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A Subsidiary of Occidental Petroleum Corporation

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July 18, 2012

VIA CERTIFIED MAIL RETURN RECEIPT REQUESTED
AND EMAIL: jgarges@CRAworld.com

John Garges
Conestoga-Rovers & Associates
410 Eagleview Boulevard, Suite 110
Exton, Pennsylvania 19341

Re: Occidental Chemical Corporation Facility, New Castle, Delaware

Dear John:

Pursuant to Section II.C of the Administrative Order on Consent (Consent Order) related to the above-referenced Facility, please find enclosed a "true and correct" copy of the Consent Order for your reference. The effective date of the Consent Order is June 25, 2012.

When you provide a copy of the Consent Order to any supervisory personnel of contractors or subcontractors, please give me notification and include the name, title and qualifications of each person receiving a copy of the Consent Order.

Sincerely,

A handwritten signature in blue ink that reads "Rick Passmore".

Rick Passmore

Enclosure



I hereby certify that the
within is a true and correct copy
of the original Administrative
filed in this matter. Order on Consent
Cynthia S. Nadelski
Attorney for U.S. EPA

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 ARCH STREET
PHILADELPHIA, PENNSYLVANIA 19103-2029**

IN THE MATTER OF:

Occidental Chemical Corporation
5005 LBJ Freeway
Suite 1350
Dallas, TX 75244-6119

Regarding the Facility located at:

1657 River Road
New Castle, DE 19720-5194

RESPONDENT

)
)
) ADMINISTRATIVE ORDER
) ON CONSENT
)
)
) DOCKET NO.
) RCRA-03-2012-0141CA
)
)
) Proceeding under Section
) 3008(h) of the Resource
) Conservation and Recovery
) Act, as amended, 42 U.S.C.
) Section 6928(h)

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Figure 1 - Facility Map

ATTACHMENT 1 - Final Administrative Order on Consent, Docket No. RCRA-III-044CA,
issued June 28, 1991

ATTACHMENT 2 - Final Decision and Response to Comments (FDRTC) issued December 8,
2011

ADMINISTRATIVE ORDER ON CONSENT

The parties to this Administrative Order on Consent (Consent Order or Order), the United States Environmental Protection Agency (EPA) and Occidental Chemical Corporation (Occidental or Respondent), having agreed to entry of this Consent Order, it is therefore Ordered and Agreed that:

I. JURISDICTION

A. This Consent Order is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency by Section 3008(h) of the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984 (collectively referred to hereinafter as RCRA), 42 U.S.C. § 6928(h). The authority vested in the Administrator has been delegated to the Director of the Land and Chemicals Division by EPA Delegation No. 8-32 dated June 21, 2004.

B. On June 22, 1984, EPA granted the State of Delaware (the State) authorization to operate a state hazardous waste program in lieu of the federal program, pursuant to Section 3006(b) of RCRA, 42 U.S.C. § 6926(b). EPA has also subsequently authorized additional revisions to the State's authorized program. The State, however, does not have authority to enforce Section 3008(h) of RCRA. The State has been given notice of the issuance of this Consent Order.

C. This Consent Order is issued to Respondent, the owner and former operator of a facility located at 1657 River Road, New Castle County, New Castle, Delaware (the Facility) as also defined in Section IV.B., below, and as generally depicted in Figure 1 attached to this Consent Order and made a part thereof.

D. Respondent consents to issuance of this Consent Order, agrees to comply with its terms and will not contest EPA's authority to issue this Consent Order and to enforce its terms. Further, Respondent will not contest EPA's jurisdiction to: compel compliance with this Consent Order in any subsequent enforcement proceeding, either administrative or judicial; require Respondent's compliance with the terms of this Consent Order; or impose the sanctions set forth in Section XIV of this Consent Order for violations of this Consent Order.

II. PARTIES BOUND

A. This Consent Order shall apply to and be binding upon EPA, Respondent and their agents, successors and assigns.

B. No change in ownership of any property covered by this Consent Order, or in the corporate or partnership status of Respondent, shall in any way alter, diminish, or otherwise affect Respondent's obligations and responsibilities under this Consent Order.

C. Respondent shall provide a copy of this Consent Order to all supervisory personnel of contractors, subcontractors, laboratories, and consultants retained to conduct and/or monitor any portion of the Work performed pursuant to this Consent Order and shall do so within thirty (30) calendar days of the Effective Date of this Consent Order or date of such retention, whichever is later. All contracts, agreements or other arrangements with such persons shall require such persons to conduct and/or monitor the Work in accordance with the requirements of this Consent Order. Notwithstanding the terms of any such contract, agreement or arrangement, Respondent is responsible for complying with this Consent Order and for ensuring that all such persons perform such Work in accordance with this Consent Order.

D. In the event of any change in ownership or operation of the Facility and/or in the event of any change in majority ownership or control of the Respondent, Respondent shall notify EPA in writing of the nature of any such change no later than fifteen (15) calendar days after the effective date of such change. In addition, Respondent shall provide a copy of this Consent Order to any successor to the Respondent and/or to the Facility at least fifteen (15) calendar days prior to the effective date of such change.

III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objectives of EPA and Respondent are to have Respondent implement the corrective measures selected in the Final Decision and Response to Comments (FDRTC) issued on December 8, 2011, as set forth herein as Attachment 2 and to have Respondent perform, if appropriate, interim measures at the Facility as necessary to protect human health and the environment.

IV. EPA's FINDINGS OF FACT

Respondent neither admits nor denies the following Findings of Fact.

A. Respondent is a corporation and is a person as defined in Section 1004(15) of RCRA, 42 U.S.C. § 6903(15).

B. Respondent is the owner and/or operator of a hazardous waste management facility located at 1657 River Road, New Castle County, New Castle, Delaware.

C. The Facility was a facility authorized to operate under Section 3005(e) of RCRA, 42 U.S.C. § 6925(e), for purposes of Section 3008(h) of RCRA, 42 U.S.C. § 6928(h).

D. The Findings of Fact set out in the Administrative Order on Consent, Docket No.

RCRA-III-044CA, and signed on June 28, 1991, are incorporated by reference herein as though fully set forth at length. The 1991 Order is attached herein and made a part hereof as Attachment 1 to this Order.

E. A FDRTC was issued for this facility on December 8, 2011, and is incorporated by reference herein as though fully set forth at length and is attached herein and made a part hereof as Attachment 2 to this Consent Order.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

EPA hereby determines that there is or has been a release of hazardous waste within the meaning of 3008(h) of RCRA, 42 U.S.C. § 6928(h), into the environment from the Facility and that the corrective action and/or other response measures required by this Consent Order are necessary to protect human health or the environment.

VI. WORK TO BE PERFORMED

EPA acknowledges that Respondent may have completed some of the tasks required by this Consent Order and that Respondent may have available some of the information and data required by this Consent Order. This previous work may be used to meet the requirements of this Consent Order, upon submission to and formal approval by EPA.

Pursuant to Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), Respondent agrees to and is hereby ordered to implement the corrective measures set forth in the FDRTC and to perform the following acts in the manner and by the schedules specified herein. All Work undertaken pursuant to this Consent Order shall be developed and performed, as appropriate and approved by EPA, in accordance with: the Scope of Work for Corrective Measures Implementation, the Scope of Work for Interim Measures, the Scope of Work for Health and Safety Plan; and RCRA, its implementing regulations and relevant EPA guidance documents. EPA's Scopes of Work and relevant guidance are available at:

http://www.epa.gov/reg3wcmd/ca/ca_resources.htm, and are incorporated herein by reference.

"Days" or "days" as used herein shall mean calendar days unless otherwise specified.

"Work" as used herein shall mean all activities Respondent is required to perform on or after the Effective Date under this Order to implement the FDRTC, dated December 8, 2011, except those required by Section X (RECORD PRESERVATION).

A. INTERIM MEASURES (IM)

1. Commencing on the Effective Date of this Consent Order and continuing thereafter,

in the event Respondent identifies an immediate or potential threat to human health and/or the environment at the Facility, or discovers new releases of hazardous waste and/or hazardous constituents at or from the Facility not previously identified, Respondent shall notify the EPA Project Coordinator orally within forty eight (48) hours of discovery and notify EPA in writing within three (3) calendar days of such discovery summarizing the immediacy and magnitude of the potential threat(s) to human health or the environment. Upon written request of EPA, Respondent shall submit to EPA for approval an IM Work Plan in accordance with the IM Scope of Work. If EPA determines that immediate action is required, the EPA Project Coordinator may orally authorize Respondent to act prior to EPA's receipt of the IM Work Plan.

2. Commencing on the Effective Date of this Consent Order and continuing thereafter, if EPA identifies an immediate or potential threat to human health and/or the environment at the Facility, or discovers new releases of hazardous waste and/or the environment at the Facility not previously identified, EPA will notify Respondent in writing. Within ten (10) days of receiving EPA's written notification, Respondent shall submit to EPA for approval an IM Work Plan in accordance with the IM Scope of Work that identifies interim measures which will mitigate the threat. If EPA determines that immediate action is required, the EPA Project Coordinator may orally require Respondent to act prior to Respondent's receipt of EPA's written notification.
3. All IM Work Plans shall ensure that the interim measures are designed to mitigate immediate or potential threat(s) to human health and/or the environment and should be consistent with the objectives of, and contribute to the performance of the corrective measures selected by EPA in the FDRTC or any amendment thereto.
4. Each IM Work Plan shall include the following sections as appropriate and approved by EPA: Interim Measures Objectives, Public Involvement Plan, Data Collection Quality Assurance, Data Management, Design Plans and Specifications, Operation and Maintenance, Project Schedule, Interim Measures Construction Quality Assurance, and Reporting Requirements. Concurrent with submission of an IM Work Plan, Respondent shall submit to EPA an IM Health and Safety Plan.

B. CORRECTIVE MEASURES IMPLEMENTATION (CMI)

1. Corrective Measures Work Plan and Design(s)

a. Within ninety (90) calendar days of the Effective Date of this Consent Order, Respondent shall submit to EPA for approval a CMI Work Plan for the implementation of the corrective measures selected by EPA in the FDRTC as it pertains to the Facility. The CMI Work Plan shall be developed in accordance with the Scope of Work for Corrective Measures Implementation.

b. Within sixty (60) calendar days of receipt of EPA approval of the CMI Work Plan, Respondent shall submit to EPA, for review and comment, the initial 30% CMI Design Submittal (with a list of plans and specifications) which shall be developed in accordance with the Scope of Work for CMI.

c. Within forty-five (45) calendar days of receipt of EPA's comments on the 30% CMI Design Submittal(s), Respondent shall incorporate those comments and submit to EPA for approval a 90% CMI Design Submittal (with complete plans and specifications). Each 90% CMI Design Submittal shall be developed in accordance with the Scope of Work for CMI.

d. Upon receipt by Respondent of EPA's approval of each 90% CMI Design Submittal, said Submittal shall be incorporated into and become enforceable under this Consent Order, and Respondent shall implement it in accordance with the schedules and provisions contained therein. EPA-approved CMI Design Submittal(s) will be known as CMI Design Report(s).

2. Corrective Measures Construction

a. For all corrective measures selected in the FDRTC that require construction, Respondent shall commence and complete construction of such corrective measures in accordance with the Scope of Work for the CMI and the schedules and specifications set forth in the EPA-approved CMI Work Plan and the EPA-approved CMI Design Report(s).

b. Within ninety (90) calendar days of completing the construction of corrective measures, Respondent shall submit to EPA for approval a CMI Report. The CMI Report shall be developed in accordance with the specific Scope of Work for CMI and shall describe activities performed during construction, provide actual specifications of the implemented remedy, and provide a preliminary assessment of CMI performance.

c. EPA shall determine, on the basis of the CMI Report and any other relevant information, whether the constructed corrective measures are consistent with the EPA-approved CMI Design Report(s). If EPA determines that the constructed corrective measures are consistent with the EPA-approved CMI Design Report(s) and that the constructed corrective measures have achieved or are achieving all of the requirements set forth in the FDRTC and the performance criteria established in the CMI Design Report(s), EPA shall approve the CMI Report.

d. If EPA determines that the constructed corrective measures are inconsistent with the EPA-approved CMI Design Report(s) and/or that the constructed corrective measures have not achieved or are not achieving all of the requirements set forth in the FDRTC and the performance criteria established in the CMI Design Report(s), EPA shall notify Respondent in writing of those activities that must be undertaken to complete the

corrective measures requirements and shall set forth a schedule for the completion of those activities. Respondent shall complete the activities in accordance with the schedule set forth in the EPA notification.

e. Respondent shall take reasonable steps to restrict the use of the Facility in any manner that may interfere with a remedial action, operation and maintenance, monitoring, or other corrective measures necessary to assure the effectiveness and integrity of the corrective measures to be implemented pursuant to this Order. Such restrictions may include, but are not limited to, the installation, construction, removal, or use of any wells or the excavation of any soil within areas exceeding soil cleanup levels set forth in the FDRTC except as approved in writing by EPA as consistent with this Order.

f. Respondent may, at any time following EPA approval of all pre-design activities required by the FDRTC as it pertains to the Facility, request that EPA select, for the purpose of this Consent Order, Alternative and/or Supplemental Corrective Measures, subject to EPA's review and approval.

3. Corrective Measures Assessment Reports

a. Within one calendar year after EPA approval of the CMI Report pursuant to paragraph VI.B.2.c or d, above, Respondent shall submit a CMI Assessment Report for EPA approval. The CMI Assessment Report shall provide an evaluation of the corrective measures effectiveness in achieving the requirements set forth in the FDRTC and the performance criteria established in the CMI Design Report(s).

b. If, based on the CMI Assessment Report or any other information, EPA determines that the corrective measures are not achieving the requirements set forth in the FDRTC and the performance criteria established in the CMI Design Report(s), EPA shall notify Respondent in writing of those activities that must be undertaken to meet the requirements of the FDRTC and the performance criteria established in the CMI Design Report(s) and shall set forth a schedule for the completion of those activities. Respondent shall complete the activities in accordance with the schedule set forth in the EPA notification.

c. No later than five (5) years after the Effective Date of this Consent Order and every five (5) years thereafter until Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that the terms of this Consent Order, including any additional tasks determined by EPA to be required pursuant to this Consent Order, have been satisfactorily completed, Respondent shall submit a CMI Five-Year Assessment Report. Such Report shall contain an evaluation of the past and projected future effectiveness of the corrective measures in achieving the requirements set forth in the FDRTC and the performance criteria established in the CMI Design Report(s).

d. Respondent may, as part of a CMI Five-Year Assessment Report, request that

EPA select, for the purposes of this Consent Order, an Alternative and/or Supplemental Corrective Measures.

e. In the event EPA selects an Alternative and/or Supplemental Corrective Measures either in response to a request by Respondent pursuant to Section VI.B.2.f or Section VI.B.3.d, above, or on its own initiative, EPA may provide Respondent with a period of sixty (60) calendar days from the date Respondent receives written notice from EPA of the selection of an Alternative and/or Supplemental Corrective Measures within which to reach an agreement with EPA regarding performance of the Alternative and/or Supplemental Corrective Measures in lieu of, or in addition to, the corrective measures. Any such agreement between EPA and Respondent shall be incorporated into and become enforceable under this Consent Order and Respondent shall implement the activities required under any such agreement in accordance with any schedule and provisions contained therein.

f. Nothing in paragraphs VI.A. or VI.B., above, shall limit EPA's authority to implement or require performance of Alternative and/or Supplemental Corrective Measures or to take any other appropriate action under RCRA, 42 U.S.C. §§ 6901 et seq., the Comprehensive Environmental Response, Compensation and Liability Act, as amended, 42 U.S.C. §§ 9601 et seq. (CERCLA), or any other legal authority, including the issuance of a unilateral administrative order or the filing of a civil action.

4. Completion of Corrective Measures

a. After Respondent has determined that the Corrective Measures have been fully implemented in accordance with the EPA-approved CMI Design Report(s), Respondent shall notify EPA in writing and request EPA's approval to discontinue the Corrective Measures in accordance with VI.C.1 of this Consent Order. The request shall explain the basis for Respondent's conclusion and include all available documentation supporting such conclusion.

b. Upon receipt of EPA's approval of Respondent's request to discontinue all Corrective Measures, Respondent may discontinue such Corrective Measures, except that Respondent shall continue to monitor the groundwater in accordance with the EPA-approved CMI Design Report(s) (including the Sampling and Analysis Plan and Operation and Maintenance (O&M) Plan). Respondent shall submit the results of such post-construction monitoring with the Quarterly and Annual Progress Reports in accordance with Section VI.C. of this Consent Order.

c. If at any time during the post-construction monitoring program, EPA determines that the level of any hazardous constituent and/or hazardous waste in the groundwater has increased above the media cleanup standards set forth in the FDRTC for such hazardous constituent and/or hazardous waste, EPA may determine if Alternative and/or Supplemental Corrective Measures need to be initiated to achieve the established media cleanup standards. EPA shall notify Respondent in writing of any such

determination. Any decision by EPA to require Alternative and/or Supplemental Corrective Measures shall be made pursuant to applicable EPA regulations and consistent with EPA guidance regarding selection of corrective measures under RCRA.

d. If after the post-construction monitoring program is completed to EPA's satisfaction, the media cleanup standards set forth in the FDRTC have been maintained and all other aspects of Corrective Measures Construction and O&M have been completed, Respondent shall submit a Certification of Completion for all corrective measures to EPA for approval in accordance with Section VI.C.1 of this Consent Order. The Certification of Completion shall provide documentation sufficient to support a determination that media cleanup standards set forth in the FDRTC have been maintained and include all available documentation supporting such a determination.

