U.S. EPA's selection of the Corrective Measures and submit a final CMI Work Plan within 45 days of receipt of U.S. EPA's comments on the draft CMI Work Plan. The CMI Work Plan includes the following:

A. Program Management Plan

The Respondent must prepare a Program Management Plan (PMP) which includes a discussion of the technical approach, engineering designs and plans, schedules, and personnel needed for performing the design, construction, operation, maintenance and monitoring of Corrective Measures for U.S. EPA review and approval. The PMP must document the responsibility and authority of all organizations and key personnel involved with the implementation. The PMP must also include a description of qualifications of key personnel directing the Corrective Measure Design and Implementation, including contractor personnel.

B. Public Involvement Plan

The existing Public Involvement Plan (PIP) must be revised to describe the community relations program to be implemented by the Respondent during the design and construction subject to the approval of U.S. EPA. Specific activities which must be conducted include the revision of the PIP to reflect knowledge of community concerns and involvement during design and construction and the preparation of a fact sheet at the completion of the engineering design. At the request of U.S. EPA, the Respondent must participate in the preparation of information disseminated to the public and in providing information for public meetings that may be held or sponsored by the U.S. EPA.

C. Health and Safety Plan

Respondent must submit a Health and Safety Plan (HSP), which is not subject to U.S. EPA approval, that is designed to protect on-site personnel and area residents from physical, chemical and other hazards posed by the Corrective Measures, including pre-design studies.

D. Quality Assurance Project Plan (if necessary)

Respondent must prepare a Quality Assurance Project Plan (QAPP) to document all monitoring procedures, sampling, field measurements, and sample analyses to be performed during the Corrective Measures, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid and properly documented. The QAPP must be prepared in accordance with Attachment V. At the request of U.S. EPA, the Respondent must participate in a pre-QAPP meeting with the U.S. EPA prior to preparation of any QAPP.

A performance audit may be conducted by U.S. EPA on the laboratories selected by the Respondent.

E. Sampling and Analysis Plan (if necessary)

Respondent must develop a Sampling and Analysis Plan (SAP) for the predesign field activities and any monitoring programs required by this Order. Respondent must submit the SAP addressing predesign field activities with the draft CMI Work Plan and must propose a schedule for the submittal of any additional sampling plans. The SAP must include, at a minimum:

1. A description of the proposed field activities;

2. The proposed locations of soil borings, ground water monitoring wells and surface water monitoring points;

3. A description of how the SAP is expected to meet the requirements of the final remedy;

4. A description of the planned operation and maintenance (O&M) activities, including the anticipated frequency of each O&M task;

5. A flow chart and schedule of work to be performed during the CMI.

F. Surveys (if necessary)

[Examples of surveys that might be necessary include: a land survey to delineate the extent of the area to be subject to deed restrictions.]

Section II: Corrective Measures Design

Respondent must prepare final construction plans and specifications to implement the Corrective Measures at the facility which have been selected by U.S. EPA. The final product of the Corrective Measures Design must be a technical package (or packages) that contain and address all elements necessary to accomplish the Corrective Measures. This includes all design support activities, initial permitting and access requirements, operation and maintenance, and institutional controls, as well as technical elements.

A. Preliminary Design (if necessary)

The Respondent must submit a Preliminary Design when the design effort is approximately 50% complete. The Preliminary Design submittal must include or discuss, at a minimum, the following:

1. Design strategy and basis, including compliance with all applicable or relevant environmental and public health standards and minimization of environmental and public impacts;

2. Technical factors of importance, including use of currently accepted environmental control measures and technology, design constructability, and use of currently acceptable construction practices techniques;

3. A summary of activities performed and data generated during Corrective Measures Design or Predesign, including results and interpretations of data and studies;

