

FINAL STATEMENT OF BASIS

FMC Corporation
Operable Unit Number 03: Air Deposition Area 2 (Off-Site)
Middleport, Niagara County
USEPA ID No.: NYD002126845
Site No. 932014
February 2021



**Department of
Environmental
Conservation**

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT – FINAL STATEMENT OF BASIS

FMC Corporation
Operable Unit Number: 03
State Superfund Project
Middleport, Niagara County
Site No. 932014
February 2021

Statement of Purpose and Basis

This document presents the remedy for Operable Unit Number: 03: Air Deposition Area 2 (Off-Site) of the FMC Corporation site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 03 of the FMC Corporation site and the public's input to the remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. **Remedial Design** - A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which

would otherwise be considered a waste;

- Maximizing habitat value and creating habitat when possible;
 - Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
 - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
2. Excavation – Excavation and off-site disposal of all soils in OU3 which exceed the site-specific soil cleanup objective of 20 ppm for arsenic based on the local background study. The Department will employ some flexibility in achievement of the 20 ppm cleanup objective pursuant to the criteria in DER-10, the Department’s Technical Guidance for Site Investigation. In addition, consideration will also be applied to accommodate property owner concerns related to preservation of their property with respect to specific features such as mature trees, sheds, decorative plantings, or other features of significance to the property owner where possible; a property owner has the right to refuse remediation of their property. Approximately 57,000 cubic yards of contaminated soil will be removed from OU3.
 3. Backfill – Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the previous grades in OU3.
 4. Where appropriate and, if approved by the Department, in non-residential areas and residential areas larger than 5 acres, excavation may be supplemented with or replaced by in-place soil tilling/blending. Such activities will require additional pilot study(s) under a Department approved work plan demonstrating that in-place soil tilling/blending will achieve the remedial objective.
 5. Properties will be restored by seeding (non-residential properties and residential properties greater than 2.5 acres) or placement of sod (residential property less than 2.5 acres). Trees will be replaced at the discretion of the property owner.
 6. If soils exceeding the site-specific cleanup objective remain a Site Management Plan will be required. The Site Management Plan will include an Institutional and Engineering Control Plan that identifies all deed restrictions within the Study Areas and details the steps and media-specific requirements necessary to assure the institutional and engineering controls remain in place and effective (any deed restriction required by the remedy will reference the site management plan). This includes a requirement for the remedial party to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3). This plan will include but may not be limited to:
 - an Excavation Plan which details the provision for manage of future excavations in areas of remaining contamination;
 - an Annual Notification Plan which details the annual notification to property owners where remediation did not occur (including those not previously sampled) or which were determined not to have fully achieved the remedial goal to achieve a no further action letter. The notification plan will require the remedial party to

offer the owner(s) of such property the opportunity to have remedial action conducted on their property consistent with the remedy. Such remedial action would be performed by the remedial party. The Notification Plan should be consistent with the 2019 Administrative Order on Consent; and

- Monitoring of soil to assess the performance and effectiveness of the remedy.
 - provisions for the steps necessary for the periodic reviews and certification of the institutional controls
7. Unless implementation of the remedy for OU3 is completed within 60 months of the date of issuance of the final Statement of Basis, FMC shall post financial assurance using one or more of the financial instruments in 6 NYCRR 373-2.8 in the amount of the cost projection for the remainder of the remedy selected in the final Statement of Basis. Financial assurance must include all remedial activities for the site that have not been implemented.

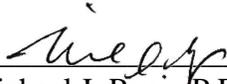
New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

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

____ February 11, 2021 _____
Date



Michael J. Ryan, P.E., Director
Division of Environmental Remediation

FINAL STATEMENT OF BASIS

FMC Corporation
Middleport, Niagara County
Site No. 932014
February 2021

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Department of Environmental Conservation
Region 9 Office
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, NY 14203-2999
Contact Person: Joshua Vaccaro
Telephone: (716) 851-7070

Department of Environmental Conservation
Central Office
625 Broadway
Albany, NY 12233-7013
Contact Person: Nathan Freeman
Telephone: (518)402-9767

Middleport Village Library
9 Vernon Street
Middleport, New York 14105

DECInfo Locator - Web Application
<https://www.dec.ny.gov/data/DecDocs/932014/>

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at <http://www.dec.ny.gov/chemical/61092.html>

SECTION 3: SITE DESCRIPTION AND HISTORY

LOCATION: The FMC Facility (FMC Site) is located at 100 Niagara Street in the village of Middleport, Town of Royalton, Niagara County New York. Operable Unit 3, the subject of this document, is located north of the FMC Facility in the Village of Middleport and Town of Royalton, Niagara County and in the Town of Shelby, Orleans County. The location of the FMC Site and Operable Unit 3 is shown on Figure 1 – Site Location Map.

SITE FEATURES: The FMC Site encompasses approximately 102 acres. The southern portion of the FMC site (approximately 39 acres) consists of maintained grassy fields, parking lots, roads, a maintenance building, and an office building. The northern portion of the FMC site is covered with a clay/asphalt cap (North Site Cover), buildings, a large surface impoundment and approximately 2,700 feet of railroad track and bedding. Operable Unit 3, also referred to as Air Deposition Area 2, includes multiple off-site areas including a portion of the Erie Barge Canal Towpath, the southern embankment of the Erie Barge Canal, open agricultural fields and wooded land north of the Erie Canal and east of the FMC facility.

CURRENT ZONING: The FMC Site is currently zoned industrial (F-1) and is surrounded by areas zoned as residential, agricultural, business, and light industrial. Operable Unit 3 is comprised of agricultural and residential zoned parcels.

HISTORIC USES: Prior to its use as a manufacturing facility, the FMC property and adjacent areas were used for agricultural purposes with the exception the North Railroad Property. The North Railroad Property is traversed by the mainline railroad tracks, which were constructed in the early to mid-1800s and has since been used for the operation of the railroad tracks.

Manufacturing operations began at the FMC Facility in 1904 with the Niagara Sprayer Company. Activities at the site included spraying machine and pesticide manufacturing, formulation and packaging, and research and development. In 1943 FMC (known then as Food Machinery Corporation) purchased Niagara Sprayer Company including the Middleport Facility. The FMC site was used for the manufacturing of chemicals that are used as pesticides and herbicides from the early 1920s to 1985. FMC ceased pesticide manufacturing operations at the Middleport Facility in 1985 and since then the site has been used for the formulation (mixing and blending) and packaging of crop protection products including Furadan (carborfuran), Talstar (bifenthrin) and Command (clomazone). During its manufacturing period, the plant disposed of hazardous and non-hazardous wastes in an on-site landfill and a number of surface impoundments.

On-site investigations began in 1973 with an extensive soil boring program which confirmed the presence of buried wastes and elevated arsenic in soil over much of the plant property. Further investigations performed in the 1980s identified several hazardous constituents in on-site soil, surface water and groundwater, as well as releases to off-site areas via past production discharges, contaminated surface water run-off and air emissions.

OPERABLE UNITS: The site has been divided into 11 Operable Units (OUs) to facilitate environmental investigations and remediation. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination:

OU1: On-site – FMC facility including areas of buried waste and impacted soil and the northern railroad property. This OU does not include the eastern parcel of the plant (OU11) or groundwater contamination (OU10);

OU2: Off-site – Air Deposition Area #1 (south of Erie Canal and west of Niagara/Orleans County Line) where soil has been impacted by past air emissions (primarily arsenic);

OU3: Off-site – Air Deposition Area #2 (north of Air Deposition Area #1 and east of Niagara/Orleans County Line) where soil has been impacted by past air emissions (primarily arsenic);

OU4: Off-site – The Royalton-Hartland High School and Middle School property;

- OU5: Off-site – Culvert 105 storm sewer pipe/ditch and flood zone where surface sediment/soil and sub-surface soil has been impacted by past surface water releases;
- OU6: Off-site – Tributary One South of Pearson Road where stream sediment and flood zone soil areas have been impacted by past production discharges;
- OU7: Off-site – Tributary One North of Pearson Road where stream sediment and flood zone soil areas have been impacted by upstream migration of past production discharges;
- OU8: Off-site – Jeddo & Johnson Creeks where stream sediment and flood zone soil areas have been impacted by upstream migration of past production discharges;
- OU9: On-site – Southwest Commercial Property (Former On-site FMC R&D Facility) where soil has been impacted by past air emissions and waste storage operations;
- OU10: On- and off-site groundwater contamination; and
- OU11: On-site – Eastern Plant Parcel (Tax Block and Lot 86.00-3-9).