5. Use Restrictions

Respondent shall, commencing on the Effective Date of this Consent Order, and thereafter, continue to comply with the Institutional Controls previously developed and implemented at the Facility as described in the December 2011 FDRTC. Respondent shall refrain from using the Facility in any manner which could compromise or adversely affect the effectiveness and protectiveness of the corrective measures implemented or undertaken in accordance with Section VI of this Consent Order. In addition, commencing on the Effective Date of this Consent Order, and thereafter, unless (i) required for implementation of the Work under this Consent Order; or (ii) otherwise determined to be necessary by EPA, Respondent shall comply with the following restrictions regarding use of the Facility:

a. No portion of the property comprising the Site may be used for residential purposes.

b. Until EPA has determined that the media cleanup standards specified in the FDRTC are achieved at the Facility, no use of groundwater or placement of new groundwater wells at the Facility for purposes of (1) drinking, bathing, washing, or any other human contact; or (2) for livestock, farming, or irrigation shall be permitted.

c. Only industrial activities may be conducted at the Facility. The term "industrial activities" shall consist of manufacturing, processing, or commercial operations or associated activities including, but not limited to, production, research and development or other laboratory activities, wastewater treatment activities, storage and shipment of products and raw materials, office use, and parking/driveway use. Some areas of the Facility may be determined to be suitable for recreational use by EPA after submission of supporting documentation by the Respondent.

d. A Materials Management Plan, including an Excavation Procedure and Health & Safety Plan that will guide how future workers will handle materials encountered during future subsurface work at the Facility shall be developed, implemented, and

amended, as appropriate, by Respondent, subject to EPA review and approval.

e. Future development at the Site may include vapor barriers beneath the buildings to eliminate the vapor pathway. If determined to be necessary by EPA, Respondent will submit a plan detailing how such vapor barriers will be constructed to EPA for review and approval.

f. Respondent shall notify EPA, in writing, of any land use changes inconsistent with those set forth in Section VI.B.5 at the Facility that may impact the corrective measures set forth in the FDRTC. This notification shall be submitted for EPA's review and approval at least fifteen (15) days prior to enacting any such land use changes at the Facility.

6. Obligations Regarding Successors-in-interest

a. Notice

(i) Within thirty (30) days after the Effective Date of this Consent Order, Respondent shall submit to EPA for review and approval a notice to be filed with the Recorder of Deeds, New Castle County, Delaware ("Title Notice"), which shall provide notice to all successors-in-title that the respective property is part of the Facility subject to the FDRTC, that EPA selected a remedy for the Facility on December 8, 2011, and that EPA and Respondent have entered into this Consent Order requiring Respondent to implement the FDRTC. Such Title Notice shall identify the administrative docket number of this Consent Order and the Effective Date of this Consent Order. Such Title Notice shall recite the obligation to comply with the land use restrictions of Section VI.B.5. Respondent shall record the Title Notice within ten (10) business days of EPA's approval of the Title Notice. Respondent shall not modify or release such Title Notice without prior written approval of EPA. Respondent shall provide EPA with a certified copy of the recorded Title Notice(s) within ten (10) business days of recording such Title Notice.

(ii) At least fifteen (15) days prior to any conveyance, transfer or assignment of any interest in the Facility, including, but not limited to, fee interests, leasehold interests, easements, land use interests, licenses and mortgage interests, Respondent shall give the grantee(s) or transferee(s)-in-interest a copy of this Consent Order. At least fifteen (15) days after such conveyance, transfer or assignment, Respondent shall also give written notice to EPA and the State of the proposed conveyance, including the name(s), address(es), and telephone number(s) of the grantee(s) or transferee(s)-in interest, and the date on which notice of this Consent Order, and use restriction requirements of this Consent Order were given to the grantee(s). In addition, Respondent shall provide EPA with copies of all agreement(s) or contract(s), including but not limited to indemnification agreement(s) or contract(s), executed in connection with such conveyance, transfer or assignment, within fifteen (15) days of the effective date of such agreement(s) subject to the invocation of any applicable privileges.

b. Continuing Obligation

In the event of any conveyance, transfer or assignment of any interest in the Facility, including, but not limited to, fee interests, leasehold interests, easements, land use interests, licenses and mortgage interests, Respondent shall continue to be bound by all terms and conditions, and subject to all benefits, of this Consent Order. In no event shall such conveyance, transfer or assignment release or otherwise affect Respondent's obligation to comply with all provisions of this Consent Order, unless EPA and Respondent agree to such a modification.

c. Reservation of Easement

In the event of a conveyance, transfer or assignment of any interest in the property that constitutes the Facility, Respondent shall expressly reserve in the deed or other instrument effecting the transfer an irrevocable and permanent easement which (i) grants Respondent access for the purpose of carrying out its obligations under this Consent Order; and (ii) imposes upon the subsequent grantee's use of the Facility the restrictions of Section VI.B.5 of this Consent Order. Thereafter, Respondent shall enforce the terms of any such easement reserved pursuant to this Section VI.B.6.c against all subsequent grantees of a conveyance, transfer or assignment of any interest in the Facility.

C. SUBMISSIONS/EPA APPROVAL/ADDITIONAL WORK

1. EPA will review the Work Plans and reports and all other documents submitted by Respondent pursuant to this Consent Order (Submissions), and, with the exception of progress reports, will notify Respondent in writing of EPA's approval or disapproval of each such Submission. In the event of EPA's disapproval of an initial Submission(s), EPA shall specify in writing any deficiencies in such initial Submission(s). Such disapproval shall not be subject to the dispute resolution procedures of Section XV, below.

2. Within thirty (30) calendar days of receipt of EPA's comments on such initial Submission(s), or ten (10) calendar days in the case of an IM Work Plan, Respondent shall submit to EPA for approval a revised Submission, which responds to any comments received and/or clarifies/corrects any deficiencies identified by EPA. In the event that EPA disapproves of the revised Submission, Respondent may invoke the dispute resolution procedures of Section XV, below. In the event EPA disapproves the revised Submission, EPA reserves the right to revise such Submission and seek to recover from Respondent the costs thereof, in accordance with CERCLA and any other applicable law. Any Submission approved or revised by EPA under this Consent Order shall be deemed incorporated into and made an enforceable part of this Consent Order.

3. Beginning with the first business day of the fourth full month following the Effective Date of this Consent Order, and every three months thereafter on the first business day

of the month, throughout the period that this Consent Order is effective, Respondent shall provide EPA with Quarterly progress reports.

4. On the first business day after the fourth quarter after the Effective Date of this Consent Order, Respondent will submit to EPA an Annual Progress Report which contains the information described in the Scope of Work for CMI for the previous calendar year. Respondent shall not be required to submit an Annual Progress Report in any year a Corrective Measures Five-Year Assessment Report is submitted pursuant to Section VI.B.3.c.

5. Two (2) copies of all Submissions required by this Consent Order shall be hand-delivered or sent by Overnight Courier to the Project Coordinator designated pursuant to Section XI (PROJECT COORDINATORS), below.

6. All work performed pursuant to this Consent Order shall be under the direction and supervision of a professional engineer or geologist with expertise in hazardous waste site investigation. Within thirty (30) calendar days after the Effective Date of this Consent Order, Respondent shall submit to EPA, in writing, the name, title, and qualifications of the engineer or geologist and of any supervisory contractors or subcontractors to be used in carrying out the terms of this Consent Order. Notwithstanding Respondent's selection of an engineer, geologist, contractor or subcontractor, nothing herein shall relieve Respondent of its obligation to comply with the terms and conditions of this Consent Order. EPA shall have the right to disapprove at any time the use of any professional engineer, geologist, contractor or subcontractor selected by Respondent. EPA's disapproval shall not be subject to review under Section XV (DISPUTE RESOLUTION) of this Consent Order, or otherwise. Within fifteen (15) calendar days of receipt from EPA of written notice disapproving the use of any professional engineer, geologist, contractor or subcontractor, Respondent shall notify EPA, in writing, of the name, title and qualifications of the personnel who will replace the personnel disapproved by EPA. Respondent shall notify EPA ten (10) days prior to changing voluntarily its engineer or geologist, and/or contractors or subcontractors to be used in carrying out the terms of this Consent Order, and shall submit to EPA in writing, the name, title, and qualifications of such person(s).

7. EPA may determine that certain tasks and deliverables including, but not limited to, investigatory work or engineering evaluation require additional work. These tasks and deliverables may or may not have been in the EPA-approved Work Plans. If EPA determines that such additional work is necessary, EPA shall request, in writing, that Respondent perform the additional work and shall specify the reasons for EPA's determination that additional work is necessary. Within fifteen (15) calendar days after the receipt of such request, or as otherwise agreed by the parties, Respondent shall have the opportunity to meet or confer with EPA to discuss the additional work EPA has requested. In the event that Respondent agrees to perform the additional work, this Consent Order shall be modified in accordance with Section XXII (SUBSEQUENT MODIFICATION) below, and such work shall be performed in accordance with this Consent Order. In the event Respondent declines or fails to perform the additional work, EPA reserves the right, at a minimum, to order Respondent to perform such additional work; to perform such additional work itself and to seek to recover from Respondent all costs of performing such additional work; and to disapprove the CMI Work Plans; the CMI Reports

and/or any other Submissions. Respondent reserves its rights and defenses to challenge any such action by EPA, subject to Section I.D.

VII. QUALITY ASSURANCE

A. Throughout all sample collection and analysis activities, Respondent shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures, as specified in the EPA-approved Work Plans. In addition, Respondent shall:

1. Ensure that laboratories used by Respondent for analyses perform such analyses according to the EPA methods included in Test Methods for Evaluating Solid Waste (SW-846, November 1986) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall submit all analytical protocols to be used for analyses to EPA for approval at least thirty (30) calendar days prior to the commencement of analyses and shall obtain EPA approval prior to the use of such analytical protocols;
2. Ensure that laboratories used by Respondent for analyses participate in a quality assurance/quality control program equivalent to that which is followed by EPA. As part of such a program, and upon request by EPA, such laboratories shall perform analyses of samples provided by EPA to demonstrate the quality of the analytical data; and
3. Inform the EPA Project Coordinator at least fourteen (14) calendar days in advance of any laboratory analysis regarding which laboratory will be used by Respondent and ensure that EPA personnel and EPA authorized representatives have reasonable access to the laboratories and personnel used for analysis.

VIII. ON-SITE AND OFF-SITE ACCESS

A. EPA and/or its authorized representatives with identifying credentials shall have the authority, subject to applicable Facility health, environmental, safety, and security requirements, to enter and freely move about all property at the Facility owned and/or controlled by Respondent during the Effective Dates of this Consent Order for the purposes of, inter alia: interviewing Facility personnel and contractors controlled by Respondent; inspecting Respondent's records, operating logs, and contracts related to the Facility; reviewing the progress of Respondent in carrying out the terms of this Consent Order; conducting such tests, sampling or monitoring as EPA or its Project Coordinator deem necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to EPA by Respondent. 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 Consent Order subject to the invocation of any applicable privileges.

B. To the extent that Work required by this Consent Order, or by any EPA-approved Work Plan prepared pursuant hereto, must be done on property not owned or controlled by Respondent, Respondent shall use its best efforts to obtain site access agreement(s) from the present owner(s) and/or lessee(s) of such property, as appropriate, within thirty (30) calendar days of receipt of EPA approval of any Work Plan pursuant to this Consent Order which requires Work on such property. For purposes of this paragraph, best efforts shall include, at a minimum, but shall not be limited to: a) a certified letter from Respondent to the present owner(s) or lessee(s) of such property requesting agreements to permit Respondent, EPA, and its authorized representatives to have access to such property; and b) the payment of reasonable sums of money in consideration of access. Reasonable sums of money means the fair market value of the right of access necessary to implement the requirements of this Consent Order. In the event that such agreements for access are not obtained within thirty (30) calendar days after receipt of EPA approval of any Work Plan pursuant to this Consent Order which requires work on property which is not owned or controlled by Respondent, Respondent shall notify EPA, in writing, within seven (7) calendar days after the conclusion of such thirty-day period, regarding both the efforts undertaken to obtain access and the inability to obtain such agreements. In the event that Respondent fails to obtain off-site access, despite the exercise of best efforts, EPA, in its discretion, may assist Respondent in obtaining off-site access for Respondent. Respondent shall reimburse EPA for all costs incurred by EPA in obtaining access, including, but not limited to, attorneys fees and the amount of any just compensation and costs incurred by EPA.

C. Nothing in this Consent Order limits or otherwise affects EPA's rights of access and entry pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

IX. SAMPLING AND DATA/DOCUMENT AVAILABILITY

A. Respondent shall submit to EPA the results of all sampling and/or tests or other data generated by, or on behalf of, Respondent in accordance with the requirements of this Consent Order.

B. Respondent shall notify EPA, in writing, at least fourteen (14) calendar days in advance of any field activities, including but not limited to, well drilling, installation of equipment, or sampling. At the request of EPA, Respondent shall provide or allow EPA or its authorized representatives to take split or duplicate samples of all samples collected by Respondent pursuant to this Consent Order. Nothing in this Consent Order shall limit or otherwise affect EPA's authority to collect samples pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

C. Respondent may assert a business confidentiality claim covering all or part of any information submitted to or requested by EPA pursuant to this Consent Order in the manner described in 40 C.F.R. § 2.203(b). Any assertion of confidentiality shall be substantiated by Respondent when the assertion is made in accordance with 40 C.F.R. § 2.204(e)(4). Information subject to a confidentiality claim shall be disclosed only to the extent allowed by, and in accordance with, the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such

confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Respondent. Respondent shall not assert any confidentiality claim with regard to any physical, sampling, monitoring, or analytical data collected by Respondent pursuant to this Consent Order.

D. If Respondent wishes to assert a privilege with regard to any document which EPA seeks to inspect or copy pursuant to this Consent Order, Respondent shall identify the document, the privilege claimed, and the basis therefore in writing within thirty (30) calendar days of EPA's written request to inspect or copy any document pursuant to this Consent Order. For the purposes of this Consent Order, privileged documents are those documents exempt from discovery from the United States in litigation under the Federal Rules of Civil Procedure. Respondent shall not assert a privilege with regard to analytical, sampling and monitoring data collected by Respondent pursuant to this Consent Order.

X. RECORD PRESERVATION

Respondent agrees that it shall preserve, during the pendency of this Consent Order and for a minimum of at least six (6) years after its termination, data, records and documents in its possession or in the possession of its divisions, officers, directors, employees, agents, contractors, successors, and assigns which relate in any way to this Consent Order or to hazardous waste management and/or disposal at the Facility. After six (6) years, Respondent shall make such records available to EPA for inspection or shall provide copies of such records to EPA. Respondent shall notify EPA at least thirty (30) calendar days prior to the proposed destruction of any such records, and shall provide EPA with a reasonable opportunity to inspect, copy and/or take possession of any such records. Respondent shall not destroy any record to which EPA has requested access for inspection and/or copying until EPA has obtained such access or withdrawn its request for such access. Nothing in this Section X shall in any way limit the authority of EPA under Section 3007 of RCRA, 42 U.S.C. § 6927, or any other access or information-gathering authority.

XI. PROJECT COORDINATORS

A. EPA hereby designates Donna McCartney as the EPA Project Coordinator. Within ten (10) calendar days of the Effective Date of this Consent Order, Respondent shall notify EPA, in writing, of the Project Coordinator it has selected. Respondent's legal counsel shall not serve as Respondent's Project Coordinator. Each Project Coordinator shall be responsible for overseeing the implementation of the Consent Order. The EPA Project Coordinator will be EPA's primary designated representative at the Facility. To the maximum extent possible, all communications between Respondent and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators.

B. Each party agrees to provide at least seven (7) calendar days written notice to the other party prior to changing Project Coordinators.

C. If EPA determines that conditions or activities at the Facility, whether or not in compliance with this Consent Order, have caused or may cause a release or threatened release of hazardous wastes, hazardous constituents, hazardous substances, pollutants or contaminants which threaten or may pose a threat to the public health or welfare or to the environment, EPA may direct that Respondent stop further implementation of this Consent Order for such period of time as may be needed to abate any such release or threatened release and/or to undertake any action which EPA determines is necessary to abate such release or threatened release.