4. Design assumptions and parameters, including design restrictions and process performance criteria;

5. Real estate, easement and permit requirements;

6. Preliminary construction schedule, including contracting strategy;

7. Discussion of the possible sources of error and references to possible operation and maintenance problems;

8. Detailed drawings of the proposed designs, including qualitative and quantitative flow sheets;

9. Tables listing equipment and specifications;

10. Tables giving material and energy balances; and

11. Sample calculations and derivation of equations essential to understanding the report.

B. Prefinal and Final Designs

The Respondent must submit the Prefinal Design when the design effort is 95% complete and must submit the Final Design when the design effort is 100% complete. The Prefinal Design must fully address all U.S. EPA comments on the Preliminary Design. After receipt of U.S. EPA comments on the Prefinal Design, Respondent must execute the required revisions and submit the Final Design with reproducible drawings and specifications suitable for bid advertisement. The Final Design consists of the Final Design Plans and Specifications (100% complete), Final Construction Cost Estimate, Final Operation and Maintenance Plan, Construction Quality Assurance Objectives, Final Project Schedule and Final Health and Safety Plan specifications.

The U.S. EPA may require additional work, including but not limited to studies, to supplement the available technical data. Respondent must furnish all equipment and personnel necessary to complete any additional work needed. Draft and final reports must be prepared and present all data obtained during the additional studies, a summary of the results, and conclusions.

C. Operation and Maintenance Plan (if necessary)

Respondent must prepare an Operation and Maintenance (O&M) Plan to cover both implementation and long term maintenance of the Corrective Measures. A draft O&M Plan must be submitted concurrently with the Prefinal Design and the final O&M Plan with the Final Design. The plan must include the following elements:

1. Description of normal O&M:

   a. Description of tasks for operation;

   b. Description of tasks for maintenance;

   c. Description of prescribed treatment or operation conditions; and

   d. Schedule showing frequency of each O&M task.

2. Description of potential operating problems:

a. Description and analysis of potential operation problems;

b. Sources of information regarding problems; and

c. Common and/or anticipated remedies.

3. Description of routine monitoring and laboratory testing:

a. Description of monitoring tasks;

b. Description of required laboratory tasks and their interpretation;

c. Required data collection, Quality Assurance Project Plan (QAPP);

d. Schedule of monitoring frequency; and

e. Description of triggering mechanisms for ground water/surface water monitoring results.

4. Description of alternate O&M:

a. Should system fail, alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and the environment or exceed cleanup standards; and

b. Analysis of vulnerability and additional resource requirements should a failure occur.

5. Corrective steps:

a. Description of corrective steps to be implemented in the event that cleanup or performance standards are not met; and

b. Schedule for implementing these corrective steps.

6. Safety plan:

a. Description of precautions, of necessary equipment, etc., for site personnel; and

b. Safety tasks required in event of systems failure.

7. Description of equipment:

   a. Equipment identification;

   b. Installation of monitoring components;

   c. Maintenance of site equipment; and

   d. Replacement schedule for equipment and installed components.

8. Records and reporting mechanisms required:

   a. Daily operating logs;

   b. Laboratory records;

   c. Records for operating costs;

   d. Mechanism for reporting emergencies;

   e. Personnel and maintenance records; and

   f. Monthly/annual reports to State agencies.

D. Cost Estimate

Respondent must refine the cost estimate developed in the CMS to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate must include both capital and O&M costs. An Initial Cost Estimate must be submitted simultaneously with the Prefinal Design and the Final Cost Estimate with the Final Design.

E. Project Schedule

Respondent must develop a project schedule for construction and implementation of the Corrective Measures which identifies timing for initiation and completion of all critical path tasks. Respondent must specifically identify dates for completion of the project and major interim milestones. An initial project schedule must be submitted simultaneously with the Prefinal Design and a final project schedule with the Final Design.

F. Construction Quality Assurance Objectives

Respondent must identify and document the objectives and framework for the development of a construction quality assurance

program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements and documentation. Draft Construction Quality Assurance Objectives must be submitted simultaneously with the Prefinal Design and the Final Construction Quality Assurance Plan must be submitted following U.S. EPA approval of the Final Design.