This document addresses OU3 – Air Deposition Area #2, which includes the Erie Barge Canal Towpath, the southern embankment of the Erie Barge Canal, open agricultural fields and wooded land north of the Erie Canal and east of the FMC facility.

A Statement of Basis was issued previously for OUs 2, 4, and 5. A Statement of Basis will be issued for OUs 1, 6, 7, 8, 9, 10 and 11, in the future.

SITE GEOLOGY AND HYDROGEOLOGY: The Middleport area lies north of the Niagara Escarpment which is the dominant landform of the area. The elevation of the top of the escarpment is approximately 600 feet above mean sea level (AMSL) and the face slopes gently to the north to an elevation of approximately 500 feet AMSL at the Village of Middleport.

The soil and unconsolidated overburden material overlying the bedrock in the vicinity of the FMC Facility ranges in thickness from about 4 feet to a depth of over 16 feet. The overburden mainly consists of glacial deposits that in areas have been reworked or may contain fill materials. The glacial deposits consist of end moraine (deposits at the edge of a melting ice sheet) materials along a narrow band north of Middleport and ground moraine deposits that cover most of the area. The end moraine material consists of silty-clay to sandy-silt and is moderately to abundantly stony. The ground moraine deposit (lodgment till) consists of reddish-brown, silty-clay with some sand, cobbles, and boulders. This lodgment till is very dense and overlays the top of bedrock as a discontinuous sheet. The bedrock geology beneath the area is composed of alternating units of shale, sandstone, and limestone rock that dip toward the southeast.

The overburden materials are relatively impermeable due to their high clay content, limiting horizontal groundwater flow in the overburden. Horizontal groundwater flow to wells does not yield appreciable quantities of water, although groundwater will slowly leak to the underlying bedrock. The depth to overburden groundwater is approximately 2.3 feet below ground surface (bgs) north of the FMC Facility and between 1-6 feet bgs at the FMC Facility. The Erie Canal

may have a local effect on the groundwater system by contributing water to the overburden.

Groundwater flow in the shallow bedrock unit occurs primarily at the top of the bedrock surface where glacial action has increased fracture density. The permeability of the shallow bedrock varies depending on the type of rock and fracture density.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative which allows for unrestricted use of the site was evaluated.

A comparison of the results of the RI against unrestricted use standards, criteria and guidance values (SCGs) for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

FMC Corporation

FMC

In 1990, NYSDEC issued a Consent Order requiring FMC to conduct an off-site Remedial Investigation/Feasibility Study (RI/FS). The findings of this off-site RI/FS were presented by FMC in a 1991 report which was revised and resubmitted by FMC in August 1993. The revised RI/FS was reviewed by NYSDEC but was never approved.

In 1991, FMC signed a Consent Order jointly administered by the USEPA and NYSDEC under the Resource Conservation & Recovery Act (RCRA). This Order required FMC to conduct a comprehensive on-site and off-site RCRA Facility Investigation (RFI) and, if determined necessary, a Corrective Measures Study (CMS). The Order also requires FMC to perform Interim Corrective Measures (ICMs) if deemed necessary by USEPA and NYSDEC.

In 2019, FMC entered into an Order with the NYSDEC which incorporates both on-site and off-site work. The 2019 Administrative Settlement and Order on Consent (Index No. CO 9-20140625-40), effective June 6, 2019 (Order) supersedes the 1991 Order.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- soil borings, and monitoring well installations,

The analytical data collected on this site includes data for:

- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: <http://www.dec.ny.gov/regulations/61794.html>

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified for this Operable Unit at this site is/are:

arsenic

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

arsenic

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed in OU3 during the RI.

FMC has completed the following Interim Remedial Measures (IRMs) at the site:

1987-1988 North Railroad Property

1996 Roy-Hart School Bleacher IRM (OU4)

1999 Roy-Hart Soil Removal IRM (OU4)

2003 West Properties IRM (OU2)

2007 P-Block Properties IRM (OU2)

2007 Wooded Parcel IRM (OU2)

2007 Culvert 105 Area IRM (OU5)

2011 Culvert 105 Properties AD1 and AE1 Partial IRM (OU5)

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 03.

The investigation analyzed samples for a full suite of parameters, including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, pesticides and PCBs. Based on the findings the Department determined that soil was the media of concern within OU3 and the primary contaminant in the soil was arsenic. Arsenic was detected in the soil at concentrations up to 49.3 parts per million (ppm), exceeding the residential use SCO of 16 ppm and the upper limit of local background of 20 ppm. Based on the results of the RFI, depths of contamination range from 0 to 12 inches bgs. Exhibit A provides additional details on the extent of contamination.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

People can come into contact with contaminants in soil by walking on the soil, digging or otherwise disturbing the soil.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Remediation Objective	Remedial Action
Soil	
<u>Public Health</u> <ul style="list-style-type: none">• Prevent ingestion and/or direct contact with contaminated soil.• Prevent the inhalation of, or exposure from contaminants in soil. <u>Environment</u> <ul style="list-style-type: none">• Prevent migration of contaminants that would result in groundwater or surface water contamination.• Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.	<ul style="list-style-type: none">• Remove soil with elevated arsenic concentrations with off-site disposal in a secure landfill. Replace with clean backfill• Potential tilling, following a pilot study that demonstrates achievement of the SCO's• Institutional and engineering controls

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in

Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as Soil Excavation to 20 ppm Arsenic.

The estimated present worth cost to implement the remedy is \$14,450,000.

The elements of the selected remedy are as follows:

1. Remedial Design - A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:
 - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
 - Reducing direct and indirect greenhouse gases and other emissions;
 - Increasing energy efficiency and minimizing use of non-renewable energy;
 - Conserving and efficiently managing resources and materials;
 - Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
 - Maximizing habitat value and creating habitat when possible;
 - Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
 - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and

2. Excavation – Excavation and off-site disposal of all soils in OU3 which exceed the site-specific soil cleanup objective of 20 ppm for arsenic based on the local background study. The Department will employ some flexibility in achievement of the 20 ppm cleanup objective pursuant to the criteria in DER-10, the Department’s Technical Guidance for Site Investigation. In addition, consideration will also be applied to accommodate property owner concerns related to preservation of their property with respect to specific features such as mature trees, sheds, decorative plantings, or other features of significance to the property owner where possible; a property owner has the right to refuse remediation of their property. Approximately 57,000 cubic yards of contaminated soil will be removed from OU3.
3. Backfill – Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the previous grades in OU3.
4. Where appropriate and, if approved by the Department, in non-residential areas and residential areas larger than 5 acres, excavation may be supplemented with or replaced by in-place soil tilling/blending. Such activities will require additional pilot study(s) under a Department approved work plan demonstrating that in-place soil tilling/blending will achieve the remedial objective.
5. Properties will be restored by seeding (non-residential properties and residential properties greater than 2.5 acres) or placement of sod (residential property less than 2.5 acres). Trees will be replaced at the discretion of the property owner.
6. If soils exceeding the site-specific cleanup objective remain a Site Management Plan will be required. The Site Management Plan will include an Institutional and Engineering Control Plan that identifies all deed restrictions within the Study Areas and details the steps and media-specific requirements necessary to assure the institutional and engineering controls remain in place and effective (any deed restriction required by the remedy will reference the site management plan). This includes a requirement for the remedial party to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3). This plan will include but may not be limited to:
 - an Excavation Plan which details the provision for manage of future excavations in areas of remaining contamination;
 - an Annual Notification Plan which details the annual notification to property owners where remediation did not occur (including those not previously sampled) or which were determined not to have fully achieved the remedial goal to achieve a no further action letter. The notification plan will require the remedial party to offer the owner(s) of such property the opportunity to have remedial action conducted on their property consistent with the remedy. Such remedial action would be performed by the remedial party. The Notification Plan should be consistent with the 2019 Administrative Order on Consent; and
 - Monitoring of soil to assess the performance and effectiveness of the remedy.
 - provisions for the steps necessary for the periodic reviews and certification of the institutional controls

7. Unless implementation of the remedy for OU3 is completed within 60 months of the date of issuance of the final Statement of Basis, FMC shall post financial assurance using one or more of the financial instruments in 6 NYCRR 373-2.8 in the amount of the cost projection for the remainder of the remedy selected in the final Statement of Basis. Financial assurance must include all remedial activities for the site that have not been implemented.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Facilities Investigation (RFI) for all environmental media that were evaluated. As described in Section 5.3, samples were collected from soil to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Soil

A summary of findings from the investigations for OU3, including contaminants and areas identified for a corrective measures study, are described below:

- the primary contaminant in the soil in OU3 is arsenic;
- concentrations of arsenic in soil indicate an anthropogenic (human-made) source; and
- arsenical pesticides were manufactured and packaged at the FMC facility.