D. The absence of the EPA Project Coordinator from the Facility shall not be cause for the delay or stoppage of work.

XII. NOTIFICATION

A. Unless otherwise specified, reports, correspondence, approvals, disapprovals, notices, or other submissions relating to or required under this Consent Order shall be in writing and shall be sent as follows:

1. One electronic and one hard copy of all documents shall be submitted to:

Donna McCartney
U.S. Environmental Protection Agency
Region III, Mail Code 3LC20
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
Telephone: (215) 814-3427
Fax: (215) 814-3113
E-mail: mccartney.donna@epa.gov

2. One copy of all documents to be submitted to EPA shall also be sent to:

Lawrence D. Matson, P.G.
Hydrologist IV
Delaware Department of Natural Resources and Environmental Control
89 Kings Highway
Dover, Delaware 19901
Telephone: (302) 739-9403
Fax: (302) 739-5060
E-mail: Lawrence.Matson@state.de.us

B. Any notice, report, certification, data presentation, or other document submitted by Respondent pursuant to this Consent Order which discusses, describes, demonstrates, or

supports any finding or makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Consent Order shall be certified by a responsible corporate officer or a duly authorized representative of a responsible corporate officer. A responsible corporate officer means: (a) 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, or (b) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. A person is a duly authorized representative only if: (1) the authorization is made in writing by a person described above; (2) the authorization specifies either an individual or position having responsibility for overall operation of the regulated facility or activity (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and (3) the written authorization is submitted to the Project Coordinator designated by EPA in Section XI (PROJECT COORDINATORS) of this Consent Order.

C. The certification required by paragraph B, above, shall be in the following form:

I certify that the information contained in or accompanying this [type of submission] is true, accurate, and complete.

As to [the/those identified portion(s)] of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under penalty of law that this [type of submission] and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons 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 fines and imprisonment for knowing violations.

Signature : _____

Name : _____

Title : _____

XIII. COST ESTIMATES AND ASSURANCES OF FINANCIAL RESPONSIBILITY

A. Estimated Cost of Work

1. Ninety (90) days after the Effective Date of this Consent Order, Respondent shall submit to EPA for approval detailed written estimates, in current dollars, of the cost of hiring a third party to perform the Work (Cost Estimate) under Section VI (WORK TO BE PERFORMED). The Cost Estimate must account for the costs of all foreseeable Work, including all investigations and reports, construction work, monitoring, and other long term care Work. All Cost Estimates shall be consistent with the requirements of 40 C.F.R. § 264.142 and § 264.144. References in these regulations to closure and post-closure shall mean the Work to Be Performed pursuant to Section VI of this Consent Order.

2. Respondent shall annually adjust the Cost Estimate for inflation and for changes in the scope of the Work to Be Performed until the Work required by this Consent Order is completed. Beginning September 1, 2013, Respondent shall submit each annual Cost Estimate to EPA for review.

3. If at any time EPA determines that a cost estimate provided pursuant to this Section XIII is inadequate, EPA shall notify Respondent in writing, stating the basis for its determination. If at any time Respondent becomes aware of information indicating that any Cost Estimate provided pursuant to this Section is inadequate, Respondent shall notify EPA in writing of such information within ten (10) days. Within thirty (30) days of EPA's notification, or within thirty (30) days of becoming aware of such information, as the case may be, Respondent shall submit a revised Cost Estimate to EPA for review.

B. Assurances of Financial Responsibility for Completing the Work

1. By March 31 of the year following EPA approval of the initial Cost Estimate, Respondent shall establish financial assurance for the benefit of the EPA. In the event that EPA approval of Respondent's initial Cost Estimate is not received within thirty (30) days after close of Respondent's fiscal year, Respondent shall establish and maintain the financial assurance in the amount of the Cost Estimate submitted pursuant to Paragraph XIII.A.1. by March 31 of the following year. Respondent shall maintain adequate financial assurance until EPA releases Respondent from this requirement pursuant to Section XXIV (TERMINATION AND SATISFACTION). Respondent shall update the financial instrument or financial test demonstration to reflect changes to the Cost Estimate by March 31 of each year. Respondent may use one or more of the financial assurance forms described in subparagraphs i - vi immediately below. Any and all financial assurance documents shall be satisfactory in form and substance as determined by EPA.

- i. A trust fund established for the benefit of EPA, administered by a trustee;
- ii. A surety bond unconditionally guaranteeing performance of the Work in accordance with this Consent Order, or guaranteeing payment at the direction of EPA into a standby trust fund that meets the requirements of the trust fund in subparagraph i above;
- iii. An irrevocable letter of credit, payable at the direction of the Director, Land and Chemicals Division, into a standby trust fund that meets the requirements of the trust fund in subparagraph i above;
- iv. An insurance policy that provides EPA with rights as a beneficiary, issued for a face amount at least equal to the current Cost Estimate, except where costs not covered by the insurance policy are covered by another financial assurance instrument;
- v. A corporate guarantee, executed in favor of the EPA by one or more of the following: (1) a direct or indirect parent company, or (2) a company that has a "substantial business relationship" with Respondent (as defined in 40 C.F.R. § 264.141(h)), to perform the Work to Be Performed under Section VI of this Consent Order or to establish a trust fund as permitted by subparagraph i above; provided, however, that any company providing such a guarantee shall demonstrate to the satisfaction of the EPA that it satisfies the financial test requirements of 40 C.F.R. § 264.143(f) with respect to the portion of the Cost Estimate that it proposes to guarantee.
- vi. A demonstration by Respondent that it meets the financial test criteria of 40 C.F.R. § 264.143(f) with respect to the Cost Estimate, provided that all other requirements of 40 C.F.R. § 264.143(f) are satisfied.

2. Respondent shall submit all original executed and/or otherwise finalized instruments to the EPA Region III Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103-2029 within thirty (30) days after date of execution or finalization as required to make the documents legally binding. Respondent shall also provide copies to the EPA Project Coordinator.

3. If at any time Respondent provides financial assurance for completion of the Work by means of a corporate guarantee or financial test, Respondent shall also comply with the other relevant requirements of 40 C.F.R. § 264.143(f), 40 C.F.R. § 264.151(f), and 40 C.F.R. § 264.151(h)(1) relating to these methods, and will promptly provide any additional information requested by EPA from Respondent or corporate guarantor within seven (7) calendar days of its receipt of such request from EPA or the corporate guarantor.

4. For purposes of the corporate guarantee or the financial test described above, references in 40 C.F.R. § 264.143(f) to “the sum of current closure and post-closure costs and the current plugging and abandonment cost estimates” shall mean the sum of all environmental remediation obligations, including, but not limited to, obligations under the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601 *et seq.*, RCRA, the Underground Injection Control Program promulgated pursuant to the Safe Drinking Water Act, 42 U.S.C. §§ 300f *et seq.*, and the Toxic Substances Control Act, 42 U.S.C. §§ 2601, *et seq.*, and any other federal or state environmental obligation guaranteed by such company or for which such company is otherwise financially obligated in addition to the Cost Estimate.

5. Respondent may combine more than one mechanism to demonstrate financial assurance for the Work to Be Performed under Section VI of this Consent Order.

6. Respondent may satisfy its obligation to provide financial assurance for the Work to be Performed under Section VI herein by providing a third party who assumes full responsibility for said Work and otherwise satisfies the obligations of the financial assurance requirements of this Consent Order; however, Respondent shall remain responsible for providing financial assurance in the event such third party fails to do so and any financial assurance from a third party shall be in one of the forms provided in subparagraphs XIII.B.1.(i.) through (vi.) above.

7. If at any time EPA determines that a financial assurance mechanism provided pursuant to this Section XIII is inadequate, EPA shall notify Respondent in writing. If at any time Respondent becomes aware of information indicating that any financial assurance mechanism(s) provided pursuant to this Section XIII is inadequate, Respondent shall notify EPA in writing of such information within ten (10) days of Respondent’s becoming aware of such information. Within ninety (90) days of receipt of notice of EPA’s determination, or within ninety (90) days of Respondent’s becoming aware of such information, Respondent shall establish and maintain adequate financial assurance for the benefit of the EPA which satisfies all requirements set forth in this Section. Any and all financial assurance documents provided pursuant to this Consent Order shall be submitted to EPA for review in draft form at least forty-five (45) days before they are due to be filed and shall be satisfactory in form and substance as determined by EPA.

8. Respondent’s inability or failure to establish or maintain financial assurance for completion of the Work to be Performed under Section VI of this Consent Order shall in no way excuse performance of any other requirements of this Consent Order.

9. Modification of Amount and/or Form of Performance Guarantee

i. Reduction of Amount of Financial Assurance. If Respondent believes that

the Cost Estimate has diminished below the amount covered by the existing financial assurance provided under this Consent Order, Respondent may, at the same time that Respondent submits its annual Cost Estimate, submit a written proposal to EPA for approval to reduce the amount of the financial assurance to equal the revised Cost Estimate.

ii. Change of Form of Financial Assurance. If Respondent desires to change the form or terms of financial assurance, Respondent may, at the same time that Respondent submits the annual Cost Estimate, submit a written proposal to EPA for approval to change the form of financial assurance. The written proposal shall specify all proposed instruments or other documents required in order to make the proposed financial assurance legally binding and shall satisfy all requirements set forth in this Section. Within ten (10) days after receiving written approval of the proposed revised or alternative financial assurance, Respondent shall execute and/or otherwise finalize all instruments or other documents required in order to make the selected financial assurance legally binding. Respondent shall submit all executed and/or otherwise finalized instruments or other documents required in order to make the selected financial assurance legally binding to the EPA Region III Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103-2029, with a copy to EPA's Project Manager, as provided in Section XII (NOTIFICATIONS) above.

10. Release of Financial Assurance. Respondent may submit a written request to the Director, Land and Chemicals Division that EPA release Respondent from the requirement to maintain financial assurance under this Section XIII upon receipt of written notice from EPA pursuant to Section XXIV that, as set forth therein, the terms of this Consent Order have been satisfactorily completed. If said request is granted, the Director, Land and Chemicals Division shall notify both the Respondent and the provider(s) of the financial assurance that Respondent is released from all financial assurance obligations under this Consent Order.

XIV. DELAY IN PERFORMANCE/STIPULATED PENALTIES

A. Unless there has been a written modification of a compliance date by EPA, or excusable delay as defined below in Section XVI (FORCE MAJEURE AND EXCUSABLE DELAY), in the event that Respondent fails to comply with any requirement set forth in this Consent Order, Respondent shall pay stipulated penalties, as set forth below, upon receipt of written demand by EPA. Compliance by Respondent shall include commencement or completion, as appropriate, of any activity, plan, study, or report required by this Consent Order in an acceptable manner and within the specified time schedules in and approved under this Consent Order. Stipulated penalties shall accrue as follows:

1. For failure to commence, perform or complete Work as prescribed in this

Consent Order: \$2,000 per day for one to fourteen days or part thereof of noncompliance, and \$3,500 per day for each day of noncompliance, or part thereof, thereafter;

2. For failure to comply with the provisions of this Consent Order after receipt of notice of noncompliance by EPA: \$2,000 per day for one to fourteen days or part thereof of noncompliance, and \$3,500 per day for each day of noncompliance, or part thereof, thereafter; in addition to any stipulated penalties imposed for the underlying noncompliance;
3. For failure to submit deliverables as required by this Consent Order, or for failure to comply with this Consent Order not described in subparagraphs 1 and 2 above: \$1,000 per day for one to fourteen days or part thereof of noncompliance, and \$1,500 per day for each day of noncompliance, or part thereof, thereafter.

B. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day of or correction of the violation. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Order.

C. All penalties owed to EPA under this Section XIV shall be due within thirty (30) calendar days of receipt of a demand for payment unless Respondent invokes the dispute resolution procedures in Section XV, below. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty (30)-calendar day period and shall accrue at the United States Tax and Loan Rate.

D. All penalty payments shall be made by certified or cashier's check payable to the Treasurer of the United States of America and shall be remitted to:

U.S. Environmental Protection Agency
Fines and Penalties
Cincinnati Finance Office
P.O. Box 979077
St. Louis, MO 63197-9000

Or by wire transfer to:

Federal Reserve Bank of New York
ABA: 021030004
Account Number: 68010727
Swift Address: FRNYUS33
Field Tag 4200 of Fedwire message should read as follows:
"D 68010727 Environmental Protection Agency"

All payments shall reference the name of the Facility, Respondent's name and address, and the EPA Docket Number of this Consent Order. Copies of the transmittal of payment shall be sent simultaneously to the EPA Project Coordinator and the Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103-2029.

E. Respondent may dispute EPA's demand for payment of stipulated penalties for any alleged violation of this Consent Order. Stipulated penalties shall continue to accrue, but need not be paid, for any alleged noncompliance which is the subject of dispute resolution during the period of such dispute resolution. To the extent that Respondent does not prevail upon resolution of the dispute, Respondent shall remit to EPA within seven (7) calendar days of receipt of such resolution any outstanding penalty payment, including any accrued interest, in the manner described above in Paragraph D of this Section XIV. To the extent Respondent prevails upon resolution of the dispute, no penalties shall be payable.

F. Neither the filing of a petition to resolve a dispute nor the payment of penalties shall alter in any way Respondent's obligation to comply with the requirements of this Consent Order.

G. The stipulated penalties set forth in this Section XIV shall not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the requirements of this Consent Order.

XV. DISPUTE RESOLUTION

A. If Respondent disputes or disagrees, in whole or in part, with any disapproval, modification or other decision or directive made by EPA Region III, Land and Chemicals Division ("LCD") pursuant to this Consent Order, unless specifically excluded from this process, Respondent shall notify LCD in writing of its objections, and the basis therefor, within fourteen (14) calendar days of receipt of LCD's disapproval, decision or directive. Such notice shall set forth the specific points of the dispute, the position which Respondent asserts should be adopted as consistent with the requirements of this Consent Order, the basis for Respondent's position, and any matters which it considers necessary for LCD's determination. LCD and Respondent shall have an additional fourteen (14) calendar days from the receipt by LCD of the notification of objection, during which time representatives of LCD and Respondent may confer in person or by telephone to resolve any disagreement. If an agreement is reached, the resolution shall be written and signed by an authorized representative of each party. In the event that resolution is not reached within this fourteen (14) calendar day period, the Director of LCD, will furnish to Respondent, in writing, his decision on the pending dispute.

B. The invocation of formal dispute resolution procedures under this Section XV shall not extend, postpone or affect in any way any obligation of Respondent under this Order

unless LCD determines otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute.

Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Order. In the event that Respondent does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIV (DELAY IN PERFORMANCE/STIPULATED PENALTIES).

C. Notwithstanding any other provisions of this Consent Order, no action or decision by EPA, including, without limitation, decisions of the Director of Land and Chemicals Division, Region III, pursuant to this Consent Order, shall constitute final agency action giving rise to any right to judicial review prior to EPA's initiation of judicial action to compel Respondent's compliance with this Consent Order.

XVI. FORCE MAJEURE AND EXCUSABLE DELAY

A. Respondent shall perform the requirements of this Consent Order in the manner and within the time limits set forth herein, unless the performance is prevented or delayed by events which constitute a force majeure. Respondent shall have the burden of proving such a force majeure. A force majeure is defined as any event arising from causes not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence and which delays or prevents performance in the manner or by a date required by this Consent Order. Such events do not include increased costs of performance, changed economic circumstances, reasonably foreseeable weather conditions or weather conditions which could have been overcome by due diligence, or failure to obtain federal, state, or local permits unless applications for such permits were submitted in a timely and complete fashion and such permits were not issued, through no fault of Respondent.

B. Respondent shall notify EPA, in writing, within seven (7) calendar days after it becomes or should have become aware of any event which Respondent claims constitutes a force majeure. Such notice shall estimate the anticipated length of delay, including necessary demobilization and remobilization, its cause, measures taken or to be taken to prevent or minimize the delay, and an estimated timetable for implementation of these measures. Failure to comply with the notice provision of this Section XVI shall constitute a waiver of Respondent's right to assert a force majeure claim with respect to such event. In addition to the above notification requirements, Respondent shall undertake all reasonable actions to prevent or to minimize any delay in achieving compliance with any requirement of this Consent Order after it becomes or should have become aware of any event which may delay such compliance.

C. If EPA determines that there is excusable delay because the failure to comply or delay has been or will be caused by a force majeure, the time for performance of that requirement of this Consent Order may be extended, upon EPA approval, for a period equal to the delay resulting from such force majeure. This shall be accomplished through an amendment to this Consent Order pursuant to Section XXII (SUBSEQUENT MODIFICATION). Such an extension shall not alter the schedule for performance or completion of any other tasks required by this Consent Order, unless these tasks are also specifically altered by amendment of the

Consent Order. In the event that EPA and Respondent cannot agree that any delay or failure has been or will be caused by a force majeure, or if there is no agreement on the length of the extension, Respondent may dispute the issue.

XVII. RESERVATION OF RIGHTS

A. EPA expressly reserves all rights and defenses that it may have, including the right both to disapprove of Work performed by Respondent pursuant to this Consent Order, to require that Respondent correct and/or perform any Work disapproved by EPA, and to request that Respondent perform tasks in addition to those stated in the Scope(s) of Work, Work Plans, or other provisions of this Consent Order.

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

C. Compliance by Respondent with the terms of this Consent Order shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

D. The signing of this Consent Order and Respondent's consent to comply shall not limit or otherwise preclude EPA from taking additional enforcement action pursuant to RCRA, including but not limited to Sections 3008(a) or (h) of RCRA, 42 U.S.C. §§ 6928(a) or (h), or any other authority, should EPA determine that such action is warranted.

E. This Consent Order is not intended to be, nor shall it be construed as, a permit. This Consent Order does not relieve Respondent of any obligation to obtain and comply with any local, state, or federal permit or approval.