Section III: Corrective Measures Construction

The Respondent must finalize the Construction Quality Assurance Plan incorporating comments received on the draft Construction Quality Assurance Plan submitted with the Prefinal Design. Within 45 days of U.S. EPA approval of the Final Design, the Respondent must implement a construction quality assurance (CQA) program to ensure, with a reasonable degree of certainty, that a completed Corrective Measure will meet or exceed all design criteria, plans and specifications. The CQA Plan is a facility specific document which must be approved by U.S. EPA prior to the start of the construction. At a minimum, the CQA plan should include the elements which are summarized below. Upon U.S. EPA approval of the CQA Plan, the Respondent must construct and implement the Corrective Measures in accordance with the approved design, schedule and CQA plan. Respondent must also implement the elements of the approved O&M plan.

A. Responsibility and Authority

The Respondent must describe fully in the CQA Plan the responsibility and authority of all organizations (i.e., technical consultants, construction firms, etc.) and key personnel involved in the construction of the corrective measures. The Respondent must also identify a CQA officer and the necessary supporting inspection staff.

B. Construction Quality Assurance Personnel Qualifications

The Respondent must set forth the qualifications of the CQA Officer and supporting inspection personnel must be presented in the CQA plan to demonstrate that they possess the training and experience necessary to fulfill their identified responsibilities.

C. Inspection Activities

The Respondent must summarize in the CQA plan the observations and tests that will be used to monitor the construction and/or installation of the components of the Corrective Measures. The plan must include the scope and frequency of each type of inspection. Inspections must verify compliance with environmental requirements and include, but not be limited to air quality and emissions monitoring records, waste disposal records (e.g., RCRA transportation manifests), etc. The inspection must also ensure compliance with all health and safety procedures. In addition to the oversight inspections, the Respondent must conduct construction inspections.

Within 30 days after Respondent makes a preliminary determination that construction is complete, Respondent must notify U.S. EPA for the purposes of conducting an inspection. The inspection must consist of a walk-through inspection of the entire project site. The inspection is to determine whether the project is complete and consistent with the contract documents and the U.S. EPA-approved Corrective Measures. Any outstanding construction items discovered during the inspection must be identified and noted. Additionally, treatment equipment, if installed, must be operationally tested by the Respondent. The Respondent must certify that the equipment has performed to meet the purpose and intent of the specifications. Retesting will be completed where deficiencies are revealed. The Respondent must outline in the inspection report the outstanding construction items, actions required to resolve items, completion date for these items and date for final inspection.

Upon completion of any outstanding construction items, the Respondent must notify U.S. EPA for the purposes of conducting a final inspection. The final inspection must consist of a walk-through inspection of the project site. Confirmation must be made that outstanding items have been resolved.

D. Sampling Requirements

The Respondent must present in the CQA plan the sampling activities, sample size, sample locations, frequency of testing, criteria for acceptance and rejection and plans for correcting problems as addressed in the project specifications.

E. Documentation

The Respondent must describe in detail in the CQA plan the reporting requirements for CQA activities. This must include such items as daily summary reports, inspection data sheets, problem identification and corrective measures reports, design acceptance reports and final documentation. Provisions for the final storage of all records must be presented in the CQA Plan.

Section IV: Other Reports and Submissions

The Respondent must prepare plans, specifications and reports as set forth in Sections I through III to document the design, construction, operation, maintenance and monitoring of the Corrective Measure. Other documentation must include, but not be limited to the following:

A. Progress

The Respondent must at a minimum provide the U.S. EPA with signed monthly progress reports during the design and construction phases and semi-annual progress reports for operation and maintenance activities containing:

1. A description and estimate of the percentage of the CMI completed;

2. Summaries of *all* findings;

3. Summaries of *all* changes made in the CMI during the reporting period;

4. Summaries of *all* contacts with representatives of the local community, public interest groups or State government during the reporting period;

5. Summaries of *all* problems or potential problems encountered during the reporting period;

6. Actions being taken to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

B. Construction Completion Report

Within 30 days of a successful final inspection, Respondent must submit a Construction Completion Report. In the report, a registered professional engineer and the Respondents Project Coordinator must state that the Corrective Measures have been constructed in accordance with the design and specifications, to the best of their knowledge, and the performance standards have been attained. The written report must include as-built drawings

signed and stamped by a registered professional engineer. The report must be certified by a Responsible Official pursuant to Section XIV of the Order. The Final O&M Plan must be submitted concurrently with the Construction Completion Report.