A total of 216 soil samples were collected from 54 locations on six properties within OU3. All of the properties sampled have arsenic levels of greater than 20 parts per million (ppm) in the soil, with a maximum concentration of 49.3 ppm. Figure 2 attached shows the distribution of arsenic contamination in OU3.

Concurrent with the RFI activities, a study to determine background soil arsenic concentrations for the Middleport area was conducted (2003 Report on the Development of Arsenic Background in Middleport Soils (CRA 2003)). In this study 103 soil samples were collected and analyzed for arsenic from wooded areas, agricultural fields, commercial/industrial properties, residential properties, and orchards in the Gasport area, which is not considered affected by FMC Plant releases. The sample results were weighted to approximate the historic land uses in Middleport (i.e., since 33% of Middleport was historically residential, residential arsenic data was weighted at 33%). The value of 20 ppm represents the weighted 95th percentile of the entire background data set, which means that 95% of the weighted data falls at or below 20 ppm. It also happens to be the 95th percentile (un-weighted) of the residential portion of the background data set (i.e., 95% of the residential data falls at or below 20 ppm). The 20 ppm arsenic level was selected in 2003 as an appropriate upper limit of the estimated range of soil arsenic background in Middleport as appropriately weighted to reflect historic land uses. Therefore, the arsenic background concentration of 20 ppm is the site-specific cleanup objective for arsenic.

Table 2 – OU3 Soil Concentrations

Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCG ^b (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG ^c (ppm)	Frequency Exceeding Restricted SCG	Site Specific Cleanup Objective	Frequency Exceeding Site Specific Cleanup Objective
Inorganics							
Arsenic	2.1 to 49.3	13	135 of 216	16	52 of 216	20	50 of 216

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.

c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives

Based on the findings of the Remedial Investigation, the presence of arsenic has resulted in the contamination of soil. The site contaminant identified in soil which is considered to be the primary contaminant of concern, to be addressed by the remedy selection process is, arsenic.

Exhibit B

Description of Remedial Alternatives

In 2015 FMC submitted the draft Corrective Measures Study (CMS) Report to the Agencies. As part of the 2019 FMC Order on Consent, the CMS has been accepted for technical completeness. In evaluating the remedial alternatives set forth in the CMS Report, the Department has included an additional remedial alternative. For the purposes of this document, the Department’s remedial alternative is identified as Alternative 3. The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1 (CMA Alternative A): No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2 (CMA Alternative B): Land Use Based Alternative

The Land Use Based Alternative will excavate arsenic contaminated soil from each property to achieve a post-remediation average arsenic soil concentration and a maximum arsenic soil concentration for each property based on land use as shown in Table 1. Based on the criteria listed below, the properties within OU3 do not exceed the average and maximum concentrations for residential. This alternative relies on averaging to determine if certain remedial goals have been achieved and is not consistent with Department guidance for remedy selection.

Table 1: Alternative 2 Remedial Goals

Land Use	Average Concentration	Maximum Concentration
Residential	20 ppm	40 ppm
Public and Institutional (excluding non-ICM Roy Hart school property)	30 ppm	60 ppm
Agricultural, Commercial	40 ppm	80 ppm
Industrial, Railroad, Utility	40 ppm	80 ppm

Present Worth:\$0
Capital Cost:\$0
Annual Costs:\$0

Alternative 3: Excavation to 20 ppm Arsenic

This alternative achieves all of the SCGs discussed in Section 5.1.1 and Exhibit A and soil meets the site

specific cleanup goal of 20 ppm for arsenic in soil. This alternative will include excavation and off-site disposal of all soils in OU3 which exceed the site-specific arsenic soil cleanup objective of 20 ppm based on the upper limit of background for this area. The alternative also includes the provision to allow the Department, on a case-specific basis, to supplement or replace excavation with in-place soil tilling/blending for residential and non-residential properties greater than 5 acres. Prior to approving supplementation or replacement with soil tilling/blending, a Department-approved pilot test demonstrating the ability to achieve the required remedial goals will be required. Approximately 57,000 cubic yards of contaminated soil will be removed from the site.

<i>Present Worth:</i>	\$14,450,000
<i>Capital Cost:</i>	\$14,450,000
<i>Annual Costs:</i>	\$50,000

The cost estimate for alternative 3 was based on analytical data presented in FMC’s September 2015 Draft Corrective Measures Study (CMS) Report for Suspected Air Deposition Study Area 2 (North of the Erie Canal and East of the Niagara/Orleans County Line) – Operable Unit 3 (OU-3), analytical data from the southern bank of the Erie Canal collected during the Department implemented OU-2 remediation efforts, and utilizing production rates and costs based on the Department’s current remedial approaches associated with OU-2 and OU-4.

OU-3 is comprised of multiple properties within three distinct areas. These include properties east of the OU-2 air depositional area (properties R2d, R2e, and R2f); property north of OU-2 air depositional area but south of the Erie Canal (southern canal bank); and properties north of OU-2 air depositional area and the Erie Canal (properties R2a, R2b, and R2c).

Soil samples for properties east of the OU-2 were collected during FMC’s Draft Corrective Measures Study for OU-3 utilizing a grid system that measured approximately 200 feet by 200 feet, with samples collected at three-inch intervals to one foot below ground surface (bgs) (analytical data presented on Figure 2 in the Draft CMS report).

Soil samples for properties north of the Erie Canal were collected during FMC’s Draft Corrective Measures Study for OU-3 utilizing a grid system that measured approximately 200 feet by 200 feet, with samples collected at three-inch intervals to one-foot bgs and samples were collected at six-inch intervals for the zone one to two feet bgs (analytical data presented on Figure 2 in the Draft CMS report).

The sample data for the southern canal bank property was collected from one small area adjacent to 10 Hammond Street, during the OU-2 remediation activities (as presented in Canal Corporation Work Permit #C-WK-201800292 March 2019 letter).

The table below shows estimated costs to remediate the entire OU-3.

Excavation & Backfill	\$ 12,100,000.00
Erosion Controls/Dewatering	\$ 200,000.00
Additional Sampling	\$ 100,000.00
Engineering & Contractor Procurement	\$ 300,000.00
Oversight & Monitoring Equipment	\$ 600,000.00
Sodding/Restoration	\$ 1,000,000.00
Final Engineering Report	\$ 150,000.00
	<u>\$ 14,450,000.00</u>

The following is a list of assumptions that were made to provide this cost estimate:

- The horizontal extent of remediation for OU-3 properties east of OU-2 air depositional area (properties R2d, R2e, and R2f) was estimated as being 50 feet further east of the eastern most grid system sample locations.
- The horizontal extent of remediation for OU-3 properties north of OU-2 and the Erie Canal (properties R2a, R2b, and R2c) was estimated as being 50 feet further north of the northern most grid system sample locations.
- Samples results that met or exceed the NYSDEC arsenic cleanup goal 20.0 mg/kg for the FMC site were identified as areas that required remediation.
- For the southern canal bank property, sample data was not available across the entire area, only for a small area adjacent to the 10 Hammond Street property. Excavation depths for this area ranged from 6-24 inches, so an average remediation depth of 15 inches was applied to the entire OU-3 southern canal bank property for this cost estimate.
- Tree coverage was estimated based on a visual interpretation of aerial images on Google Earth.
- Tree clearing/removal cost of \$8,600 was based on a combination of rates listed in RSMeans.
- It was assumed all excavation areas would be restored using sod.
- Excavation and Restoration costs (labor & equipment, disposal, topsoil, common fill, erosion controls/dewatering, sodding, etc.) were based on the costs incurred during remediation of FMC OU-2 and OU-4.
- Engineering costs (additional sampling, oversight and monitoring equipment, final engineering reporting, etc.) were estimated to remediate all of OU-3. If only a portion of the OU-3 properties are remediated, these costs would also be reduced.