F. EPA reserves the right to perform any portion of the Work consented to herein or any additional site characterization, feasibility study, and response/corrective actions it deems necessary to protect public health or welfare or the environment. EPA may exercise its authority under RCRA, CERCLA or any other authority to undertake or require the performance of response actions at any time. EPA reserves the right to seek reimbursement from Respondent for costs incurred by the United States in connection with any such response actions. Notwithstanding compliance with the terms of this Consent Order, Respondent is not released from liability, if any, for the costs of any response actions taken by EPA.

G. EPA reserves whatever rights it may have under CERCLA or any other law, or in equity, to recover from Respondent any costs incurred by EPA in overseeing the implementation of this Consent Order.

H. Respondent retains its right to assert claims against any third parties with respect to the Facility.

XVIII. OTHER CLAIMS

Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation, or other entity 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, solid wastes, pollutants, or contaminants found at, taken to, or taken from the Facility.

XIX. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations. Respondent shall obtain or require its authorized representatives to obtain all permits and approvals necessary under such laws and regulations.

XX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

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 agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Consent Order. 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. The United States shall not be deemed to be a party to any contract entered into by Respondent for the purpose of carrying out any activities required by this Consent Order. Respondent shall not be responsible for indemnifying the EPA for claims or causes of actions from or on account of acts or omissions of EPA.

XXI. NOTICE OF NON-LIABILITY OF EPA

EPA shall not be deemed a party to any contract involving Respondent and relating to

activities at the Facility and shall not be liable for any claim or cause of action arising from or on account of any act, or the omission of Respondent, its officers, employees, contractors, receivers, trustees, agents or assigns, in carrying out the activities required by this Consent Order.

XXII. SUBSEQUENT MODIFICATION

A. Except as provided in Paragraph C of this Section XXII, below, this Consent Order may be amended only by mutual agreement of EPA and Respondent. Any such amendment shall be in writing, shall be signed by an authorized representative of each party, shall have as its effective date the date on which it is signed by EPA, and shall be incorporated into this Consent Order.

B. Any reports, plans, specifications, schedules, other submissions, and attachments required by this Consent Order are, upon written approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA-approved reports, plans, specifications, schedules, other submissions, and attachments shall be considered a violation of this Consent Order and shall subject Respondent to the stipulated penalty provisions included in Section XIV (DELAY IN PERFORMANCE/STIPULATED PENALTIES).

C. Minor modifications in the studies, techniques, procedures, designs, or schedules utilized in carrying out this Consent Order and necessary for the completion of the project may be made by written agreement of the Project Coordinators. Such modifications shall have as an effective date the date on which the agreement is signed by the EPA Project Coordinator.

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

XXIII. SEVERABILITY

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

XXIV. TERMINATION AND SATISFACTION

The provisions of this Consent Order shall be deemed satisfied upon Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that the terms of this Consent Order, including any additional tasks determined by EPA to be required pursuant to this Consent Order, have been satisfactorily completed. This notice shall not, however, terminate Respondent's obligation to comply with any continuing obligations

hereunder including, but not limited to, Sections X (RECORD PRESERVATION), XVII (RESERVATION OF RIGHTS), XVIII (OTHER CLAIMS), XIX (OTHER APPLICABLE LAWS), and XX (INDEMNIFICATION OF THE UNITED STATES GOVERNMENT).

XXV. SURVIVABILITY/PERMIT INTEGRATION

A. Subsequent to the issuance of this Consent Order, a RCRA permit may be issued to the Facility incorporating the requirements of this Consent Order by reference into the permit.

B. No requirement of this Consent Order shall terminate upon the issuance of a RCRA permit unless such requirement is expressly replaced by a requirement in the permit.

XXVI. ATTORNEYS' FEES

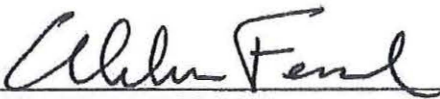
Each party shall bear its own costs and attorneys fees.

XXVII. EFFECTIVE DATE/WAIVER OF HEARING


The effective date of this Consent Order shall be the date on which a true and correct copy of this Consent Order is received by Respondent. Because this Consent 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), and 40 C.F.R. Part 24.

IT IS SO AGREED AND ORDERED:

DATE: 6/21/12

BY: 
ABRAHAM FERDAS
DIRECTOR
LAND AND CHEMICALS DIVISION
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, REGION III

DATE: 6/18/2012

BY: 
MICHAEL G. ANDERSON
VICE PRESIDENT
OCCIDENTAL CHEMICAL CORPORATION

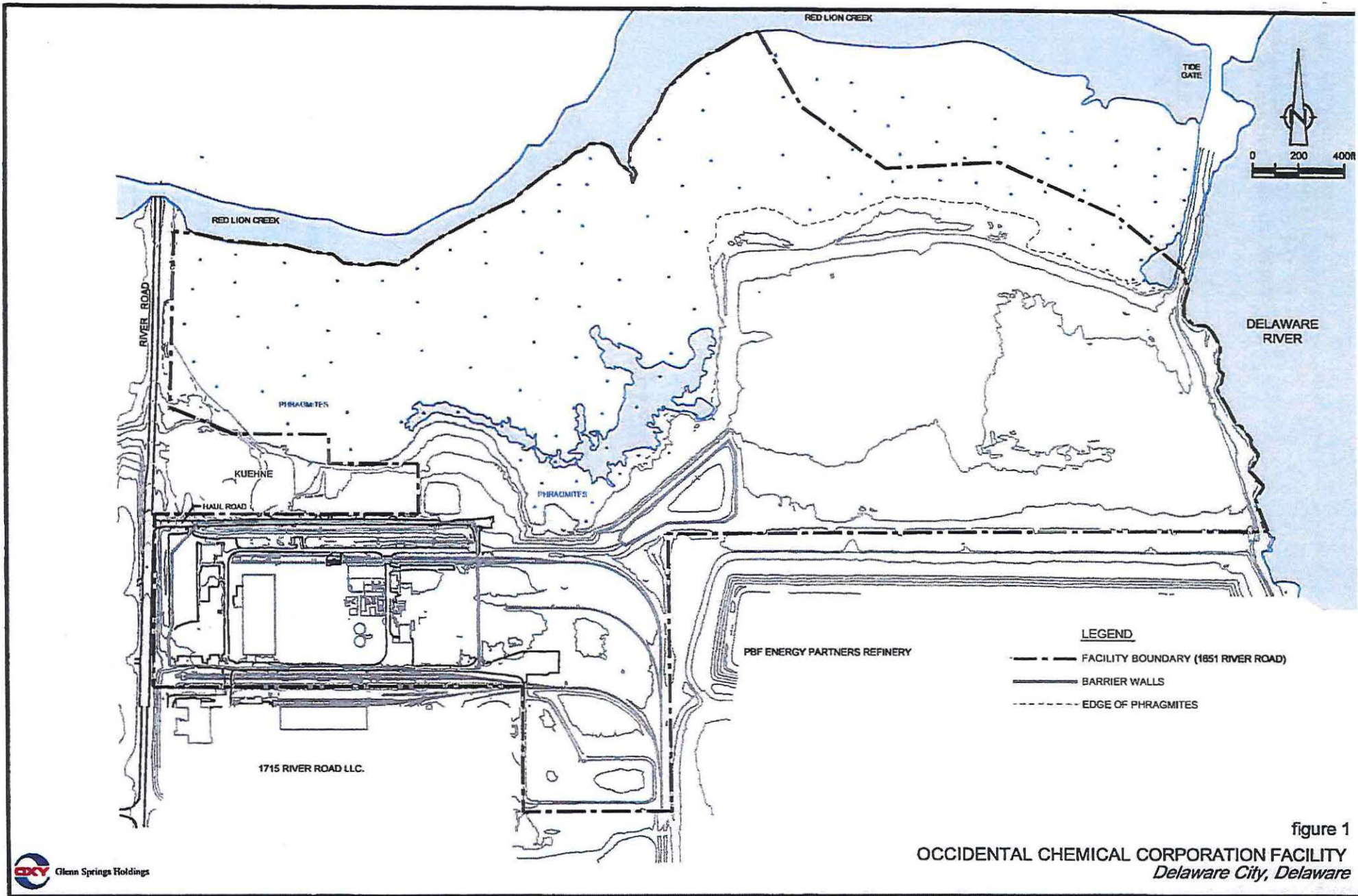


figure 1
 OCCIDENTAL CHEMICAL CORPORATION FACILITY
 Delaware City, Delaware

I hereby certify that the within is a true and correct copy of the original Final Administrative Order filed in this matter. Order on Consent

UNITED STATES

Maia Paula Vieira
Attorney for U.S. EPA

ENVIRONMENTAL PROTECTION AGENCY

REGION III

IN THE MATTER OF:)	
)	FINAL ADMINISTRATIVE ORDER
OCCIDENTAL CHEMICAL CORPORATION))	ON CONSENT
)	
)	U.S. EPA Docket Number:
River Road - Route 9)	RCRA-III-044CA
Delaware City, Delaware)	
)	
EPA I.D. No. DED 00 391 3266)	
)	
RESPONDENT)	Proceeding under Section
)	3008(h) of the Resource
)	Conservation and Recovery
)	Act, as amended, 42 U.S.C.
)	Section 6928(h).

I. JURISDICTION

This Final Administrative Order on Consent ("Consent Order" or "Order") is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency ("EPA") by Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984 (collectively referred to hereinafter as "RCRA"), 42 U.S.C. Section 6928(h). The authority vested in the Administrator has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32 dated March 6, 1986.

On June 22, 1984, the EPA granted the State of Delaware (the "State") authorization to operate a hazardous waste program in lieu of EPA, pursuant to Section 3006(b) of RCRA, 42 U.S.C. Section 6926(b). The State, however, does not have authority to enforce Section 3008(h) of RCRA.

This Consent Order is issued to Occidental Chemical Corporation ("Respondent"), the owner/operator of a facility located on River Road - Route 9 in Delaware City, New Castle County, Delaware (the "Facility" or the "Site"). Respondent consents to and agrees not to contest EPA's jurisdiction to issue this Consent Order and to enforce its terms. Further, Respondent consents to and will not contest EPA's jurisdiction to: compel

compliance with this Consent Order in any subsequent enforcement proceedings, either administrative or judicial; require Respondent's full or interim compliance with the terms of this Consent Order; or impose sanctions for violations of this Consent Order.

II. PARTIES BOUND

1. This Consent Order shall apply to and be binding upon EPA, Respondent and their officers, directors, employees, successors and assigns.

2. No change in ownership or corporate or partnership status relating to the Facility will in any way alter Respondent's obligations under this Consent Order.

3. Respondent shall provide a copy of this Consent Order to all supervisory personnel, contractors, subcontractors, laboratories, and consultants retained to conduct or monitor any portion of the work performed pursuant to this Consent Order within one (1) week of the effective date of this Consent Order or date of such retention, whichever is later, and shall condition all such contracts on compliance with the terms and conditions of this Order. All supervisory personnel, contractors, subcontractors, laboratories and consultants retained to conduct any work pursuant to this Consent Order shall perform such work in accordance with the requirements of this Order.

4. Respondent shall give notice of this Consent Order to any successor in interest prior to transfer of ownership or operation of the Facility and shall notify EPA at least thirty (30) calendar days prior to such transfer.

III. STATEMENT OF PURPOSE

1. In entering into this Consent Order, the mutual objectives of EPA and Respondent are: (1) to provide Interim Measures ("IM") at the Facility to prevent or relieve threats to human health or the environment; (2) to perform a RCRA Facility Investigation ("RFI") to determine fully the nature and extent of any release of hazardous wastes and/or hazardous constituents at or from the Facility; and (3) to perform a Corrective Measures Study ("CMS") to identify and evaluate alternatives for corrective action necessary to prevent or mitigate any migration or releases of hazardous wastes and/or hazardous constituents at or from the Facility as necessary to protect human health and the environment.

IV. FINDINGS OF FACT

1. Respondent, a company incorporated in the State of New York and doing business in the State of Delaware, is a person as defined in Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15).
2. Respondent is a generator of hazardous waste and an owner/operator of a hazardous waste management facility ("Facility") located on River Road - Route 9 in Delaware City, New Castle County, Delaware. The Facility produces chlorine, as well as caustic potash (potassium hydroxide), caustic soda (sodium hydroxide) and hydrogen. A topographic map of the Facility and surrounding area is presented in Figure 1, attached hereto.
3. Respondent operated its Facility as a hazardous waste management facility on and after November 19, 1980, the applicable date which renders facilities subject to interim status requirements or the requirement to have a permit under Sections 3004 and 3005 of RCRA, 42 U.S.C. Sections 6924 and 6925.
4. Pursuant to 3010 of RCRA, 42 U.S.C. 6930, Respondent notified EPA of its Hazardous Waste Activity on August 15, 1980. In its Notification, Respondent identified itself as a generator of hazardous waste and as an owner/operator of a treatment, storage and/or disposal facility for hazardous waste. EPA assigned the Facility the EPA Identification Number DED 00 391 3266 on October 7, 1980.
5. Respondent submitted a Part A Permit Application on November 18, 1980. Respondent modified its Part A Application through several submissions of revised Part A Applications to EPA from 1981 through 1988. In the modified Part A Permit Applications, Respondent identified itself as being engaged in the treatment or storage of the following hazardous wastes at the Facility:
 - a) Hazardous wastes from specific sources identified at 40 C.F.R. Section 261.32 (K071 and K106);
 - b) Hazardous wastes exhibiting the characteristics of corrosivity and EP toxicity (D002, D004, D005, D006, D007, D008, D009, D010, and D011);
 - c) Commercial chemical products, manufacturing chemical intermediates, off-specification commercial chemical products, or manufacturing chemical intermediates identified at 40 C.F.R. Section 261.33(f) (U211).

6. By letter dated October 18, 1981, EPA acknowledged that the Facility qualified for interim status.
7. Waste Lake #1 is a closed waste lagoon and sedimentation basin at the Facility. In 1972, the Respondent conducted an investigation to determine if contaminant migration was occurring from Waste Lake #1. The results of the investigation indicated that mercury had been released from the unit.
8. In 1973, the Respondent conducted an investigation of groundwater in the vicinity of Waste Lake #1. Through the investigation, it was determined that localized seepage zones from the unit probably are contributing to the movement of ground water containing mercury.
9. In 1982, the Respondent completed a geohydrology investigation of the entire Facility. During the investigation, dissolved solids, chloride, mercury and vinyl chloride monomer concentrations were found in the Columbia Formation water table aquifer below the Facility. Concentrations of each tracer contaminant were observed at some locations to be in excess of ambient ground water quality.
10. In 1983, the Respondent completed an assessment of groundwater conditions beneath the Old and New Brine Sludge Landfills which are located at the Facility. During the assessment, chloride ions were found to be releasing radially from the Old Brine Sludge Landfill.
11. In 1984, the Respondent completed an investigation of the shallow groundwater aquifer beneath the waste disposal areas at the Facility. Analytical results showed concentrations of mercury, lead and certain volatile organics in excess of drinking water standards in the north area of Waste Lake #1.
12. In 1984, the Respondent completed a further investigation of Waste Lake #1. As a result of the investigation, mercury, lead and volatile organics were identified to be contained in the unit and migrating toward the north of the lake. Two areas in the dike in the northern corner of the unit were identified as possible seepage areas.
13. In 1986, the Respondent completed an investigation of the flux of mercury and organic concentrations from the Columbia Formation Water Table Aquifer into Red Lion Creek. During the investigation, elevated concentrations of mercury, benzene, chlorobenzene and dichlorobenzene were identified in surface sediment and in borings in a sand channel which runs west and north from the northeast corner of Waste Lake #1 towards Red Lion Creek.

14. In 1989, EPA was notified by the State of Delaware that chlorobenzene was found in the Upper Potomac "A" Aquifer in Well A-19 at the Facility. The Upper Potomac "A" Aquifer is located below the Columbia Formation Aquifer.
15. Analytical results which identify the presence of hazardous wastes and hazardous constituents in Waste Lake #1 and in sediments and/or surface water immediately north of Waste Lake #1 are presented below:

Table 1

Sampling Results from Waste in Waste Lake #1
(Woodward-Clyde Waste Lake #1 Assessment, 1984)

Parameter	Sampling Location*	
	WB2-84	WB3-84
Mercury (mg/kg) ¹	607**	1499**
Benzene (mg/kg)	2770**	1940**

Table 2

Sampling Results from Sediments in Red Lion Creek
(Woodward-Clyde Subsurface Investigation of Red Lion Creek, 1986)

Parameter	Sampling Location*			HBN ² (soil)
	C-1	C-2	C-7	
Mercury (mg/kg)	7.7**	2.8**	0.54**	20
Benzene (mg/kg)	34.5**	1.19**	17.2**	20

* See Figures 2 and 3 attached hereto.

** Maximum concentration found at specified location.

¹ "mg/kg" is an abbreviation for milligrams per kilogram.