C. Attainment of Ground Water Performance Standards Report (if necessary)

Within 45 days after the Respondent concludes that the ground water performance standards have been attained, the Respondent must submit a written report and certification. In the report, a registered professional engineer and the Respondents Project Coordinator must state that the ground water performance standards have been attained in full satisfaction of the requirements of this Order. The report must be certified by a Responsible Official pursuant to Section XIV of the Order.

D. Completion of Work Report (if necessary)

This report must be submitted by the Respondent when construction is complete, performance standards have been attained and O&M is complete. Within 45 days after the Respondent concludes that all phases of the work (including O&M and monitoring) have been completed, the Respondent must schedule and conduct a precertification inspection to be attended by representatives of the Respondent and U.S. EPA. If, after the precertification inspection and any prefinal or subsequent final inspections required by U.S. EPA, the Respondent still concludes that the work has been fully performed, the Respondent must submit within 30 days of a successful final inspection, a written Completion of Work Report to U.S. EPA for approval. In the report, a registered professional engineer and the Respondents Project Coordinator must state that the Corrective Measures have been completed in full satisfaction of the requirements of this Order. The written report must include as-built drawings stamped by a registered professional engineer. The report must be certified by a Responsible Official pursuant to Section XIV of the Order.

E. Institutional Controls (if necessary)

Respondent must implement the deed notification/restrictions contained in the form set forth in U.S. EPA's decision on corrective measure(s).

Section V: Proposed Schedule

Respondent will provide the U.S. EPA with the CMI submittals according to the following schedule:

Facility Submission	Due Date
Draft CMI Workplan (Section I)	60 days after notification of U.S. EPA's selection of Corrective Measures
Final CMI Workplan (Section I)	45 days after receipt of comments on the Draft CMI Workplan
Preliminary Design (*if necessary*) (Section II)	In accordance with the project schedule approved in the CMI Workplan
Prefinal Design (including Draft O&M and CQA Plans, *if necessary*) (Section II)	In accordance with the project schedule approved in the CMI Workplan
Final Design (including Final O&M Plan, *if necessary*) (Section II)	45 days after receipt of comments on the Prefinal Design

Facility Submission	Due Date
Final CQA Plan (Section III)	Within 45 days of approval of the Final Design
Initiate Construction of Corrective Measures Design (Section III)	Immediately upon approval of the CQAP
Initial Construction Inspection (Section III)	30 days after Construction Completion
Construction Completion Report (Section IV)	30 days after final Construction Inspection
O&M Progress Reports (Section IV)	No later than 6 months after approval of the Construction Completion Report and semi-annually thereafter
Attainment of GW Performance Standards Report (*if necessary*) (Section IV)	45 days after determination that GW performance standards have been attained
Completion of Work Inspection (*if necessary*) (Section IV)	45 days after completion of all work, including O&M
Completion of Work Report (*if necessary*) (Section IV)	30 days after final Completion of Work Inspection
Progress Reports on Sections I through IV	Monthly

ATTACHMENT V

REGION 5 RCRA QUALITY ASSURANCE PROJECT PLAN POLICY

available at

http://www.epa.gov/reg5rcra/ca/qapp.htm

State and Tribal Partnerships
Hazardous Waste
Solid Waste
Underground Storage and Leaking Underground Tanks
Children's Health

Region 5 RCRA Corrective Action

Region 5 Waste Ar
Compliance Assista
Corrective Actio
Enforcement
Permit Activities
Pollution Preventi
Public Participati
Regional Databas
Solid Waste
UST/LUST
Waste Minimizati

Regional Policy for Development of Quality Assurance Project Plans (QAPP)

This document was revised in April 1999 to provide an updated "EDQL - Appendix C." The following document provides the Regional Policy for development of Quality Assurance Project Plans (QAPP), which must submitted by facilities who are regulated under the Resource Conservation and Recovery Act (RCRA). When addressing these specific project objectives, Workplans must be developed in accordance with Regional Policy(s). Special care must be taken to assure that the collection of data documentation is of known and reliable quality. This QAPP Policy document details how facilities can design investigations utilizing QAPP in such ways that data of an appropriate quality can be generated for regulatory decision-making.