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost (\$)	Annual Costs (\$)	Total Present Worth (\$)
Alternative 1 – No Action	0	0	0
Alternative 2 – Land Use Based	0	0	0
Alternative 3 – Excavation Unrestricted Use	\$14,450,000	\$50,000	\$14,450,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department has selected Alternative 3 Excavation for Unrestricted Use as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by achieving arsenic levels in soil that are less than 20 ppm. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 3

Basis for Selection

The selected remedy is based on the results of the RFI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. The basis for the Department's selected remedy is set forth below.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Arsenic is a known human carcinogen. There is strong evidence of arsenic carcinogenicity and of noncarcinogenic health effects based on large scale epidemiological studies. The Department therefore has an obligation to minimize, to the extent practical, both current and potential future human exposure to elevated levels of arsenic in soil when selecting an arsenic remedial goal.

The Department's findings relative to the protection of human health are based on the NYSDOH's review and evaluation of the arsenic human health risk assessments which are provided in the Draft CMS Report. Based on this review/evaluation, the Department and NYSDOH find that the CMS risk assessments do not appropriately assess potential exposure to arsenic and the associated cancer and noncancer human health risks. As a result, the Department and NYSDOH consider that FMC's assessments may substantially underestimate the potential human health risks associated with arsenic exposure, and therefore do not serve as an appropriate basis upon which to make risk management and remedial decisions.

Risk evaluations prepared by the NYSDOH during the development of the State's Soil Cleanup Objectives have determined that the arsenic soil concentration associated with a 10^{-6} (one in one million) cancer risk level is less than 1.0 ppm. The Department and NYSDOH consider this risk evaluation to be applicable and appropriate to the Middleport community. Since typical background levels of arsenic in soil almost always exceed 1.0 ppm, arsenic remedial goals are routinely evaluated in terms of background concentrations, including this site.

Alternative 3 would most effectively protect human health by removing the potential for exposure to soils with arsenic concentrations above the upper limit of local background. Alternatives 1 and 2 would not effectively protect human health or the environment as neither option would require the removal of any soils.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs

addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

New York State's regulations governing Inactive Hazardous Waste Disposal Sites (6 NYCRR Part 375) and the Soil Cleanup Objectives (SCOs) contained within those regulations (6 NYCRR Part 375-6 and CP-51) are relevant and appropriate regulations to consider in evaluating CMAs and associated remedial goals. These regulations set forth an arsenic SCO of 13 ppm for ecological resources and 16 ppm for all other land uses, which represents the upper limits of state-wide background levels established from sampling data. These regulations allow for the use of site-specific SCOs based on local background data where appropriate.

Alternative 3 complies with SCGs to the extent practicable. It would result in the removal and proper disposal of soil that exceeds the site-specific soil cleanup objective. Alternatives 1 and 2 would not comply with the soil cleanup objectives and hence do not comply with the necessary SCGs.

In determining whether an SCO has been achieved through sampling NYSDEC guidance states that: "the use of averages, means, or other statistical techniques are generally not allowed" (See DER-10 "Technical Guidance for Site Investigation and Remediation" at www.dec.ny.gov/regulations/67386.html). Since Alternative 2 relies on averaging to determine if certain of their remedial goals have been achieved, it does not conform to this guidance.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is directly related to the quantity of contamination remaining in the operable unit after remediation. The alternative which best achieves arsenic background soil concentrations will also be the alternative that reduces long-term arsenic exposure to the greatest extent practicable. In the case of the Middleport community local arsenic background is near/below 20 ppm.

Alternative 3, which calls for removal of arsenic contaminated soil above a concentration of 20 ppm at all locations and depths, is the best way to achieve pre-release, background arsenic concentrations. Alternative 3 would result in less restrictive arsenic remedial goals and would minimize long-term arsenic exposures and their associated potential human health risks.

Alternative 3 would result in the permanent removal of the contamination from the site and would not require long-term institutional controls to limit the risk. Alternative 3 is the most effective in the long-term and permanent remedy of the three alternatives. Alternatives 1 and 2 are not effective nor permanent, as contamination would remain in place. Also, neither Alternative 1 nor Alternative 2 require institutional or engineering controls such as deed restrictions or soil covers, respectively, which would reduce likelihood of exposure of contaminated soils that remain in place.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 3 would provide the greatest reduction in volume and mobility of contamination in the operable unit of the alternatives under consideration. Although the selected remedy employs some degree of flexibility with respect to the 20 ppm arsenic remedial goal, approximately 57,000 cubic yards of soil would be excavated and replaced with clean fill. The other alternatives evaluated by FMC, Alternative 1 and Alternative 2, would not reduce toxicity, would not reduce mobility, nor would they reduce volume. Alternative 1 and Alternative 2 are the less desirable options in relation to this criterion.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Excavation activities have the potential to produce some short-term arsenic exposures for construction workers and community residents. Hence, Alternative 3 does have short-term impacts that are associated with excavation. These impacts could include dust creation and worker exposure to contaminated soils. Also, with construction there is always a risk of accidents and injury. However, the selected remedy includes features designed to mitigate these short-term exposures. It requires the development and implementation of both general and property-specific health and safety plans (HASPs) and engineering controls which are intended to prevent/mitigate exposures for construction workers and the surrounding community. It also requires the use of dust suppression techniques (e.g., wetting the soil) and the implementation of a community air monitoring plan (CAMP) which are designed to work in concert with one another to prevent/mitigate inhalation exposures. With implementation of these mitigation measures it is anticipated that the potential for short-term human exposure to arsenic contaminated soil during excavation activities would be minimal.

Alternatives 1 and 2 would not create any short-term impacts as those alternatives require no remediation to take place.

Alternative 3 would also take the more time to implement, as Alternative 1 and Alternative 2 would require no time as no cleanup would be done. It is estimated that approximately 48 months would be required to implement the design and excavation and restoration of OU3.

Although Alternative 3 is less favorable compared to Alternative 1 and Alternative 2 when using these specific criteria for comparison, the duration of the intrusive work, contemplated by Alternative 3, will generally be limited.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

All three alternatives are readily implementable. Alternative 1 and Alternative 2 do not require any

remediation.

Excavation and disposal (Alternative 3) are common approaches to addressing metals contamination in soil. Contaminated soil may be excavated and disposed off-site in a permitted waste landfill or hazardous waste landfill based on the contamination levels and the results of toxic characteristic leaching procedure (TCLP) tests. This remedy is technically feasible to implement and may not require institutional and engineering controls if all contaminated material is excavated and disposed off-site.

Alternative 3 would require obtaining site access from the affected property owners.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The cost criterion requires each alternative to be evaluated with respect to the capital, engineering, and any long-term costs (e.g., inspection, monitoring, and maintenance). The capital cost consist of two components: 1) direct cost expenditures for construction equipment, labor, and materials to perform the remedial construction; and 2) indirect cost expenditures for engineering, financial, and other services that are not part of the actual construction but required to implement the corrective measure.

The costs of the alternatives vary significantly. See Exhibit 3 for a detailed listing of the various costs. The cost of the selected remedy Alternative 3 would be approximately \$14,450,000. The cost to implement Alternative 1 and Alternative 2, which requires no cleanup, would be zero. Alternative 3 is the most expensive remedial alternative but this must be weighed against the other criteria including protection of human health and the environment, and adherence to applicable standards, criteria, and guidance. Other alternatives would cost less but would not be as protective to public health and the environment nor would they comply with applicable laws and standards.

In summary although the selected remedy is more costly than Alternative 1 and Alternative 2 the cost is not the overriding criteria which should prohibit the selection of a remedy necessary for the protection of human health and the environment.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Based on the Department's evaluation of current zoning and FMC's projected future zoning, selected remedy, Alternative 3, is consistent with current and reasonably anticipated future land uses within OU3. Alternative 3 does not restrict current land usages and accommodates a variety of anticipated future land uses including residential development on all properties.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the draft Statement of Basis are evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the selected remedy, notices to the public will be issued describing the differences and reasons for the changes.