² HBN (Health-Based Numbers) are constituent concentrations at which a person could be directly exposed to the media (i.e., ingestion of contaminated soils) and would be unlikely to suffer adverse health effects (for non-carcinogens) or is at minimal risk (for carcinogens) over a 70 year life-time. These levels were compiled by the Office of Solid Waste's Health Assessment Section for EPA's proposed DeMinimus exemption to represent levels of least concern. The HBNs for carcinogens are all derived using the 10⁻⁶ risk level. The 10⁻⁶ cancer risk is the estimated concentration of a substance in drinking water that would be expected to cause no more than one excess cancer case in a population of one million people who consumed two liters each day for an estimated lifetime of 70 years.

Table 3

Sampling Results from Surface Water in Red Lion Creek
(Woodward-Clyde Subsurface Investigation of Red Lion Creek, 1986)

Parameter	Sampling Location*		HBN (water)
	C-2	C-6	
Mercury (mg/l)	0.0040	0.0013	0.002

* See Figure 3 attached hereto.

16. Analytical results which identify the presence of a hazardous constituent in ground water in the recent (Holocene) sediments and Columbia aquifer beneath the Facility are presented below:

Table 4

Sampling Results from Ground Water Beneath Facility
(Woodward-Clyde Shallow Aquifer Field Study, 1983)

Parameter	Sampling Well Location*						HBN water
	Recent Sediments			Columbia Aquifer			
	110	113	114	A-07	A-16	A 20	
Mercury (ppb) ³ (Unfiltered)	86	42	76	38	72	64	2
Mercury (ppb) (filtered)	1.1	17	60	1	0.5**	0.5	2

* See Figure 4 attached hereto.

** Well A-16 initially showed a concentration of 24 ppb filtered mercury; repeat sampling has shown 0.5 ppb from 1986 to present.

17. Analytical results which identify the presence of a hazardous constituent in fish in Red Lion Creek adjacent to the Facility are presented below:

³ "ppb" is an abbreviation for parts per billion.

Table 5

Sampling Results of Mercury in Fish Tissue
From Fish in Red Lion Creek
Studies by the State of Delaware Dept. of Water Quality
(All results are in microgram per gram.)

Fish Type	Year and Part Analyzed		
	1983 whole fish	1986 whole fish	1986 fillets
White Perch	0.1	0.3*	0.2*
Carp	0.1	0.3*	not sampled

18. There are potential human and environmental receptors near Respondent's Facility, including those described below:
- a. The Facility is located immediately south of the confluence of Red Lion Creek into the Delaware River. Grasses indigenous to wetlands areas are located on the Facility property along the confluence. Fish which are associated with the area include striped bass, bluefish, mullet, American shad, various species of herring, bluegill, white perch and carp.
 - b. Migratory birds and deer have been observed on the property. The Facility is located in the Atlantic Flyway. The migratory birds which use the Flyway include the Clapper Rail, Black Duck, Redwinged Blackbird, Willet, Mallard, Blue and Green-Winged Teal, Gadwall, Canadian Goose, Marsh Hawk and numerous Herons.
 - c. The Least Bitten, a rare wading bird in Delaware, has been observed in the area. Osprey nesting has also been reported.
 - d. Pea Patch Island is located within a quarter mile southeast of the Facility in the Delaware River. Heron Rookery and Osprey nesting locations are located on the island.
 - e. The ground water and surface water site-related constituents migrate northward and discharge to Red Lion Creek. Recreationalists can access this area of Red Lion Creek from Route 9, which crosses the creek approximately 0.4 miles upgradient of the affected area.
 - f. The Lower Hydrologic Zone of the Potomac Aquifer, which is located below the Columbia Aquifer, and the Upper

and Middle Hydrologic Zones of the Potomac Aquifer, is the primary source of drinking water for Delaware City and the surrounding community.

19. The substances referred to in paragraphs 7 through 9 and 11 through 17 are hazardous wastes as defined in Section 1004(5) of RCRA, 42 U.S.C. § 6903(5) and 40 C.F.R. Section 261.3 and are hazardous constituents as defined in 40 C.F.R. Part 261, Appendix VIII.
20. The substances referred to in paragraphs 7 through 9 and 11 through 17 have the potential to impact the environmental receptors described in paragraph 18 via the groundwater, surface water, soil and sediment pathways.
21. The substances identified in paragraphs 7 through 9 and 11 through 17 may pose a threat to human health and the environment. Human health impacts for some of these substances are described below as taken from "Chemical, Physical, or Biological Properties of Compounds Present at Hazardous Waste Sites" (EPA, 1985). Specifically:
 - a) Metallic mercury, when administered by intraperitoneal injection, produces implantation site sarcomas in rats. Several mercury compounds exhibit a variety of genotoxic effects in eukaryotes. In experimental animals, organic mercury compounds can produce toxic effects in the gastrointestinal tract, pancreas, liver, heart, and gonads, with involvement of the endocrine, immunocompetent, and central nervous systems. Soluble mercuric salts are highly poisonous on ingestion, with oral LD₅₀⁴ values of 20 to 60 mg/kg reported. Acute exposure to mercury compounds at high concentrations causes a variety of gastrointestinal symptoms and severe anuria with uremia. Signs and symptoms associated with chronic exposure involve the central nervous system and include behavioral and neurological disturbances.
 - b. Benzene is a known human carcinogen, causing leukemia in exposed individuals. It also adversely affects the hematopoietic system.

⁴ The LD₅₀ (lethal dose 50) is a single dose of a substance that causes the death of 50% of an animal population from exposure to the substance by any route other than inhalation.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set out above, and after consideration of the Administrative Record supporting issuance of this Consent Order, EPA has made the following Conclusions of Law and Determinations:

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

2. Respondent is the owner and operator of a facility authorized to operate under Section 3005(e) of RCRA, 42 U.S.C. Section 6925(e).

3. Certain wastes found at the Facility are hazardous wastes within the meaning of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h) and as defined in Section 1004(5) of RCRA, 42 U.S.C. § 6903(5).

4. There is or has been a release of hazardous wastes into the environment from Respondent's Facility within the meaning of Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h).

5. The actions required by this Consent Order are necessary to protect human health and the environment.

VI. WORK TO BE PERFORMED

Evaluation of potential for adverse effects on human health and the environment at or adjacent to the Facility requires an investigation to determine the presence, magnitude, extent, direction and rate of movement of any hazardous wastes or hazardous constituents within and beyond the Facility boundary.

EPA acknowledges that Respondent may have completed some of the tasks required by this Consent Order and that Respondent may have available some of the information and data required by this Consent Order. This previous work may be used to meet the requirements of this Consent Order, upon submission to and formal approval by EPA.

Pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), Respondent agrees to and is hereby ordered to perform the following acts in the manner and by the dates specified herein. All work undertaken pursuant to this Consent Order shall be developed and performed in accordance with, as applicable, the following guidance documents: the Scope of Work for Interim Measure(s) set forth in Attachment A; the Scope of Work for a

RCRA Facility Investigation set forth in Attachment B; the Scope of Work for a Corrective Measures Study set forth in Attachment C; ; RCRA, its implementing regulations and relevant EPA guidance documents. All Scopes of Work and other Attachments to this Consent Order are incorporated herein by reference. Relevant guidance may include, but is not limited to, the "RCRA Facility Investigation (RFI) Guidance" (Interim Final, May 1989, EPA 530/SW-88-028), "RCRA Ground Water Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1, September 1986), "Test Methods For Evaluating Solid Waste" (SW-846, November 1986), "Risk Assessment Guidance for Superfund Volume I- Human Health Evaluation Manual and Volume II- Environmental Evaluation Manual Interim Final" (EPA/540/1-89/002 and 001, March, 1989), "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA 530/SW-85-031, July 1986), and "OWRS Guidance for Preparation of QA Project Plans" (OWRS QA-1, May 1984).

"Days" as used herein shall mean calendar days unless specifically stated otherwise.

A. INTERIM MEASURES ("IM")

1. Within ten (10) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for approval an IM Workplan which identifies Interim Measures which will protect human health and the environment from releases from Waste Lake #1 and the Old Brine Sludge Landfill and which will be consistent with the final corrective measure(s) for the Facility to the extent practicable. The IM Workplan shall be developed in accordance with the IM Scope of Work in Attachment A to this Order. Upon receipt of EPA approval of the IM Workplan, Respondent shall implement the approved IM Workplan in accordance with the requirements and schedules contained therein. The Respondent shall operate and maintain the Interim Measures until final corrective action, as set forth immediately hereafter, has been implemented.

2. If at any time during the pendency of this Consent Order, Respondent obtains or discovers information concerning a hazardous waste or hazardous constituent release, in a quantity reportable pursuant to State and Federal laws, at or from the Facility into the environment in addition to or different from that described in Section IV, "Findings of Fact" above, Respondent shall immediately notify EPA orally of such release and in writing within seven (7) calendar days of providing oral notification. The notification shall describe the nature and extent of the release and any threat or potential threat to human health or the environment posed by such release. If EPA determines that corrective action for such release is necessary

to protect human health or the environment, EPA shall so notify the Respondent. Within fourteen (14) calendar days of receipt of such notice from EPA, Respondent shall submit to EPA for approval an IM Workplan which identifies Interim Measures which will protect human health and the environment from such release and which will be consistent with the final corrective measure(s) for the Facility to the extent practicable.

3. The IM Workplan shall be developed in accordance with the IM Scope of Work, in Attachment A to this Order. The IM Workplan shall document the procedures to be used by Respondent for the implementation of Interim Measures and shall include, but not be limited to: the objectives of the Interim Measures; design, construction, operation, monitoring and maintenance requirements; and detailed schedules for the expeditious completion of such measures.

4. In accordance with the Attachment A hereto, the IM Workplan shall include: Interim Measures Objectives; a Health and Safety Plan; a Community Relations Plan; a Data Collection Quality Assurance Plan; a Data Management Plan; Design Plans and Specifications; an Operation and Maintenance Plan; a Project Schedule for expeditious completion of Interim Measures; an Interim Measures Construction Quality Assurance Plan; and Reporting Requirements.

5. Upon receipt of EPA approval of the IM Workplan, Respondent shall implement the approved IM Workplan in accordance with the requirements and schedules contained therein.

B. RCRA FACILITY INVESTIGATION ("RFI")

1. Within seventy-five (75) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for approval a Description of the Current Conditions at the Facility ("Description"). This Description shall be developed in accordance with the RFI Scope of Work contained in Attachment B.

2. Within seventy-five (75) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA for approval a Pre-Investigation Evaluation of Corrective Measure Technologies ("Evaluation"). This Evaluation shall be developed in accordance with the RFI Scope of Work contained in Attachment B.

3. Within ninety (90) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA a Workplan for a RCRA Facility Investigation ("RFI Workplan"). The RFI Workplan is subject to approval by EPA and shall be developed in accordance with, at a minimum, the RFI Scope of Work contained in

Attachment B, RCRA, its implementing regulations, and relevant EPA guidance documents.

4. The RFI Workplan shall be designed to determine the presence, magnitude, extent, direction, and rate of movement of any hazardous wastes or hazardous constituents within and beyond the Facility boundary. The RFI Workplan shall document the procedures Respondent shall use to conduct those investigations necessary to: (1) characterize the potential pathways of contaminant migration; (2) characterize the source(s) of contamination; (3) define the degree and extent of contamination; (4) identify and evaluate actual or potential human and/or ecological receptors; and (5) support the development of alternatives from which a corrective measure(s) will be selected by EPA. A specific schedule for expeditious implementation of all activities shall be included in the RFI Workplan.

5. In accordance with the provisions of Attachment B hereto the RFI Workplan shall include: (1) a Project Management Plan; (2) a Data Collection Quality Assurance Plan; (3) a Data Management Plan; (4) a Health and Safety Plan; and (5) a Community Relations Plan.

6. Upon receipt of EPA approval of the RFI Workplan, Respondent shall implement the EPA-approved RFI Workplan in accordance with the terms and schedule contained therein. Upon implementation of the RFI Workplan, Respondent shall submit to EPA for approval an RFI Report and a Laboratory and Bench Scale Studies Report in accordance with the requirements and schedule contained in the RFI Workplan.

C. CORRECTIVE MEASURES STUDY ("CMS")

1. Within ninety (90) calendar days of receipt of EPA approval of the RCRA Facility Investigation Final Report, Respondent shall submit to EPA for approval a Draft Corrective Measures Study Report in accordance with the CMS Scope of Work in Attachment C.

2. Within thirty-five (35) calendar days of receipt of EPA's comments on the Draft Corrective Measures Study Report, Respondent shall submit to EPA the Corrective Measures Study Final Report, revised to respond to and/or remedy comments received from EPA on the Draft Corrective Measures Study Report.

D. PUBLIC COMMENT AND PARTICIPATION

1. After the initial submission of all of the following documents: Description of the Current Conditions at the Facility, Pre-Investigation Evaluation of Corrective Measure Technologies, and RFI Workplan, required by Sub-section VI.B of this Order, EPA shall hold a public meeting. The purpose of the meeting shall be to describe the current status of actions regarding the Facility, to present an overview of the aforementioned submittals and to receive comments from the public.

2. Upon approval of a Corrective Measures Final Study Report, EPA shall make both the RCRA Facility Investigation Final Report (and Respondent's Executive Summary of Report) and the Corrective Measures Study Final Report (and Respondent's Executive Summary of report) and a summary of EPA's proposed corrective measure and EPA's justification for proposing selection of that corrective measure available to the public for review and comment for thirty (30) calendar days.

3. Following the public review and comment period, EPA shall notify Respondent of the corrective measure selected by EPA. If the corrective measure recommended in the Corrective Measures Study Final Report is not the corrective measure selected by EPA after consideration of public comments, EPA shall inform Respondent in writing of the reasons for such decision, and Respondent shall modify the RFI and/or CMS Final Reports within thirty (30) calendar days of receipt of EPA's decision on the corrective measure if directed to do so by EPA.

E. CORRECTIVE MEASURE(S) IMPLEMENTATION

1. If Respondent has complied with the terms of this Consent Order, EPA shall provide a fifty (50) calendar day period for negotiation of an administrative order on consent (or a judicial consent decree) for implementation of the final corrective measure(s). The fifty (50) calendar day negotiation period shall begin on the date Respondent receives EPA's notification of the final corrective measure(s). If agreement is not reached during this period, EPA reserves all rights it has to implement the corrective measure(s) or other remedial response and to take any other appropriate action under RCRA, the Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 ("CERCLA"), 42 U.S.C. Section 9601 et seq., or any other available legal authority, including issuance of a unilateral administrative order directing Respondent to implement the final corrective measure(s).

F. WASTE MINIMIZATION PROGRAM

1. Within one hundred and eighty (180) calendar days of the effective date of this Consent Order, Respondent shall certify to EPA that it has a program in place to reduce the volume or quantity, mobility and toxicity of hazardous waste generated at the Facility to the degree determined by the Respondent to be economically practicable. The certification shall be accompanied by a description of Respondent's waste minimization program, that addresses the reduction in volume or quantity, mobility and toxicity of hazardous waste.

2. Respondent shall report to EPA, at each anniversary of the initial certification, Respondent's progress in implementing its waste minimization program.

G. SUBMISSIONS/EPA APPROVAL/ADDITIONAL WORK

1. Respondent shall submit simultaneously to the State any plan, report, or other item which is required to be submitted for approval by EPA pursuant to this Consent Order to allow the State a reasonable opportunity to review and comment to EPA regarding such submission.

2. EPA shall, after review of such submission as described in paragraph 1 above and review of any comments provided to EPA by the State, notify Respondent in writing of EPA's approval or notice of deficiencies, if any, in the IM or RFI Workplan, RFI or CMS Draft Reports, or other submission. Such notice of deficiencies shall not be subject to the dispute resolution procedures of Section XV, below.

3. Except as otherwise specified herein, within thirty (30) calendar days of receipt of EPA's comments on the RFI Workplan, RFI or CMS Draft Report, or other submission, Respondent shall submit to EPA for approval a revised RFI Workplan, RFI or CMS Report, or other submission, which responds to and/or remedies any deficiencies identified by EPA. Any submission approved by EPA under this Consent Order shall be deemed incorporated into and made an enforceable part of this Consent Order. In the event that EPA disapproves of the revised submission, Respondent may invoke the dispute resolution procedures of Section XV, below. In the event EPA disapproves the revised submission, EPA reserves the right to prepare the RFI Workplan, RFI or CMS Reports, or other submission in lieu of Respondent and seek to recover from Respondent the costs thereof in accordance with CERCLA and/or any other applicable law.

4. Within thirty (30) calendar days of receipt of EPA's comments on any IM Workplan, Respondent shall submit to EPA for approval a revised IM Workplan which responds to and/or remedies any deficiencies identified by EPA. Any submission approved by EPA under this Consent Order shall be deemed incorporated into and made an enforceable part of this Consent Order. In the event that EPA disapproves of the revised submission, Respondent may invoke the dispute resolution procedures of Section XV, below. In the event EPA disapproves the revised submission, EPA reserves the right to prepare the IM Workplan in lieu of Respondent and seek to recover from Respondent the costs thereof in accordance with CERCLA and/or any other applicable law.

5. Beginning with the second month following the effective date of this Consent Order and continuing throughout the period this Consent Order is effective, Respondent shall provide EPA with bimonthly (every two months) progress reports which shall be submitted by the fifteenth day of the following month. The bimonthly progress reports shall contain the information required in the relevant Scope(s) of Work attached hereto.