Download the PDF version of this document (896 K)

Select to download the the free Adobe Acrobat Reader.
EXIT disclaimer

For more information contact: Allen Debus 312/886-6186, Brian Freeman 312/353-2720, or Nabil Fayoumi 312/886-6840

ATTACHMENT VI

REFERENCES

ATTACHMENT VI

References

The following list comprises guidance documents and other information, in chronological order, which may be useful in implementing a RCRA Section 3008(h) Order. This list does not include every guidance document pertaining to work performed under a RCRA Section 3008(h) Order.

"*Health and Safety Requirements of Employees Employed in Field Activities*," EPA Order 1440.2, July 12, 1981.

"*Corrective Measures for Releases to Ground Water from SWMUs*," Draft Final, EPA/530-SW-88-020, March 1985.

"*Corrective Measures for Releases to Soil from SWMUs*," Draft Final EPA/530-SW-88-022, March 1985.

"*Technical Guidance for Corrective Measures -- Subsurface Gas*," EPA/530-SW-88-023, March 1985.

"*Technical Guidance for Corrective Measures--Determining Appropriate Technology and Response for Air Releases*," Draft Final, EPA/530-SW-88-021, March 1985.

"*RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD)*," OSWER Directive 9950.1, September 1986.

"*Technical Guidance Document: Construction Quality Assurance for Hazardous Waste Land Disposal Facilities*," EPA 530/SW-86/031, OSWER Directive 9472.003, October 1986.

"*RCRA Facility Assessment (RFA) Guidance*," EPA/530/SW-86/053, October 1986.

"*Data Quality Objectives for Remedial Response Activities*," EPA/540/G-87/003 & 004, OSWER Directive 9335.0-7B, March 1987.

"*Alternate Concentration Limit Guidance, Part 1: ACL Policy and Information Requirements*," Interim Final, OSWER Directive 9481.00-6C, July 1987.

"*A Compendium of Superfund Field Operations Methods*," Two Volumes, EPA/540/P-87/001a&b, OSWER Directive 9355.0-14, August 1987.

"*Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors,*" OSWER Directive 9285.6-03, March 25, 1991.

"*Synopses of Federal Demonstrations of Innovative Site Remediation Technologies,*" EPA/540/8-91/009, May 1991.

"*Bibliography of Federal Reports and Publications Describing Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation,*" EPA/540/8-91/007, May 1991.

"*Handbook: Ground Water,*" Volumes I and II, EPA/625/6-90/016 (a&b), September 1990 and July 1991.

"*Guide for Conducting Treatability Studies under CERCLA: Aerobic Biodegradation Remedy Screening*", EPA/540/2-91/013B, July 1991.

"*Handbook: Stabilization Technologies for RCRA Corrective Actions,*" EPA/625/6-91/026, August 1991.

"*Guide for Conducting Treatability Studies under CERCLA: Soil Vapor Extraction*", EPA/540/2-91/019B, September 1991.

"*Guide for Conducting Treatability Studies under CERCLA: Soil Washing,*" EPA/540/2-91/020B, September 1991.

"*Selected Alternative and Innovative Treatment Technologies for Corrective Action and Site Remediation,*" EPA/540/8-91/092, 1991.

"*Characterizing Heterogeneous Wastes: Methods and Recommendations,*" EPA/600/R-92/033, Feb. 1992.

"*Final Guidance for Data Useability in Risk Assessment,*" (Parts A & B), OSWER Directive 9285.7-09A, April 1992.