Summary of CMA Evaluations

Alternative 3 was selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

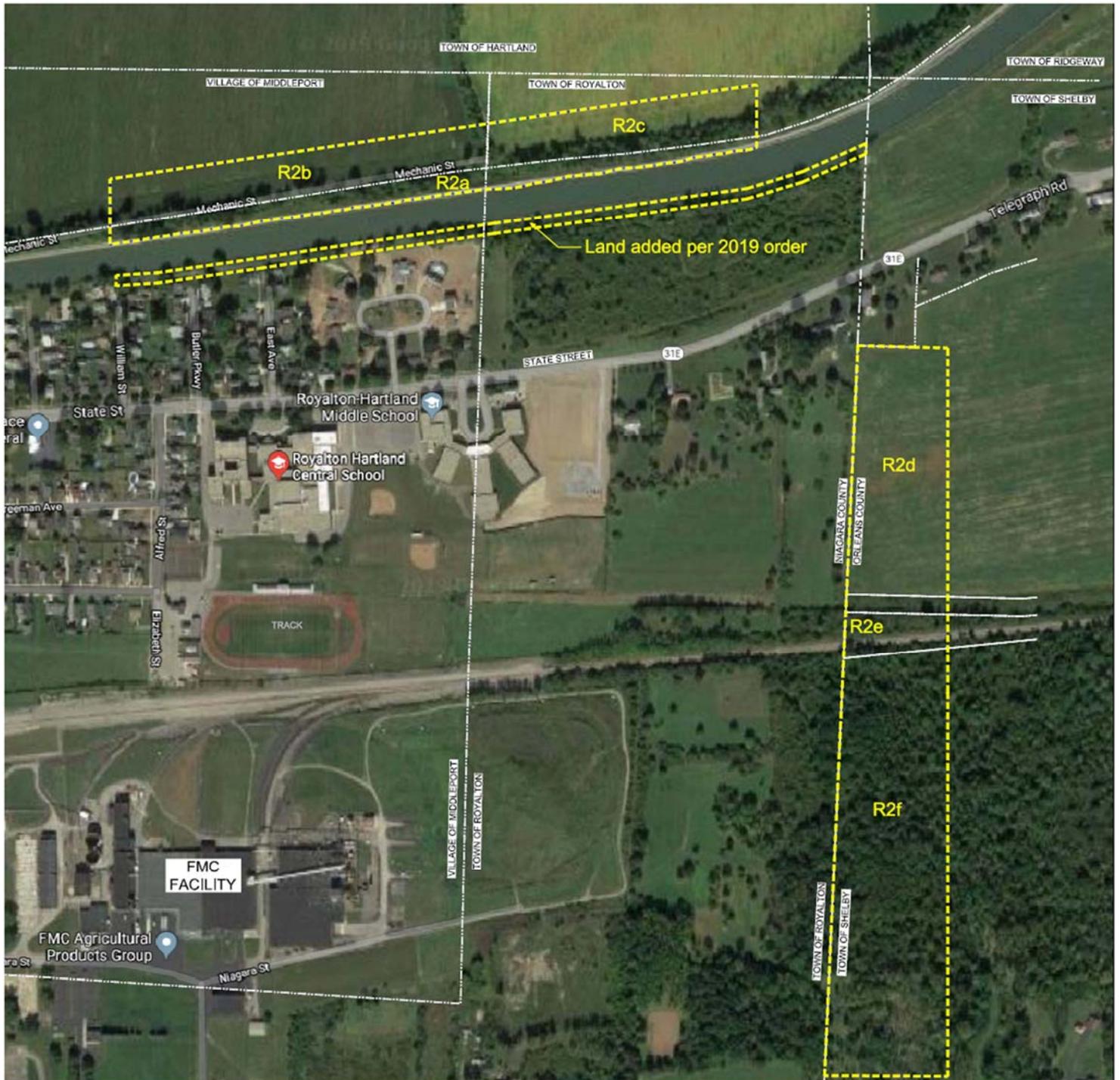
SELECTED REMEDY

The elements of the selected remedy are as follows:

1. **Remedial Design** - A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:
 - Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
 - Reducing direct and indirect greenhouse gases and other emissions;
 - Increasing energy efficiency and minimizing use of non-renewable energy;
 - Conserving and efficiently managing resources and materials;
 - Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
 - Maximizing habitat value and creating habitat when possible;
 - Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
 - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
2. **Excavation** – Excavation and off-site disposal of all soils in OU3 which exceed the site-specific soil cleanup objective of 20 ppm for arsenic based on the local background study. The Department will employ some flexibility in achievement of the 20 ppm cleanup objective pursuant to the criteria in DER-10, the Department’s Technical Guidance for Site Investigation. In addition, consideration will also be applied to accommodate property owner concerns related to preservation of their property with respect to specific features such as mature trees, sheds, decorative plantings, or other features of significance to the property owner where possible; a property owner has the right to refuse remediation of their property. Approximately 57,000 cubic yards of contaminated soil will be removed from OU3.
3. **Backfill** – Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the previous grades in OU3.
4. Where appropriate and, if approved by the Department, in non-residential areas and residential areas larger than 5 acres, excavation may be supplemented with or replaced by in-place soil tilling/blending. Such activities will require additional pilot study(s) under a Department approved work plan demonstrating that in-place soil tilling/blending will achieve the remedial objective.

5. Properties will be restored by seeding (non-residential properties) or placement of sod (residential property less than 2.5 acres). Trees will be replaced at the discretion of the property owner.
6. If soils exceeding the site-specific cleanup objective remain a Site Management Plan will be required. The Site Management Plan will include an Institutional and Engineering Control Plan that identifies all deed restrictions within the Study Areas and details the steps and media-specific requirements necessary to assure the institutional and engineering controls remain in place and effective (any deed restriction required by the remedy will reference the site management plan). This includes a requirement for the remedial party to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3). This plan will include but may not be limited to:
 - an Excavation Plan which details the provision for manage of future excavations in areas of remaining contamination;
 - an Annual Notification Plan which details the annual notification to property owners where remediation did not occur (including those not previously sampled) or which were determined not to have fully achieved the remedial goal to achieve a no further action letter. The notification plan will require the remedial party to offer the owner(s) of such property the opportunity to have remedial action conducted on their property consistent with the remedy. Such remedial action would be performed by the remedial party. The Notification Plan should be consistent with the 2019 Administrative Order on Consent; and
 - Monitoring of soil to assess the performance and effectiveness of the remedy.
 - provisions for the steps necessary for the periodic reviews and certification of the institutional controls
7. Unless implementation of the remedy for OU3 is completed within 60 months of the date of issuance of the final Statement of Basis, FMC shall post financial assurance using one or more of the financial instruments in 6 NYCRR 373-2.8 in the amount of the cost projection for the remainder of the remedy selected in the final Statement of Basis. Financial assurance must include all remedial activities for the site that have not been implemented.