6. Four (4) copies of all documents, including Workplan(s), Program Plan(s), draft and final reports, bimonthly progress reports, and other documents to be submitted pursuant to this Consent Order shall be hand-delivered or sent by Certified Mail, Return Receipt Requested, to the Project Coordinator designated pursuant to Section XII, "PROJECT COORDINATOR," below.

7. All work performed pursuant to this Consent Order shall be under the direction and supervision of a professional engineer or geologist with expertise in hazardous waste site investigation. Within ten (10) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA, in writing, the name, title, and qualifications of the engineer or geologist and of any contractors or subcontractors to be used in carrying out the terms of this Consent Order. Notwithstanding Respondent's selection of an engineer, geologist, contractor or subcontractor, nothing herein shall relieve Respondent of its obligation to comply with the terms and conditions of this Consent Order.

8. If EPA determines that work not specified in or under this Consent Order is necessary to accomplish the purposes of the Order, EPA shall request, in writing, that Respondent perform the additional work and shall specify the basis and reasons for EPA's determination that additional work is necessary. Within fifteen (15) calendar days after the receipt of such request, Respondent shall have the opportunity to meet or confer with EPA to discuss the additional work EPA has requested. In the event that Respondent agrees to perform the additional work, this Consent Order shall be modified in accordance with Section XXI,

"SUBSEQUENT MODIFICATION," below, and such work shall be performed in accordance with this Consent Order. In the event Respondent fails to perform the additional work, EPA reserves the right to order Respondent to perform such additional work; to perform such additional work itself and to seek to recover from Respondent all costs of performing such additional work and to disapprove of the IM or RFI Workplan and the RFI or CMS Reports.

VII. QUALITY ASSURANCE

Throughout all sample collection and analysis activities, Respondent shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures, as specified in the approved Workplans. In addition, Respondent shall:

1. Ensure that laboratories used by Respondent for analyses perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste" (SW-846, November 1986) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall submit all protocols to be used for analyses to EPA for approval at least thirty (30) calendar days prior to the commencement of analyses and shall obtain EPA approval prior to the use of such protocols.

2. Ensure that laboratories used by Respondent for analyses participate in a quality assurance/quality control program equivalent to that which is followed by EPA. As part of such a program, and upon request by EPA, such laboratories shall perform analyses of samples provided by EPA to demonstrate the quality of the analytical data.

3. Inform the EPA Project Coordinator at least fourteen (14) calendar days in advance of any laboratory analysis regarding which laboratory will be used by Respondent and ensure that EPA personnel and EPA-authorized representatives have reasonable access to the laboratories and personnel used for analysis.

VIII. PUBLIC REVIEW OF ADMINISTRATIVE RECORD

1. The Administrative Record supporting the issuance of this Consent Order will be available for public review on Mondays through Fridays, from 9:00 a.m. to 5:00 p.m., by contacting the EPA Project Coordinator, Ms. Dominique Lueckenhoff, at:

U.S. Environmental Protection Agency
841 Chestnut Building (3HW61)
Philadelphia, Pennsylvania 19107
Telephone (215) 597-6681

2. A copy of the Administrative Record may also be reviewed by contacting:

State of Delaware
Dept. of Natural Resources and Environmental Control
Division of Air and Waste Management
Hazardous Waste Management Branch
P.O. Box 1401
89 Kings Highway
Dover, Delaware 19903
Telephone # (302) 739-3689

IX. ON-SITE AND OFF-SITE ACCESS

1. EPA and/or its authorized representatives shall have the authority to enter at reasonable times and move about all property at the Facility during the effective dates of this Consent Order for the purposes of, inter alia: interviewing Facility personnel and contractors; inspecting records, operating logs, and contracts related to the Facility; reviewing the progress of Respondent in carrying out the terms of this Consent Order; conducting such tests, sampling or monitoring as EPA or its Project Coordinator deem necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to EPA by Respondent. Respondent shall permit such persons, at all reasonable times, 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 Consent Order. EPA and its representatives shall be escorted by an employee or representative of Respondent and shall observe Facility safety requirements imposed by state and federal law.

2. To the extent that work required by this Consent Order, or by any EPA-approved Workplan prepared pursuant hereto, must be done on property not owned or controlled by Respondent, Respondent shall use its best efforts to obtain site access agreements from the present owner(s) and/or lessee(s) of such property, as appropriate, within fourteen (14) calendar days of receipt of EPA approval of any Workplan pursuant to this Order which requires work on such property. Best efforts as used in this paragraph, shall include, at a minimum, but shall not be limited to, a certified letter from Respondent to the present owner(s) or lessee(s) of such property requesting access agreements to permit Respondent, EPA and its authorized representatives access to such property. In the event that such agreements for access are not obtained within fourteen (14) calendar days after receipt of EPA approval of any Workplan

pursuant to this Order which requires work on property which is not owned or controlled by Respondent, Respondent shall notify EPA, in writing, within seven (7) calendar days after failure to obtain such agreements, regarding both the efforts undertaken to obtain access and the failure to obtain such agreements.

3. Nothing in this Consent Order limits or otherwise affects EPA's right of access and entry pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

X. SAMPLING AND DATA/DOCUMENT AVAILABILITY

1. Respondent shall submit to EPA the results of all sampling and/or tests or other data generated by, or on behalf of, Respondent in accordance with the requirements of this Consent Order and the Attachments appended hereto and incorporated herein.

2. Respondent shall notify EPA in writing at least fourteen (14) calendar days before engaging in any field activities, such as well drilling, installation of equipment, or sampling. At the request of EPA, Respondent shall provide or allow EPA or its authorized representatives to take split or duplicate samples of all samples collected by Respondent pursuant to this Consent Order. Nothing in this Consent Order shall limit or otherwise affect EPA's authority to collect samples pursuant to applicable law, including, but not limited to, RCRA and CERCLA.

3. Respondent may assert a business confidentiality claim covering all or part of any information submitted to EPA pursuant to this Consent Order in the manner described in 40 C.F.R. Section 2.203(b). Any assertion of confidentiality shall be adequately substantiated by Respondent when the assertion is made in accordance with 40 C.F.R. Section 2.204(e)(4). Information subject to a confidentiality claim shall be disclosed only to the extent and by the means of the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Respondent. Respondent shall not assert any confidentiality claim with regard to any physical, sampling, monitoring, or analytical data.

XI. RECORD PRESERVATION

1. Respondent agrees that it shall preserve, during the pendency of this Consent Order and for minimum of at least six

(6) years after its termination, all data, records and documents in its possession or in the possession of its divisions, officers, directors, employees, agents, contractors, successors, and assigns which relate to this Consent Order or to hazardous waste management and/or disposal at the Facility. After six (6) years, Respondent shall make such records available to EPA for inspection or shall provide copies of any such records to EPA. Respondent shall notify EPA at least thirty (30) calendar days prior to the destruction of any such records, and shall provide EPA with the opportunity to inspect, copy and/or take possession of any such records. Nothing in this Section XI shall in any way limit the authority of EPA under Section 3007 of RCRA, 42 U.S.C. Section 6927.

XII. PROJECT COORDINATOR

1. EPA hereby designates Dominique Lueckenhoff as the EPA Project Coordinator. Within ten (10) calendar days of the effective date of this Consent Order, Respondent shall designate a Project Coordinator and shall notify EPA, in writing, of the Project Coordinator it has selected. Each Project Coordinator shall be responsible for overseeing the implementation of the Consent Order. The EPA Project Coordinator will be EPA's primary designated representative at the Facility. To the maximum extent possible, all communications between Respondent and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators.

2. The parties agree to provide at least seven (7) calendar days written notice prior to changing Project Coordinators.

3. If EPA determines that activities, whether or not in compliance with this Consent Order, have caused or may cause a release or threatened release of hazardous wastes, hazardous constituents, hazardous substances, pollutants or contaminants, which threaten or may pose a threat to the public health or welfare or to the environment, or that Respondent is not capable of preparing any plans and/or undertaking any actions, studies or interim measures required, EPA may direct, in writing, that Respondent stop further implementation of this Consent Order for such period of time as may be needed to abate any such release or threatened release and/or to undertake any action which EPA determines is necessary to abate such release or threatened release.

4. The absence of the EPA Project Coordinator from the Facility shall not be cause for the delay or stoppage of work.

XIII. NOTIFICATION

Unless otherwise specified, reports, correspondence, approvals, disapprovals, notices, or other submissions relating to or required under this Consent Order shall be in writing and shall be sent as follows:

1. Four copies of all documents to be submitted to the EPA shall be sent to:

Dominique Lueckenhoff (3HW61)
U.S. EPA Region III
841 Chestnut Building
Philadelphia, PA 19107

2. Two copies of all documents submitted by or for the Respondent under the terms and conditions of this Consent Order shall be submitted to the State to allow the State the opportunity to review and comment as provided in Section VI.G of this Consent Order to the office designated below:

Dept. of Natural Resources and Environmental Control
Division of Air & Waste Management
Hazardous Waste Management Branch
P.O. Box 1401
89 Kings Highway
Dover, DE 19903

Re: DED003913266, Code 28

3. Documents to be submitted to Respondent shall be sent to:

Wesley Sanders, Plant Manager
Occidental Chemical Corporation
Electrochemicals Division
River Road - Route 9
Delaware City, Delaware 19706-1550

4. Any notice, report, certification, data presentation, or other document submitted by Respondent pursuant to this Consent Order which discusses, describes, demonstrates, supports any finding or makes any representation concerning Respondent's compliance or noncompliance with any requirement of this Consent Order shall be certified by a responsible corporate officer of Respondent. A responsible corporate officer means: (a) 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, or (b) the manager of one or more

manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$35 million (in 1987 dollars when the Consumer Price Index was 345.3), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

5. The certification of the responsible corporate officer required by paragraph 4 above shall be in the following form:

I certify that the information contained in or accompanying this [type of submission] is true, accurate, and complete.

As to [the/those] identified portion(s) of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under penalty of law that this [type of submission] and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, 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 fines and imprisonment for knowing violations.

Signature : _____

Title: _____

XIV. DELAY IN PERFORMANCE/STIPULATED PENALTIES

1. Unless there has been a written modification of a compliance date by EPA, or excusable delay as defined below in Section XVI, "FORCE MAJEURE AND EXCUSABLE DELAY," in the event Respondent fails to comply with any requirement set forth in this Consent Order, Respondent shall pay stipulated penalties, as set forth below, upon written demand by EPA. Compliance by Respondent shall include commencement or completion of any activity under this Consent Order or a plan approved under this Consent Order or any matter under this Consent Order in the manner and within the time specified in and approved under this Consent Order. For any reports and submissions required of Respondent by EPA, compliance with such time limits shall be demonstrated by the date of mailing by Certified Mail, Return

Receipt Requested or, alternatively, by a receipt documenting hand delivery.

- a. For failure to commence or complete work as prescribed in this Consent Order: \$2,000 per day for one to seven days or part thereof of delay, and \$4,000 per day for each day of delay, or part thereof, thereafter;
- b. For failure to submit any draft or final workplans, plans or reports at the time required pursuant to this Consent Order: \$1,000 per day for one to seven days or part thereof of delay, and \$3,000 per day for each day of delay, or part thereof, thereafter;
- c. For failure to submit bimonthly progress reports at the time required pursuant to this Consent Order: \$1,000 per day for one to seven days or part thereof of delay, and \$2,000 per day for each day of delay, or part thereof, thereafter,
- d. For failure to submit other deliverables required by this Consent Order: \$750 per day for one to seven days or part thereof of delay, and \$1,500 per day for each day of delay, or part thereof, thereafter;
- e. For any failure to comply with this Consent Order not described in subparagraphs a-d, above: \$1,000 per day for one to seven days or part thereof of delay, and \$1,500 per day for each day of delay, or part thereof, thereafter;
- f. For any failure to comply with the provisions of this Consent Order after receipt of notice of noncompliance by EPA: \$1,000 per day for first one to seven days or part thereof of delay, and \$2,000 per day for each day of delay, or part thereof, thereafter, in addition to any stipulated penalties imposed under subparagraphs a through e, above, for the underlying noncompliance.

2. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day or correction of the non-compliance. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Order.

3. All penalties owed to EPA under this Section XIV shall be due within thirty (30) calendar days of receipt of a notification of noncompliance unless Respondent invokes the dispute resolution procedures under Section XV, below. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty (30) calendar day period and shall accrue at the United States Tax and Loan Rate.

4. All penalty payments shall be made by certified or cashier's check payable to the Treasurer of the United States of America and shall be remitted to:

Regional Hearing Clerk
U.S. Environmental Protection Agency
Region III
P.O. Box 360515M
Pittsburgh, Pennsylvania 15251

All payments shall reference the name of the Facility, Respondent's name and address, and the EPA Docket Number of this Order. Copies of the transmittal of payment shall be sent simultaneously to the EPA Project Coordinator and the Regional Hearing Clerk (3RC00), U.S. Environmental Protection Agency, Region III, 841 Chestnut Building, Philadelphia, Pennsylvania 19107.

5. Respondent may dispute EPA's right to the stated amount of penalties by invoking the dispute resolution procedures below under Section XV, "DISPUTE RESOLUTION." Stipulated penalties shall continue to accrue, but need not be paid, for any alleged noncompliance which is the subject of dispute resolution during the period of such dispute resolution. To the extent that Respondent does not prevail upon resolution of the dispute, Respondent shall remit to EPA within ten (10) calendar days of receipt of such resolution any outstanding penalty payment, including any accrued interest, in the manner described above in Paragraph 4 of this Section. To the extent Respondent prevails upon resolution of the dispute, no penalties shall be payable. To the extent Respondent prevails in part upon resolution of the dispute, EPA, in the sole exercise of its discretion which is not subject to dispute resolution, may adjust or waive penalties otherwise assessed.

6. Except as provided in Paragraph 5 of this Section XIV, neither the filing of a petition to resolve a dispute nor the payment of penalties shall alter in any way Respondent's obligation to comply with requirements of this Consent Order.

7. The stipulated penalties set forth in this Section XIV

do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the requirements of this Consent Order.

XV. DISPUTE RESOLUTION

1. If Respondent disagrees, in whole or in part, with any EPA disapproval, modification or other decision or directive made by EPA pursuant to this Consent Order, Respondent shall notify EPA in writing of its objections, and the basis therefor, within fourteen (14) calendar days of receipt of EPA's disapproval, decision or directive. Said notice shall set forth the specific points of the dispute, the position which Respondent asserts should be adopted as consistent with the requirements of this Consent Order, the basis for Respondent's position, and any matters which it considers necessary for EPA's determination. EPA and Respondent shall have an additional fourteen (14) calendar days from the receipt by EPA of the notification of objection, during which time representatives of EPA and Respondent may confer in person or by telephone to resolve any disagreement. If an agreement is reached, the resolution shall be written and signed by representatives of each party. In the event that resolution is not reached within this fourteen (14) calendar day period, EPA shall furnish to Respondent, in writing, its decision on the pending dispute. To the extent Respondent prevails in the dispute, affected schedules or time periods relating to work to be performed under this Consent Order shall be modified to reflect the time taken to resolve the dispute. In any event, EPA may, in the exercise of its discretion, extend such schedules or time periods.

2. Except as provided in Section XIV.5., the existence of a dispute, as defined in this Section XV, and EPA's consideration of matters placed into dispute, shall not excuse, toll or suspend any compliance obligation or deadline required pursuant to this Consent Order during the pendency of the dispute resolution process.

3. Notwithstanding any other provisions of this Consent Order, no action or decision by EPA, including, without limitation, decisions of the Regional Administrator, Region III, pursuant to this Consent Order, shall constitute final agency action giving rise to any rights to judicial review prior to EPA's initiation of judicial action to compel Respondent's compliance with this Consent Order.

XVI. FORCE MAJEURE AND EXCUSABLE DELAY

1. Respondent shall perform the requirements of this Consent Order in the manner and within the time limits set forth herein, unless the performance is prevented or delayed by events which constitute a force majeure. Respondent shall have the burden of proving such a force majeure. A force majeure is defined as any event arising from causes not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence and which delays or prevents performance in the manner or by a date required by this Consent Order. Such events do not include increased costs of performance, changed economic circumstances, weather conditions which could have been overcome by due diligence, or failure to obtain federal, state, or local permits.

2. Respondent shall notify EPA, in writing, within seven (7) calendar days after it becomes aware of any event which causes or may cause a delay in complying with any requirement of this Consent Order or prevents compliance in the manner required by this Order and any event which Respondent claims constitutes a force majeure. Such notice shall estimate the anticipated length of delay, including necessary demobilization and remobilization, its cause, measures taken or to be taken to prevent or minimize the delay, and an estimated timetable for implementation of these measures. Failure to comply with the notice provision of this Section XVI shall constitute a waiver of Respondent's right to assert a force majeure claim with respect to such event.

3. If EPA determines that the failure to comply or delay has been or will be caused by circumstances not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence, the time for performance of that requirement of this Consent Order may be extended, upon EPA approval, for a period equal to the delay resulting from such circumstances. This shall be accomplished through an amendment to this Consent Order pursuant to Section XXI, "SUBSEQUENT MODIFICATION." Such an extension shall not alter the schedule for performance or completion of any other tasks required by this Consent Order, unless these tasks are also specifically altered by amendment of the Consent Order. In the event that EPA and Respondent cannot agree that any delay or failure has been or will be caused by circumstances not reasonably foreseeable and beyond the control of Respondent, which cannot be overcome by due diligence, or if there is no agreement on the length of the extension, Respondent may invoke the dispute resolution

procedures set forth in Section XV, "DISPUTE RESOLUTION."