"*Literature Survey of Innovative Technologies for Hazardous Waste Site Remediation: 1987 - 1991,*" EPA/542/B-92/004, July 1992.

"*Handbook of RCRA Ground-Water Monitoring Constituents: Chemical and Physical Properties,*" EPA/530/R-92/022, September 1992.

"*Ground-Water Monitoring: Draft Technical Guidance,*" EPA/530-R-93-001, November 1992.

"*Statistical Training Course for Ground-Water Monitoring Data Analysis,*" EPA/530/R-93/003, 1992.

"*Ecological Data Quality Levels, RCRA Appendix IX Hazardous Constituents,*" U.S. EPA, Region 5, Draft Report, August 18, 1997.

"*Region 5 RCRA Subtitle C Corrective Action Risk Assessment Guidance,*" U.S. EPA, Region 5, Letter and Enclosures, February 12, 1998.

"*Documentation of Environmental Indicator Determination Guidance,*" Interim Final, February 5, 1999.

"*Use of Institutional Controls in the RCRA Corrective Action Program,*" U.S. EPA, Region 5, WPTD, March 2000.

"*Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups,*" U.S. EPA, OSWER, EPA 540-F-00-005, September 2000.

"*Handbook of Groundwater Protection and Cleanup Policies for RCRA Corrective Action,*" U.S. EPA, OSWER, EPA/530/R-01/015, September 2001.

"*Region 9 Preliminary Remediation Goals (PRGs),*" U.S. EPA, Annual Update, October 1, 2002.

ATTACHMENT VII

ACKNOWLEDGMENT OF TERMINATION

Acknowledgment of Termination and Agreement to Record Preservation and Reservation of Rights

1. The United States Environmental Protection Agency (U.S. EPA) agrees and acknowledges that the terms of Order RCRA-___-___-___ issued by U.S. EPA on _____ ___, 20__ (Order), including any additional tasks determined by U.S. EPA to have been required pursuant to the Order, but excluding Section XIII: Record Preservation, have been satisfactorily completed based upon the information presently available to U.S. EPA.

2. Respondent agrees and acknowledges that the terms of Section XIII: Record Preservation remain in effect until _____ ___, 20__ (date 6 years after termination of the Order).

3. Respondent agrees and acknowledges that Respondent's completion of the terms of the Order does not limit or otherwise preclude U.S. EPA from taking additional enforcement action pursuant to Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. §6928(h), or other available legal authorities, should U.S. EPA determine that such actions are warranted.

4. Respondent agrees and acknowledges that Respondent's completion of the terms of the Order does not relieve Respondent of its obligations to comply with RCRA or any other applicable local, State, or Federal laws and regulations.

IT IS SO AGREED AND ACKNOWLEDGED:

Date:_____ By: _____
(Name)
(Title)
(RESPONDENT)

Date:_____ By: _____
(Name)
(Title)
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION 5
(Petitioner)

RCRA-05- 2003-0009

IN THE MATTER OF:
Dana Corporation
Boston Weatherhead Division
5278 U.S. 24 East
Antwerp, Ohio 45813
EPA ID#: OHD 005 039 730

DOCKET NO. RCRA-05- 2003 - 0009

CERTIFICATE OF SERVICE

I hereby certify that today I filed the original of this **Administrative Order on Consent** and this **Certificate of Service** in the office of the Regional Hearing Clerk (E-19J), United States Environmental Protection Agency, Region 5, 77 W. Jackson Boulevard, Chicago, IL 60604-3590.

I further certify that I then caused true and correct copies of the filed document to be mailed to the following:

Mr. Richard P. Fahey, Esq.
Vorys, Sater, Seymour and Pease LLP
52 East Gay Street
P.O. Box 1008
Columbus, Ohio 43216-1008
Certified Mail # 7001 0320 0006 1565 3140

This is said persons last known addresses to the subscriber.

Dated: May 1st, 2003

Katrina D. Jones
Secretary, ECAB
Waste, Pesticides and Toxics Division
Compliance Section #2

03 MAY -1 P2:53