FMC – OU3

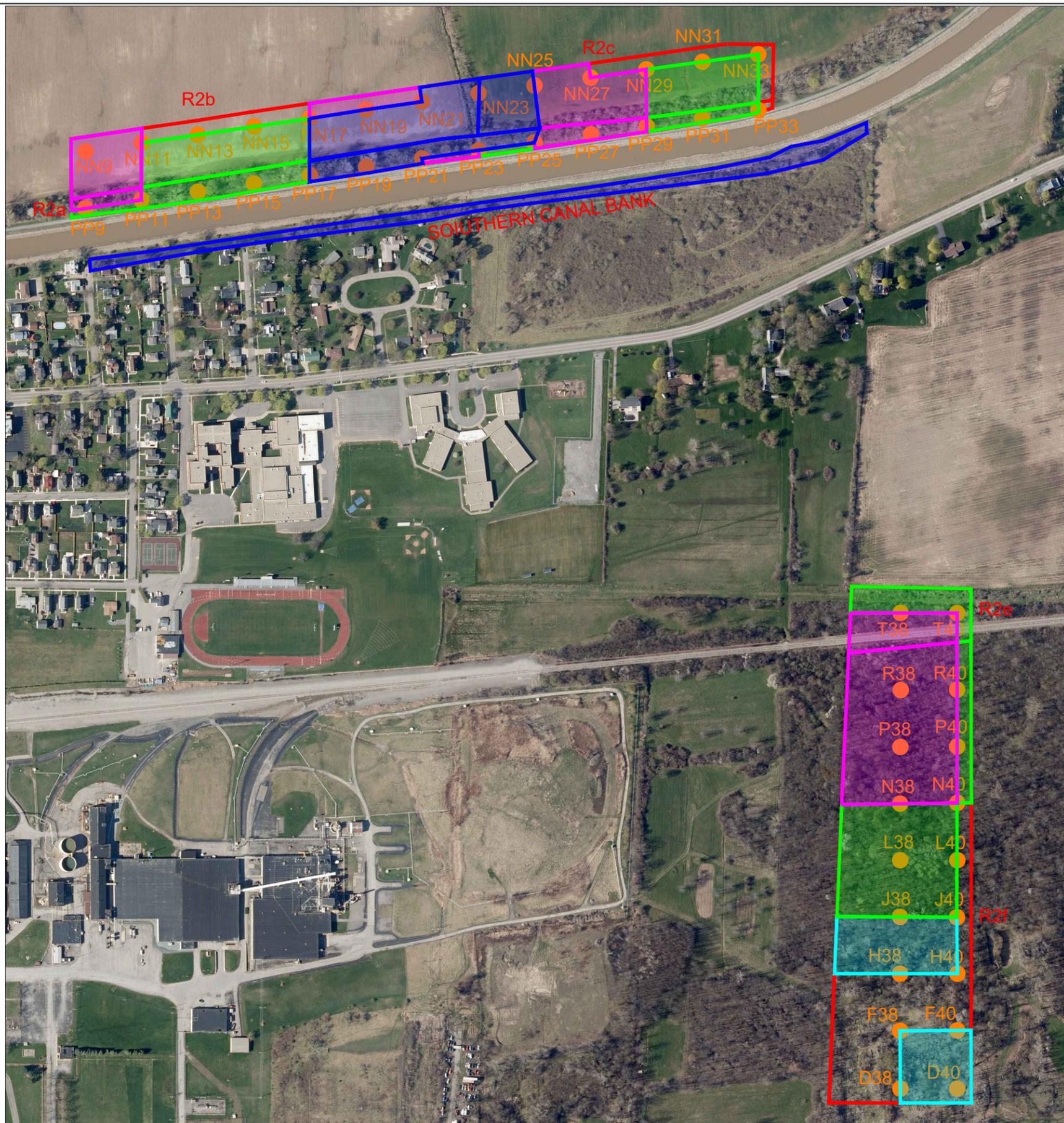


LEGEND

-  ESTIMATED REMEDIATION AREA BOUNDARIES
-  PROPERTY/DIVIDER LINES

FIGURE 1
REMEDATION AREA BOUNDARIES
AIR DEPOSITION STUDY AREA
(OPERABLE UNIT 3)
MIDDLEPORT, NEW YORK





LEGEND

- PP33 ● HISTORIC SOIL BORING LOCATION
- R2e □ PROPERTY WITH IDENTIFIER
- 6 INCH EXCAVATION AREA
- 9 INCH EXCAVATION AREA
- 12 INCH EXCAVATION AREA
- 15 INCH EXCAVATION AREA

NOTES

1. AERIAL PHOTOGRAPHY SHOWN IS FROM NIAGARA COUNTY (2017).
2. HISTORIC SOIL BORING LOCATIONS SHOWN ARE APPROXIMATED FROM FIGURE 2 – SOIL SAMPLING LOCATIONS AND ARSENIC CONCENTRATIONS FROM ARCADIS (7-7-2015).
3. EXTENT OF WORK ZONES ARE BASED ON FIGURES AND DATA PROVIDED BY ARCADIS.



FIGURE 3 PROPOSED OU3 EXCAVATION AREAS AIR DEPOSITION STUDY AREA (OPERABLE UNIT 3) MIDDLEPORT, NEW YORK

APPENDIX A

RESPONSIVENESS SUMMARY

FMC Corporation
Operable Unit No. 3: Air Deposition Area 2
State Superfund Project
Middleport, Niagara County, New York
Site No. 932014
February 2021

The Draft Statement of Basis (DSOB) for the FMC Middleport (OU3) site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on September 30, 2020. The DSOB outlined the remedial measure proposed for the contaminated soil at the FMC Middleport (OU3) site.

The release of the DSOB was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

The public comment period for the DSOB ended on November 16, 2020.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: What is meant by excavation and off-site disposal of contaminated soils followed by restoration of excavated areas; please explain how properties will be restored.

RESPONSE 1: Excavation and off-site disposal of contaminated soils means the removal of soil from a property where the level of contaminants in the soil exceeds the clean-up criteria, in this case soil exceeding 20 parts per million of arsenic. The soil will be removed from the property by means of mechanical excavation and properly disposed of at an off-site facility. Properties will be restored to their pre-existing condition, to the extent possible, restoring features that were disturbed during the remedial process with "in kind". Trees and other plantings will be replaced with available nursery stock items. Every owner whose property has been affected will have the opportunity to review their data and the recommended remedial and restoration plans for their property.

COMMENT 2: What material will be used as backfill and what are the established Soil Cleanup Objectives?

1. What are the established soil cleanup objectives for use as a backfill?
2. What is the composition of backfill?
3. Is the composition of backfill able to vary if it free of contaminants?

RESPONSE 2: Backfill material will be locally sourced and have a soil structural makeup similar to that of native material removed for remedial purposes. The backfill material will be

laboratory tested prior to use and meet Department standards established by regulation in the New York Codes, Rules and Regulations, Part 375-6. Soil Cleanup Objectives are contaminant specific health-based cleanup criteria, that are applied to specific land use categories (unrestricted, residential, restricted residential, commercial and industrial).

COMMENT 3: We have a bridge leading to the canal and a dock on the canal in an area proposed for remediation, how this will be affected?

RESPONSE 3: The bridge leading to the canal and the dock on the canal are on property owned by New York State Canal Corporation and are part of OU3. Placement of these features typically would have required a permit from NYS Canal Corp. Following the selection of a final remedy for the OU3 area, the Department and FMC will work with property owners and determine what features will be affected by the remediation and how these features will be restored.

COMMENT 4 The Agencies have chosen a remedy for this unit of remediation to 20 PPM or an evacuation of arsenic to support unrestricted use. I would like to note that these areas consist of farm land and canal banks. Currently there is no residential use of any part of these properties. In addition, since these lands were purchased from the Holland Land Company in the early 1800's, they have never been used for residential purposes. With the current and foreseeable building activity in the Middleport area, it is not probable the areas to be remediated would be used for anything but agricultural or not used at all as in area R2f. The parts targeted for remediation are not served by any roads, streets or highways. New York Route 31 is close to R2f but there is some distance to the road. Three areas do border or are close to residential properties. However, the western edge of R2b and the northern edge of R2d which border residences are not being targeted for remediation according to the PSOB. The southern corner of area R2f is near a residence but from the map in the SOB not close enough to appear to be of concern. From the above discussion I find it difficult to understand the need for remediation to achieve a future unrestricted use. This is considering the cost of 14 million dollars over no cost to remediate to a use of agricultural/industrial. It does not matter if it is public taxpayer money or corporate money, 14 million is a lot to spend for this goal. In addition to the above, I would like to point out area R2f is currently wooded providing cover for a variety of animals. If this wooded area was destroyed, these animals would have to move elsewhere. As my property borders R2f to the west, I am concerned some will move there which is already overpopulated causing damage to crops and private gardens. I encourage the Agencies to consider an alternate remedy such as Alternative 2, Land Based Use to limit the effect on the area and allow the 14 million to be used elsewhere.

RESPONSE 4: For the FMC site, an area-specific background study was performed, which resulted in a site-specific cleanup level for arsenic of 20 ppm. Alternative 2 would result in no removal action, and would allow for arsenic-contaminated soils at up to 49 parts per million (ppm) to be left on properties. Alternative 3 will in general require arsenic contaminated soils above the site-specific background level (20 ppm) to be removed.