XVII. RESERVATION OF RIGHTS

1. EPA expressly reserves all rights and defenses that it may have, including the right both to disapprove of work performed by Respondent pursuant to this Consent Order and to request that Respondent perform tasks in addition to those stated in the Scope(s) of Work, Workplans, or this Consent Order.

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

3. Except as provided in Section I, "Jurisdiction," with respect to any enforcement action alleging failure to comply with this Consent Order, including revisions hereto, Respondent does not waive herein any defenses it may have under statutory or common law or regulation.

4. Compliance by Respondent with the terms of this Consent Order shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, state, or federal laws and regulations.

5. The signing of this Consent Order and Respondent's consent to comply shall not limit or otherwise preclude the EPA from taking additional enforcement action pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), should EPA determine that such actions are warranted.

6. This Consent Order is not intended to be, nor shall it be construed as, a permit. This Consent Order does not relieve Respondent of any obligation to obtain and comply with any local, state, or federal permit.

7. EPA reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and response/corrective actions it deems necessary to protect public health or welfare or the environment. Except as specifically provided otherwise, Respondent reserves its rights under the Dispute Resolution provision of Section XV

with respect to the performance of any portion of the work consented to herein. EPA may exercise its authority under Section 7003 of RCRA, 42 U.S.C. Section 6973, and CERCLA to undertake removal actions or remedial actions at any time. In any event, 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 Consent Order, Respondent is not released from liability, if any, for the costs of any response actions taken by EPA.

XVIII. OTHER CLAIMS

1. Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action or demand 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, or contaminants found at, taken to, or taken from the Facility.

XIX. OTHER APPLICABLE LAWS

1. All actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

XX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

1. 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 agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Consent Order. 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. The United States shall not be deemed to be a party to any contract entered into by Respondent for the purposes of carrying out any activities required by this Order.

XXI. SUBSEQUENT MODIFICATION

1. This Consent Order may only be amended by mutual

agreement of EPA and Respondent. Any such amendment shall be in writing, shall be signed by both parties, shall have as its effective date the date on which it is signed by EPA, and shall be incorporated into this Consent Order.

2. Any reports, plans, specifications, schedules, other submissions and attachments required by this Consent Order are, upon written approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Consent Order and shall subject Respondent to the stipulated penalty provisions included in Section XIV, "DELAY IN PERFORMANCE/STIPULATED PENALTIES".

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

XXII. SEVERABILITY

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

XXIII. TERMINATION AND SATISFACTION

1. The provisions of this Consent Order shall be deemed satisfied upon Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that the terms of this Consent Order have been satisfactorily completed. This notice shall not, however, terminate Respondent's obligation to comply with any continuing obligations hereunder including, but not limited to, Sections XI ("RECORD PRESERVATION"), XVII ("RESERVATION OF RIGHTS") and XIX ("OTHER APPLICABLE LAWS").

XXIV. SURVIVABILITY/PERMIT INTEGRATION

1. Subsequent to the issuance of this Consent Order, a RCRA permit may be issued to the Facility incorporating the requirements of this Consent Order by reference into the permit. No requirement of this Consent Order shall terminate upon the

issuance of a RCRA permit unless such requirement is expressly replaced by a requirement in the permit.

XXV. EFFECTIVE DATE

1. The effective date of this Consent Order shall be the date on which it is signed by EPA. Because this Consent 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. Section 6928(b).

XXVI. ATTORNEY'S FEES

1. The Respondent shall bear its own costs and attorneys fees.

IT IS SO AGREED AND ORDERED:

DATE: 6/27/91

BY: Thomas L. Jennings
RESPONDENT

Thomas L. Jennings
Vice President Corporate Environmental
Affairs

DATE: 6/28/91

BY: W. Erickson
EDWIN B. ERICKSON
REGIONAL ADMINISTRATOR
for UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY, REGION III



FINAL DECISION AND RESPONSE TO COMMENTS

OCCIDENTAL CHEMICAL CORPORATION FACILITY

NEW CASTLE, DELAWARE

December 2011

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

FINAL DECISION AND RESPONSE TO COMMENTS

Purpose

The United States Environmental Protection Agency (EPA) is issuing this Final Decision and Response to Comments (Final Decision) under the authority of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, and the Hazardous and Solid Waste Amendments (HSWA) of 1984, 42 U.S.C. Sections 6901 to 6939(e), for the Occidental Chemical Corporation (OxyChem) facility located at 1657 River Road in New Castle County, New Castle, Delaware (hereinafter the Facility or the Site).

On September 26, 2011, EPA issued a Statement of Basis (SB) which described the information gathered during the environmental investigation at the Facility, and the Proposed Remedy for the Facility. The SB is hereby incorporated into this Final Decision by reference and made a part hereof as Attachment A.

Final Decision

The selected remedy for the Facility emphasizes source removal and source control through excavation, consolidation and capping of soils and sediments with concentrations of contaminants above Cleanup Levels. The primary sources of groundwater contamination are being and will continue to be controlled by barrier walls and free product removal, and targeted in-situ treatment will be used to address areas outside of the barrier wall containment areas and thereby restore groundwater to drinking water standards, or Maximum Concentration Levels (MCLs) promulgated by EPA pursuant to the Safe Drinking Water Act, 42 U.S.C. § 300g-1, et seq., and codified at 40 CFR Part 141. In addition, institutional controls (ICs) will be implemented to prevent current and potential future exposure to contamination.

The selected remedy consists of a soil component, a sediment component, a groundwater component, and facility wide non-engineering controls or ICs.

(1) Soil

The final remedy for soil consists of hot spot excavation, consolidation on-Site at the former cell building portion of the process area (AOC 5), and capping. Excavation will occur at locations in the Process Area (AOC 5), the Tributary (AOC 8), the Former Lay Down Area (AOC 10), and Outfall 003 (SWMU 6). The final remedy for soil will utilize EPA's Area of Contamination (AOC) policy (see Management of Remediation Waste under RCRA, EPA 530-F-98-026, October 1998) to facilitate implementation of the remedy. Some portions of the Stormwater Drainage Pond (SWMU 6) and the Former Lay Down Area (AOC 10) will be capped/covered. The former landfills and waste lakes are capped/covered and no additional remedies are required. In addition, Site-wide ICs will be implemented to provide non-engineering controls to prevent

potential future exposure and to prevent activities which could interfere with the integrity and protectiveness of the remedy.

(2) Groundwater

Final remedies for groundwater consist of the existing barrier walls and extraction and treatment systems at the Process Area (AOC 5) and Waste Lake 1 (SWMU 1). Dense non-aqueous phase liquid (DNAPL) will be addressed through periodic removal or extraction from existing recovery wells. Groundwater outside the barrier walls (AOC 7 and AOC 9) will be addressed with active remedies as detailed below. Groundwater remedies will be performed with the short-term goal of protection of surface water in the Tributary and with the long-term goal of achieving MCLs.

IMs will be continued as part of the final remedy for groundwater. Groundwater extraction and treatment inside the barrier walls will continue to be implemented to create a neutral or inward gradient, which will control the migration of contaminated groundwater. DNAPL recovery will continue until data is provided to demonstrate that it can no longer be extracted, or until less than one inch per month of free-phase DNAPL accumulates in all four recovery wells, whichever occurs first.

For AOC 7, In-Situ Enhanced Bioremediation (ISEB) at the Source Area & Air Sparge Treatment Curtain at the Tributary has been selected as the final remedy. The In-Situ air sparge curtain will treat volatile organic groundwater contaminants and manganese prior to discharge to the Tributary (AOC 8). Groundwater extraction and treatment will be implemented as a contingency remedy if the in-situ remedy is determined to not be effective in meeting the cleanup objectives and cleanup levels for AOC 7.

For AOC 9, In-Situ Redox Management (ISRM) has been selected as the final remedy. ISRM will be designed to precipitate mercury in an innocuous essentially insoluble form and treat the chlorinated solvents including tetrachloroethene and carbon tetrachloride at the same time. Groundwater extraction and treatment will be implemented as a contingency remedy if the in-situ remedy is determined not to be effective in meeting the cleanup objectives and cleanup levels for AOC 9.

(3) Sediment

The final remedies selected for Tributary (AOC 8) sediment consist of placing a reactive cap or mat over the east Tributary, dredging and backfilling the west Tributary and ICs. No sediment remedy is required for Red Lion Creek (AOC 3).

(4) Institutional Controls

Certain ICs have been developed and already implemented to support the corrective measures at the Site. The existing ICs include:

- Heavy industrial zoning prohibiting residential development.

- An Excavation Procedure and Health & Safety Plan that guides how workers handle materials encountered during subsurface work at the Facility.
- Restrictions on potable use of groundwater at the Facility. An existing IC for groundwater is currently in place. The Site is located in a Groundwater Management Zone (GMZ) that restricts installation of potable drinking water supply wells. The Delaware Department of Natural Resources and Environmental Control (DNREC) established the GMZ on April 10, 2008.
- DNREC well permitting program with regard to the installation of monitoring and supply wells.

Additional ICs will be developed and used to support the corrective measures to be implemented at the Site. Given the extent and nature of impacted media left in place, more than one IC is necessary to prevent activities which could interfere with the integrity and protectiveness of the remedy. The ICs will be implemented by an enforceable document such as an order and/or an Environmental Covenant recorded in a manner consistent with the Delaware Uniform Environmental Covenants Act (UECA), Title 7 of the Delaware Code, Chapter 29, Subchapter II. Accordingly, EPA's selected remedy includes the following additional ICs to ensure the short and long-term effectiveness of the remedy:

- Restrictions on the property deed to prevent conversion to residential use.
- Restrictions on the property deed to prevent potable use of groundwater at the Site.
- Restrictions for land disturbance at the Site.
- A Materials Management Plan, including an Excavation Procedure and Health & Safety Plan that will guide how future workers will handle materials encountered during future subsurface work at the Facility.
- Inspections and reporting to DNREC regarding compliance with the Environmental Covenant.
- Future development at the Site will include vapor barriers beneath buildings to eliminate the vapor pathway.

For convenience of reference, OxyChem in this document refers to the Site, Facility or Facility owner/operator, and Glenn Springs Holdings (GSH) refers to an affiliate company of OxyChem with responsibility for managing historic environmental matters at the Facility. GSH will be required by EPA to submit biennial review reports on the effectiveness of the ICs in meeting the human health and environmental protection objectives. This review may include, but not be limited to, review of: GSH's compliance with the Environmental Covenant requirements; groundwater and land uses within 0.5 miles of the Facility; and zoning maps or planning documents that may affect future land use in the impacted area. Additionally, GSH will be required to submit five-year review reports on the progress of the remedial measures and of meeting the Cleanup Levels and/or Corrective Action Objectives (CAOs) defined in the SB.

EPA and DNREC will review the progress of the remedy activities to confirm that Cleanup Levels and CAOs have been met. If EPA and/or DNREC determine that GSH is not achieving Cleanup Levels and/or CAOs, EPA may require GSH to perform additional studies and/or to modify the existing corrective measures. If new contamination is discovered or if the selected remedy cannot adequately mitigate risk to human health or the environment, additional

corrective measures will be developed and implemented. In the event that EPA requires the performance of additional studies and/or modification of the corrective measures selected in this Final Decision, an opportunity for public comment will be provided prior to the initiation of changes to the existing corrective measures, as necessary or appropriate.

Response to Comments

On September 26, 2011, this matter was publicly noticed in the Delaware News Journal, Wilmington, Delaware newspaper. The thirty day comment period ended on October 26, 2011. No comments or requests for a public meeting were received by EPA. EPA's decision is unchanged from that proposed in the SB.

Declaration

Based on the Administrative Record compiled for the corrective action at the Occidental Chemical Corporation Facility, EPA has determined that the Final Remedy as set forth in this Final Decision and Response to Comments is appropriate and protective of human health and the environment.

Date: 12/8/11


Abraham Ferdas, Director
Land and Chemicals Division
U.S. Environmental Protection Agency, Region III

Attachment A: Statement of Basis, September 12, 2011



STATEMENT OF BASIS

OCCIDENTAL CHEMICAL CORPORATION FACILITY

NEW CASTLE, DELAWARE

September 2011

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GLOSSARY

AOC – Area of Concern
AOC Policy – Area of Contamination Policy
cm/sec – centimeters per second
CAOs – Corrective Action Objectives
Chlorobenzenes - Chlorobenzene, 1,2-Dichlorobenzene,
1,3-Dichlorobenzene, 1,4-Dichlorobenzene and 1,2,4-Trichlorobenzene
CMS – Corrective Measures Study
COC – contaminant of concern
cy – cubic yards
DNAPL – dense non-aqueous phase liquid
DNREC – Delaware Department of Natural Resources and Environmental Control
ERA – Ecological Risk Assessment
FEMA – Federal Emergency Management Agency
FDRTC – Final Decision and Response to Comments
GSH – Glenn Springs Holdings
GWTS – Groundwater Treatment System
gpm – gallons per minute
GMZ – Groundwater Management Zone
HHRA – human health risk assessment
ICs – Institutional Controls
IM – Interim Measures
ISEB – In-Situ Enhanced Bioremediation
ISRM – In-Situ Redox Management
MCL – maximum concentration level
Media Cleanup Levels – Cleanup Levels
mg/kg – milligrams per kilogram
MNA – monitored natural attenuation
NAVD – National American Vertical Datum of 1988
NPDES – National Pollutant Discharge Elimination System
O&M – operations and maintenance
OSHA – Occupational Safety and Health Administration
OxyChem – Occidental Chemical Corporation, Inc.
RBC – risk-based concentration
RCRA – Resource Conservation and Recovery Act
RFA – RCRA Facility Assessment
RFI – RCRA Facility Investigation
SB – Statement of Basis
SVOC – semivolatile organic compound

SWMU – solid waste management unit
UECA – Uniform Environmental Covenant Act
USACE – United States Army Corps of Engineers
U.S.C. – United States Code
USEPA – United States Environmental Protection Agency
VOC – volatile organic compound

I. INTRODUCTION

This Statement of Basis (SB) describes the United States Environmental Protection Agency's (EPA's) proposed remedy for contaminated soil, groundwater, sediment, and surface water originating from the Occidental Chemical Corporation, Inc. (OxyChem) Plant located to the northwest of Delaware City, New Castle County, Delaware (Facility or Site).

Based on the findings set forth in the RCRA Facility Investigation (RFI), EPA has determined that past operations at the Facility have resulted in soil, groundwater, sediment and surface water contamination. The proposed remedy includes the continuation of certain Interim Measures (IMs) being performed by OxyChem. The proposed remedy for the Facility emphasizes source removal and source control through excavation, consolidation and capping of soils and sediments with concentrations of contaminants above Media Cleanup Levels (Cleanup Levels). The primary sources of groundwater contamination will continue to be controlled by barrier walls and free product removal, and targeted in-situ treatment will be used to address areas outside of the barrier wall containment areas and thereby restore groundwater to drinking water standards, or Maximum Concentration Levels (MCLs) promulgated by EPA pursuant to the Safe Drinking Water Act, 42 U.S.C. § 300g-1, *et seq.*, and codified at 40 CFR Part 141. In addition, EPA proposes that institutional controls (ICs) be implemented as necessary to prevent current and potential future exposure to contamination. The ICs will be implemented by an enforceable document such as an order and/or an Environmental Covenant recorded in a manner consistent with the Delaware Uniform Environmental Covenants Act (UECA), Title 7 of the Delaware Code, Chapter 29, Subchapter II. Current and future groundwater uses from beneath the Site are prohibited by the restrictions of the Groundwater Management Zone (GMZ) established for the Delaware City Industrial Area by the State of Delaware.

EPA is issuing this SB pursuant to the Resource Conservation and Recovery Act (RCRA), as amended, 42 United States Code (U.S.C.) §§ 6901, *et seq.* The purpose of this SB is to solicit public comment on EPA's proposed remedy prior to EPA making its final remedy selection for the Facility. The public may participate in the remedy selection process by reviewing this SB and documents contained in the Administrative Record and submitting written comments to EPA during the public comment period. The information presented in this SB can be found in greater detail in the reports submitted by the Facility to EPA and the Delaware Department of Natural Resources and Environmental Control (DNREC). To gain a more comprehensive understanding of RCRA activities that have been conducted at the Facility, EPA encourages the public to review these documents, which are found in the Administrative Record.

The locations of the Administrative Record and details of the public participation process are provided in Section IX of this SB. EPA will address all significant comments submitted in response to the proposed remedy described in this SB. EPA will make a final remedy decision and issue a Final Decision and Response to Comments after considering information submitted during the public comment period. If EPA determines that new information or public comments warrant a modification to the proposed remedy,

EPA may modify the proposed remedy or select other alternatives based on such new information and/or public comments.