Environmental Conservation Law (ECL) requires that the remedy selected be protective of public health and the environment, with the goal of restoring sites and off-site impacts to pre-release conditions. Thus, the Agencies must determine which alternative(s) meets this requirement, taking into consideration other evaluation criteria (e.g., technical feasibility, institutional controls,

green remediation practices, cost, and community/property owner acceptance) when selecting a remedy. If two or more remedies are deemed protective, then cost can be a determining factor. Remedial alternatives that leave arsenic above 20 ppm at shallow depths, however, do not achieve requirements under ECL.

Comments from NYS Canal Corp

COMMENT:5

- Canals must approve all work that could impact the integrity of water impounding structures prior to contractor mobilization. This can be completed by submitting an application for a Canal work permit (available on the Canal web site) and attaching applicable work plans for review.
- For work on Canals water impounding structures, preparation of a Temporary Construction EAP that includes the following elements, at a minimum, is recommended:
 - An emergency notification plan
 - Identify a rally point for workers
 - Site specific training for construction personnel
 - Immediate responses to seepage or other conditions that may arise
 - Request that NYSCC personnel serve as observers and liaisons with DEC and Contractors during the Work
- Soil materials used to restore the embankment must meet the requirements of both 6 NYCRR Part 375-6.7(d) and Canals embankment specifications.

RESPONSE 5: Comment noted.

FMC Comments

General Comments

The OU3 DSOB proposes a remedy (Alternative 3: Excavation to 20 ppm Arsenic) that was not included in the CMS Report, which the Department accepted for technical completeness purposes pursuant to the Order. As Alternative 3 is significantly different from the alternatives summarized in the CMS Report, the final Statement of Basis requires further adjustment in order to be consistent with the scope of the regulatory analysis required by applicable regulations and guidance, and needed for any interested party to understand the full scope of the selected remedy. This point serves as the overarching basis for FMC's general comments listed below:

COMMENT 6: Properties Subject to Remediation:

As discussed in Exhibit B to the OU3 DSOB, the remedy presumes the excavation and off-site disposal of all soils exceeding the site-specific arsenic soil cleanup objective of 20 parts per million ("ppm"). However, this proposition fails to take into account three important circumstances:

- Property R2a: The OU3 – Air Deposition Area 2 (Report Volume X) RCRA Facility Investigation report submitted in 2012 does not include sampling data and analysis along the southern Erie Canal property (R2a), which is owned by the New York

State Canal Corporation. This southern segment of property R2a was added to the scope of OU3 in the Order. Therefore, insufficient data is present to assess the scope of the remedial action at this property location, which should be considered and identified in the final statement of basis and the selected remedy.

RESPONSE 6: The Department understands that the southern Erie Canal property was not subject to the Air Deposition Area 2 RFI, however it was determined and documented in the 2019 AOC that this property would be included in OU3. The Department understands that soil sampling will need to be conducted prior to determining the scope of remedial action necessary to meet the final remedy. The Department does have soil data from the implementation of the OU2 remedial action on Hammond Parkway and will share this information with FMC. Soil sampling was performed at 12 locations on the Erie Canal embankment to a maximum depth of 24 inches. Arsenic was detected in all samples collected on the Canal's property, in the range of 3.2 to 69.8 ppm.

COMMENT 7: Property R2d: Pursuant to the then-controlling AOC, a No Further Action ("NFA") determination was issued for property R2d by letter dated January 29, 2013. A copy of the NFA letter is attached to this submittal as Exhibit A. Accordingly, it is not clear why the NFA determination was not identified in the OU3 DSOB, with property R2d expressly excluded from the area subject to remediation. FMC would note that the maximum soil arsenic concentration detected on property R2d is 20.3 ppm

RESPONSE 7: The Department is aware that property R2d received a No Further Action letter and did not identify this property in Figure 3 as estimated areas to be excavated. The final Statement of Basis will clarify the status of this property.

COMMENT 8: Property Owner Acceptance: Consistent with the Final Statement of Basis for Air Deposition Area # 1 (OU2 and OU4) and Culvert 105 (OU5), FMC Corporation, Middleport, New York, USEPA ID No. NYD002126845, NYSDEC Site No. 932014, dated May 24, 2013 (the "FSOB"), the Department considered Middleport community comments and concerns that were raised associated with site remediation and impacts to existing property and property-related features. Based on these comments and discussions, the FSOB includes a discussion section on the "Community/Property Owner Acceptance" criterion. This section expressly addressed the ability for property owners to seek limitations on the scope of on-site remediation to account for property specific features, as well as acknowledging the ability of property owners to refuse to grant legal access to have their property remediated, therefore allowing the property owner to determine whether to accept or refuse remediation of its property.

The Community Acceptance prong in the Basis for Selection section of Exhibit D to the OU3 DSOB does contemplate consideration to accommodate the preservation of specific features at the property. However, those circumstances are prescriptive in nature, unlike the FSOB, which allows property owners broad discretion as to the scope of features to be maintained. Most importantly, there is no discussion of a property owner's right to either accept or refuse to allow legal access for remediation to occur. Given the importance of this issue to the Middleport community, it is clear that this same right must be included as part of the OU3 remedy. A review of the various factors to be considered as part of the Department's regulatory process for selecting a remedy supports this proposition.

Therefore, this right must be expressly stated in the final statement of basis issued for OU3.

RESPONSE 8: DEC is aware of the public's concerns regarding the potential impacts of the cleanup on the Village of Middleport and has considered those concerns in arriving at the remedy decision. The remedy, a cleanup plan consistent with applicable laws and regulations (i.e., RCRA and State Superfund programs), will allow flexibility in the application of the cleanup levels in recognition of the public's concerns, so that property owners may save property features during the cleanup, such as large trees, that are important to them. The remedy will also allow a property owner to refuse a cleanup or defer it to a later date.

Every property owner whose property has been affected will have the opportunity to review the data and the recommended remedial plan for their own property. FMC, along with the Department and DOH, will discuss options with the property owner, including saving trees, sheds, decks, swimming pools, or other features. Ultimately, the property owner will decide if the property is to be remediated or not. The Department will not force a property owner to remediate.

The final Statement of Basis will make clear that a property owner has the authority to refuse to remediation of their property.

COMMENT 9: Scope of the Selected Remedy:

Green Remediation/Ecological Considerations: Alternative 3 is at odds with the green remediation principles that are discussed in the remedial design section of the proposed remedy in the OU3 DSOB, as well as Division of Environmental Remediation (“DER”)-31. It also appears to be inconsistent with the obligation to appropriately consider and implement ecological risk and green remediation techniques, consistent with Section VIII of the Order and its attendant Exhibit E (Section E. of Exhibit B to the Order), as well as DER-10 requirements. While the OU3 DSOB does reference green remediation considerations to be assessed as part of the remedy selection process (*e.g.* the need to consider the environmental impacts of treatment technologies, maximize and create habitat value where possible, foster green and healthy communities and working landscapes that balance ecological, economic and social goals, amongst others), it fails to describe how the selected remedy addresses these considerations. For instance, there is not a clear discussion as to how the potential removal of 57,000 cubic feet of soil, especially in heavily vegetated/forested and habitat-friendly areas, would meet the ultimate goals of these criterion. Furthermore, the impacts that will be felt by implementing the removal remedy, such as increased truck traffic, the need to remove additional habitat and brush in areas not subject to the remedial work to allow for equipment and personnel access, and the increased risk to human health and workers during the course of implementation of the remedy, appears to greatly exceed the limited potential incremental benefit.

By way of example, property R2d is a vacant wooded parcel, with densely vegetated areas (mature trees and bushes) that is a well-suited habitat for birds and mammals. Soil arsenic concentrations ranged from 2.7 ppm to 36.2 ppm, with an average of 18.3 ppm at the surface (0” - 3”). FMC’s ecological risk evaluation included in the CMS Report did not identify any meaningful risk to wildlife, mature trees/vegetation, or other ecological resources. When comparing this finding against the amount of direct and indirect impacts that would occur to these and the surrounding areas by

undertaking a removal action, the destruction of this habitat is not warranted, consistent with the overarching green remediation and sustainability considerations required as part of the remedy selection process. Similarly, undertaking work within the Erie Canal sidewalls raises significant concerns regarding wall stability within the area and potential damage to a water-based habit and culturally beneficially area. Accordingly, the Erie Canal Corporation may not agree to allow such work to occur, whether in whole or in part.

For the foregoing reasons, FMC would request that the proposed remedy include an option(s) that would preserve and/or minimize destruction of existing valuable habitat beyond potential flexibility based on property owner preference, and take into account the potential expanded use of flexibility and/or institutional controls for certain other areas. This should be addressed within the final statement of basis, where the more in-depth discussion regarding the green remediation and ecological analysis is required to be addressed.

RESPONSE 9: The selected remedy allows for the preservation of mature trees and provides for reasonable replacement for trees which are removed. The remedy requires the development and implementation of a Tree Preservation Plan. This plan requires an independent arborist's evaluation of individual trees and/or larger tracks of trees, and allows for additional sampling to better characterize arsenic concentrations in soils within each tree's root zone, and a number of excavation methods and techniques designed to minimize damage to the tree's root system.

Where mature trees cannot be preserved to meet arsenic cleanup goals or where the property owner would like the tree(s) removed from the area to be excavated, the remedy requires reasonable tree replacement in consultation with the property owner(s). Ultimately, if a property owner does not want a tree to be removed, the Department will not require tree removal, even if this results in a departure from the remedial goals. Also see Responses 5 and 8.

The Department's guidance for green remediation, DER-31/Green Remediation, first requires a protective remedy be selected with green and sustainable practices incorporated in its implementation. DER-31 states "Applying green remediation concepts, such as minimizing energy consumption, reducing GHG emissions, maximizing the reuse of land and the recycling of materials, and conserving natural resources such as soil, water and habitat helps to achieve that objective. Green remediation concepts will be applied to the existing (ongoing) cleanups and future cleanup of contaminated properties. This policy does not modify or replace existing remedial program goals. It is also not intended to encourage, and does not justify, implementation of a 'no action' or lesser remedy when a more comprehensive remedy is called for, appropriate, and feasible. *The priority remains implementing remedies that are protective of public health and the environment.*" (Emphasis included). The guidance document further states, "Remedies will still be selected in accordance with applicable regulations, standards, policies, and guidance documents and all selected remedies shall still, at a minimum: protect public health and the environment; address source removal and control; address groundwater protection and restoration; and strive to meet the cleanup goal of the respective program (e.g., pre-disposal conditions for State Superfund sites.)"

Regarding ecological resources, the soil cleanup objective (SCO) established for arsenic for protection of ecological resources (all flora and fauna and the habitats that support them) is 13 ppm. However, in this case, based on the site-specific background, the cleanup goal is set higher at 20 ppm.

Remediating the Middleport area to background will provide a long-term benefit to all ecological resources, rather than leaving the higher levels of arsenic in place.

The final remedy has been modified to allow for the use of intuitional or engineering controls in certain areas, where approved by the Department.

COMMENT 10: Restoration: Alternative 3 calls for the replacement of trees at the discretion of the property owner. However, the alternative fails to take into account that certain areas subject to remedy implementation are in densely vegetated areas that include mature trees. It is not feasible that all trees in these areas can be replaced, nor would doing so be possible without greatly impacting the surrounding areas. In areas where it is possible to appropriately replace trees without residual impact, there should be clarity provided that mature landscaped trees cannot be replaced in-kind, but rather, nursery stock would be appropriate, consistent with the scope of remedial work completed in the Middleport community to date.

RESPONSE 10: Comment noted. Nursery stock would be the expectation.

Specific Comments

FMC would also note the following additional comments for the Department's consideration:

COMMENT 11: Cost Estimate Information: Clarification needs to be provided regarding the estimated present worth, construction, and annual costs to implement Alternative 3, given the inconsistencies included in the OU3 DSOB and the lack of a detailed assessment in the CMS Report. This information is one of the factors required to be considered as part of the remedy selection process and is also otherwise required for the responsible party and/or any interested party to understand the magnitude of financial impact caused by the selected remedy.

Exhibit B and Exhibit C of the OU3 DSOB identify the total present worth cost and capital cost of Alternative 3 as being \$14,450,000.00, along with an annual cost of \$50,000.00. However, Exhibit D identifies the cost to construct the remedy as being estimated at \$2,350,000.00, with an estimated present worth and annual cost consistent with the other sections of the OU3 DSOB. It is not clear how any of these estimates appropriately tie together, especially without any type of focused estimate breakdown and summary of costs having been included. DER-10 sets forth criteria that must be evaluated to determine the overall cost effectiveness of an alternative remedy for selection process, including "all direct and indirect capital costs and engineering costs for the construction of all facilities and process equipment, labor, materials, construction equipment and services, land purchase and land preparation/development and relocation expenses." Accordingly, a more detailed breakdown is required.

RESPONSE 11: Please see exhibit B, cost estimate information for Alternative 3 has been included.

COMMENT 12: CMS Report: While Exhibit B of the OU3 DSOB notes that the Department has accepted the CMS report for technical completeness, and that it reviewed and considered the

extent of the information contained within it as part of its selection of Alternative 3, there is no detailed discussion of its contents relative to the selected remedy. Furthermore, there does not appear to be general access to the CMS Report to those interested in assessing the same information as the Department, as a review of the project document website that was included in the OU3 DSOB and the associated September 2020 Fact Sheet does not include the CMS Report.

As the Department is aware, the Middleport community is very interested in ongoing impacts to the area and remedial decision-making associated with the broader project. Consistent with the Department's guidance on Citizen Participation (DER-23), the community is to be appropriately engaged regarding remedial decision-making, which is reaffirmed within the Order. FMC concurs with the Department's focus on the importance of interested parties being provided with access to the information and documentation used to lay out the premise for the broader remedial analysis, including the attendant assessments and analyses that were prepared. Therefore, FMC requests that the Department provide further discussion of the CMS Report within the final statement of basis, along with providing access to the entire document.

RESPONSE 12: The CMS report has been made available to the public via the link in the factsheet. See <https://www.dec.ny.gov/data/DecDocs/932014/>

COMMENT 13: Total Volume of Soil Excavation: In several locations throughout the OU3 DSOB, Alternative 3 is described as including the removal of 57,000 cubic yards of soil. However, there is no discussion as to the genesis of how this number was derived, including any assumptions made by the Department in identifying it. Further clarity is needed regarding this estimate, given that an underlying analysis is not included in the CMS Report, so that parties can understand the nature of how it was presumed and weighed against the various remedy selection factors. Given the issues raised in this submittal regarding properties R2a and R2d, the potential opportunity for tilling/soil blending, and the potential for property owner refusal, any reference to the approximate amount of soil removal should be qualified, regardless.

RESPONSE 13: To calculate this estimate, the Department used the soil data in the draft CMS report to estimate a volume of soil for removal as part of Alternative 3 remedial option. The Department's estimate was based on a presumed removal of all soil exceeding 20 ppm and did not take into consideration soil tilling. The Department acknowledges that property R2d was provided a no further action letter and therefore this property was not considered in the overall soil volume for removal. Also, see Response 11.

COMMENT 14: Section 5.5 [Summary of the Remediation Objectives]: This section includes a remedial action table that only identifies soil removal to a secure landfill with backfill as the "Remedial Action" to address the Remediation Objectives. As potential soil blending/tilling or institutional/engineering restrictions have been identified as components of the proposed remedy in the OU3 DSOB, there should be an additional objective allowing for these types of circumstances.

RESPONSE 14: Acknowledged. This section has been revised.

APPENDIX B

Administrative Record

**FMC Corporation
Operable Unit No. 3: Air Deposition Area 2
State Superfund Project
Middleport, Niagara County, New York
Site No. 932014
February 2021**

1. Proposed Remedial Action Plan for the FMC Corporation site, Operable Unit No. 3, dated September 2020, prepared by the Department.
2. RCRA Facility Investigation Report (RFI) Volume X – Suspected Air Deposition Study Area 2 (North of the Erie Canal and East of the Niagara/Orleans County Line) Arcadis (October 2012).
3. Corrective Measures Study (CMS) Report - Suspected Air Deposition Study Area 2 (North of the Erie Canal and East of the Niagara/Orleans County Line) – Operable Unit 3 (OU-3) Arcadis (Draft September 2015).
4. FMC Development of Arsenic in Background in Middleport Soils, Conestoga-Rovers and Associates (February 2003).
5. Order on Consent, Index No. CO 9-20140625-40, between the Department and FMC Corporation, executed on June 6, 2019.