II. FACILITY BACKGROUND AND HISTORY

The approximately 300-acre Facility is located three miles northwest of Delaware City, in New Castle County, Delaware (Figure 1) and lies south of the confluence of Red Lion Creek and the Delaware River. The Facility is surrounded by a heavily industrial and commercial setting. Located to the immediate south is the former Kaneka PVC facility, which is now used as a warehouse by Tri-Supply and Equipment Inc. The Standard Chlorine of Delaware Inc. Superfund site is located to the west. A commercial packaging and transport company, Kuehne Chloromone Corporation, is located on the immediate northern boundary of the Facility. The PBF Energy Partners refinery is located to the south of the Facility. PBF Energy Partners owns and operates a dredge material storage area, a landfill, a land treatment area and two flyash disposal impoundments east and south of the Facility.

The Facility was built in 1964 to manufacture chlorine, hydrogen, sodium hydroxide, and potassium hydroxide. The Facility operated as a chlor-alkali plant from 1964 through 2007. Diamond Shamrock Chemicals Company was purchased by OxyChem in 1986. OxyChem operated the Facility from 1986 through 2007. The Facility stopped chlorine production in November 2005, and stopped production of anhydrous potassium hydroxide in 2007. Decommissioning and demolition of most plant structures was completed in 2007 and 2008. Remaining structures will be removed during implementation of the final remedy. Portions of the Facility are currently leased to others for industrial purposes. To address RCRA corrective action requirements applicable to the Site, OxyChem entered into an Administrative Order on Consent with EPA on June 28, 1991, pursuant to Section 3008(h) of RCRA. The Order required OxyChem to perform interim measures (IMs), and to complete a RFI and a Corrective Measures Study (CMS) in connection with the Site. For convenience of reference, OxyChem in this document refers to the Site, Facility or Facility owner/operator, and Glenn Springs Holdings (GSH) refers to an affiliate company of OxyChem with responsibility for managing historic environmental matters at the Facility.

III. SUMMARY OF PREVIOUS INVESTIGATIONS AND INTERIM MEASURES

A Phase I RCRA Facility Investigation (RFI) was completed by OxyChem in 1993. The focus of the Phase I RFI was to investigate Solid Waste Management Units (SWMUs) identified during the RFI Facility Assessment (RFA) completed by EPA in 1986 and to provide baseline characterization data. A Phase II RFI was completed by OxyChem in 1998. The focus of the Phase II RFI was to further investigate key SWMUs and sources of contamination and to characterize groundwater flow on a Site-wide basis. From 1998 to the present, several Areas of Concern (AOCs) and one SWMU were added to the RCRA corrective action project. Figure 2 presents the locations of SWMUs and AOCs identified during the investigations. Table 1 presents a listing of the SWMUs and AOCs. Figure 3 presents the groundwater monitoring well locations at the Site.

Based on the results of these investigations, EPA and OxyChem agreed to proceed with the implementation of several IMs to prevent releases of contaminants of concern (COCs) from Site processes, and control or limit the migration of existing COCs in Site soil and groundwater. The IMs included:

- o Soil – IMs were completed at the Former Mercury Retorts (SWMU 11)/ Wastewater Treatment Plant (SWMU 13) in 1995-96; the Sand Blast Grit Area (SWMU 18) in 1998; Standard Chlorine Pipeline (AOC 1) in 2004; Stormwater Drainage Channels & Outfalls (AOC 6) in 2001; and the Former Lay Down Area (AOC 10) in 2008. In general, these IMs consisted of the excavation of 1,031 cubic yards (cy) of impacted soils and sediments and off-Site disposal or the on-Site consolidation and capping of 8,500 cy of impacted soils at Waste Lake 1 (prior to installation of an engineered cap).
- o Groundwater – Source control IMs were completed at the Process Area (AOC 5) and Waste Lake 1 (SWMU 1) as follows:
 - o A groundwater IM consisting of a low permeability barrier wall surrounding the entire Process Area and a collection trench within the barrier was constructed in 2003. The Process Area is defined as an approximate 20-acre portion of the Facility where the majority of the former manufacturing operations took place. Extracted groundwater is treated at the on-Site Groundwater Treatment System (GWTS) and discharged to the Delaware River. The groundwater IM includes ongoing performance monitoring.
 - o A groundwater IM consisting of a low permeability barrier wall surrounding the entire Waste Lake 1 and extraction wells within the barrier was constructed in 2003. Waste Lake 1 is defined as an approximate 2.5 acre portion of the Facility that was constructed in 1965 as an unlined surface impoundment and used as a primary settling basin for plant process wastewater. Spoil material from the construction of the barrier walls and soils removed during the Standard Chlorine Pipeline IM (AOC 1) were consolidated on top of Waste Lake 1 (SWMU 1). An engineered cap was then placed on top of the spoils and tied into the barrier wall to minimize water infiltration and to eliminate direct contact with the materials in the waste lake. Extracted groundwater is treated at the on-Site GWTS and

discharged to the Delaware River. The groundwater IM includes ongoing performance monitoring.

- DNAPL Removal – A dense non-aqueous phase liquid (DNAPL) recovery program is currently ongoing at the Free-Phase DNAPL area northwest of Waste Lake 1 (AOC 13). This program consists of the periodic removal of DNAPL that has accumulated in recovery wells constructed as part of the IM. The DNAPL recovery began in July 2004 to address DNAPL in the Potomac A Sands beneath this area of the Site. By the end of 2010, a cumulative total of 1,052 gallons (9,695 pounds) of DNAPL were recovered. The recovered DNAPL is containerized and shipped off-Site as hazardous waste.

In addition to the completion of these IMs, several activities were completed by OxyChem in consultation with EPA to control exposure and stabilize Site conditions during the operational period of the Facility. The following are the most significant of these Site improvements:

- Closure and capping of the former waste lakes and landfills.
- Installing physical barriers and implementing administrative procedures to restrict access by Site employees to areas of potential exposure to COCs.
- Initiating a health and safety program designed to educate and protect Site personnel and contractors from exposure to COCs.
- A waste minimization program documenting the use and disposition of product and waste handling practices.
- Constructing and operating a wastewater treatment system (with periodic system improvements) to manage process water and collect Site surface water runoff.

After the implementation of the IMs, the RCRA corrective action project focused on completion of the CMS in order to develop a final remedial strategy for the Site. The CMS included the completion of a Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA). The ERA involved multiple field efforts since 2004 to collect data at ecological habitat areas including Red Lion Creek (AOC 3), the Tributary (AOC 8), and SWMU 2 (Waste Lake 2).

IV. SITE CHARACTERIZATION

A. SURFACE WATER HYDROLOGY

The Facility is bordered to the north by Red Lion Creek and to the east by the Delaware River. Surface water drainage from the Facility is toward Red Lion Creek, which then discharges to the Delaware River. The Delaware River flows from the north to the south along the east side of the Facility. The 100-year flood plain elevation is approximately 9 feet above mean sea level, as recorded by the Federal Emergency Management Agency (FEMA) in New Castle County in 2007, based on the North American Vertical Datum (NAVD) of 1988. About one half of the approximately 300-acre property (including the Process Area, landfills and waste lakes) lies above the 100-year flood plain. The other

half consists of marsh composed primarily of dense *Phragmites*. There is a tributary to Red Lion Creek (the Tributary) that lies north of the former plant area within the dense *Phragmites*. Stormwater from the former process and storage areas of the Facility is managed under a National Pollutant Discharge Elimination System Permit (NPDES), Number DE0050911, issued to the Facility by the DNREC.

B. GROUNDWATER HYDROLOGY

The hydrogeologic system at the Site consists of four distinct hydrogeologic units. The first, described as the Water Table Aquifer, refers to the groundwater in the Fill Material, Recent Sediments and/or Columbia Formation. The second consists of an underlying layer of fine-grained silty clay/clay that has a low permeability that serves as a semi-confining base of the Water Table Aquifer (Merchantville Formation or Potomac Formation). The third and fourth units consist of relatively pervious coarse sand material beneath the silty clay unit (Potomac A Sands and Potomac B Sands, respectively). There is a regional sand unit in the Potomac, "Deep Potomac Sands", which is not influenced by the Site. The thicknesses of each unit are depicted on a representative cross section presented on Figure 4.

The water table groundwater flows from south to north across the Site with discharge to the Tributary. Groundwater IMs, consisting of vertical barrier walls through the Water Table Aquifer and keyed into the underlying low permeability formations, have altered groundwater flow. Since 2003, groundwater flowing onto the Facility from the south is forced to flow around the barrier walls; however, the ultimate discharge to the Tributary remains the same. The majority of groundwater flows in the Columbia Sands (versus in the Recent Sediments and Fill). The approximate groundwater discharge from the Columbia Sands to the Tributary is 100 gallons per minute (gpm). Groundwater flow in the Potomac A Sands and Potomac B Sands is local and, in general, also from south to north.

C. EXTENT OF KEY COCS

Thousands of samples from soil, groundwater, sediment and surface water have been collected at the Facility to characterize the nature and extent of the impacted media. Throughout the project, the results were screened to applicable regulatory criteria. Based on the Facility operations and monitoring results, the following chemicals are the Key COCs: benzene, chlorobenzenes (chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene and 1,2,4-trichlorobenzene), manganese and mercury. The following presents a summary of the extent of Key COCs that drive the remedial alternative selection process.

(1) Soil

Figures 5 and 6 present mercury and chlorobenzene dot plots for soil and sediment, respectively. Benzene and chlorobenzenes concentrations have been highest northwest of Waste Lake 1 and were found to be present between 0.018 milligrams per kilogram (mg/kg) and 566 mg/kg. Mercury concentrations have been highest inside the Process Area barrier wall and were found to be present between 0.243 mg/kg and 9,131 mg/kg.

Elevated mercury concentrations have also been detected at the Former Lay Down Area (AOC 10).

(2) Groundwater

Figures 7 and 8 present mercury and chlorobenzene dot plots, respectively, for the groundwater (Water Table Aquifer) and surface water (chlorobenzenes).

Water Table Groundwater

Benzene and chlorobenzenes concentrations have been highest northwest of Waste Lake 1 (SWMU 1) where they were found to be present between 1.0 micrograms per liter (ug/L) and 100,000 ug/L. Residual chlorobenzenes are present in the Water Table in this area.

Manganese concentrations have been highest northwest of Waste Lake 1 (SWMU 1) where they were found to be present between 11 ug/L and 115,000 ug/L. Manganese is naturally occurring, but has likely been mobilized by the change in geochemistry from the chlorobenzenes.

Mercury concentrations have been highest inside the Process Area (AOC 5) barrier wall. Elevated mercury concentrations have also been detected downgradient (north) of the Process Area barrier wall, inside the Waste Lake 1 barrier wall, and downgradient (northwest) of Waste Lake 1 (SWMU 1). Mercury concentrations ranged between 0.11 ug/L and 867 ug/L in the Water Table groundwater.

Potomac A Sands Groundwater

The concentrations of Key COCs have been highest northwest of Waste Lake 1 (SWMU 1). Concentrations of Key COCs have been commonly lower in the Potomac A Sands than in the Water Table Aquifer, with the exception of the DNAPL area northwest of Waste Lake 1. Benzene and chlorobenzene concentrations were found to be present between 2.1 ug/L and 32,000 ug/L in the Potomac A Sands groundwater.

Evidence of DNAPL has been observed in the upper two hydrogeologic units at many soil borings and monitoring well locations northwest of Waste Lake 1. In this area, the largest accumulation of DNAPL beneath the Facility is pooled on the Potomac A Sands. There is no evidence that DNAPL extends into the Potomac B Sands.

Potomac B Sands Groundwater

Key COC concentrations in the Potomac B Sands groundwater have had a few minor exceedances of the applicable screening criteria. Continued monitoring will be completed as part of the ongoing performance monitoring that is conducted for the groundwater IMs.

Deep Potomac Sands Groundwater

Key COC concentrations in the Deep Potomac Sands (AOC 2) groundwater have been below applicable screening criteria.

(3) Sediment

Figure 6 presents a chlorobenzene dot plot for sediment and Figure 5 presents a mercury dot plot for soils and sediments. Sediment in the Tributary (AOC 8) contains mercury and chlorobenzenes which were found to be present between 4.9 mg/kg and 1,920 mg/kg, and 0.018 mg/kg and 566 mg/kg, respectively. The area of highest total mercury concentrations occurs in the western portion of the Tributary downgradient of the former Process Area (AOC 5). Mercury concentrations are highest near the sediment surface. They are present in the top 6 inches and decrease with depth. The 6-inch depth has been correlated with deposition that occurred during Facility operations. The area of highest chlorobenzene concentrations occurs in the eastern portion of the Tributary downgradient of Waste Lake 1 (SWMU 1). Chlorobenzenes are present in the top 10 feet of the Tributary sediments.

(4) Surface Water

Surface water in the Tributary contains mercury and chlorobenzenes which were found to be present between 0.18 ug/L and 3.5 ug/L and 8 ug/L and 458 ug/L, respectively. As with sediment, the area of highest mercury concentrations in the Tributary surface water occurs in the western portion, which is downgradient of the former Process Area (AOC 5). Concentrations of chlorobenzenes are highest in the eastern portion of the Tributary downgradient of Waste Lake 1 (SWMU 1) where DNAPL is present in the subsurface.

V. SUMMARY OF HUMAN HEALTH RISK ASSESSMENT

As part of the RFI process, OxyChem performed a Site-specific human health risk assessment including identification of constituents of concern, exposure assessment, toxicity assessment and risk characterization. The methodology and results are presented in their entirety in the HHRA Report included in the Administrative Record. The results are summarized below.

The areas of the Site which have the potential to be developed were the focus of the HHRA. As the long term uses of the Site and surrounding area are for heavy industry, the concept of a residential area supplanting this industrial area is not practical in the near or long term. This fact was documented in the "Justification for a Future Land-Use Scenario" submittal. As such, the HHRA considered current and future land use scenarios for industrial purposes. No residential land use was considered.

A. SOIL

The HHRA considered the following current and future exposure scenarios:

- Current industrial worker direct contact with surface soil.
- Future industrial or construction worker direct contact with subsurface soil.
- Future industrial or construction worker inhalation of volatile organic compound (VOC) vapors from indoor air.

These exposure scenarios were evaluated to a target risk level for Cancer Risk of 1×10^{-5} and a Hazard Index of 1. Based on the HHRA, EPA determined that the Key COCs may exceed these target risk levels at some areas of the Site. Cleanup Levels were developed as part of the HHRA.

B. GROUNDWATER

Groundwater is considered an incomplete exposure pathway for the Facility because groundwater beneath the Facility is not used as a potable or industrial water source. Current and future groundwater uses from beneath the Site are prohibited by the restrictions of the GMZ established for the Delaware City Industrial Area by the State of Delaware. EPA is proposing ICs to prevent future potable groundwater use. This is supported by the GMZ.

C. SEDIMENT AND SURFACE WATER

The HHRA considered human exposure to the Tributary (AOC 8) sediment and surface water to be unlikely, therefore these media were not evaluated. The primary risks associated with the sediment and surface water in the Tributary are ecological in nature and were evaluated in the ecological risk assessment (ERA). The Tributary is essentially inaccessible to people due to the dense *Phragmites* vegetation that surrounds it and that covers most of the wetland areas of the Site. The *Phragmites* act as a natural physical barrier.

D. INDOOR AIR

The risk assessment incorporated soil-to-vapor and groundwater-to-vapor exposure pathways. Because the groundwater plumes do not migrate beyond Facility boundaries, there are no potential impacts to indoor air in off-site receptors from the contaminated groundwater. Although the plume and/or impacted soil may be present beneath certain Facility buildings remaining after demolition and decommissioning, they are constructed in a manner unlikely to allow significant migration or accumulation of subsurface volatiles to indoor air (e.g., partially open to the outside, or designed with air ventilation systems).

VI. SUMMARY OF ECOLOGICAL RISK ASSESSMENT

The ERA quantitatively predicted potential risks to ecological receptors. The evaluation incorporated multiple conservative assumptions to ensure that effects are not under-predicted.

The Site consists of areas that are ecological habitat and areas that are not considered ecological habitat, as described below. The non-ecological habitat areas consist of managed vegetation (mowed grass), buildings, and open areas covered by concrete and asphalt that prevent establishment of diverse plant and animal communities. Exposure pathways, between chemicals and ecological receptors, were assumed to be negligible in the areas of non-ecological habitat. The ERA activities concentrated on areas of ecological habitat.

Non-ecological habitat areas include:

- The former Process Area (AOC 5) where decommissioning and demolition of most structures was completed in 2007 and 2008. This area is mostly paved or covered by concrete foundations on top of 10 to 15 feet of fill material, with minimal (<10%) areas of managed vegetation.
- The landfill areas (totaling approximately 13 acres and covered with mowed grass) include Waste Lake 1 (SWMU 1), Waste Lake 3 (SWMU 3), the Old Brine Sludge Landfill (SWMU 4), and the New Brine Sludge Landfill (SWMU 5).
- The Chemfix Test Unit (SWMU 12) which is approximately 0.5 acres and is covered with mowed grass.
- The Former Lay Down Area (AOC 10) which is approximately 1.3 acres and is covered with gravel and asphalt pavement.

Ecological habitat areas include:

- Terrestrial Habitat
 - Waste Lake 2 (SWMU 2) and the wooded portion of AOC 14.
- Open Water (aquatic) Habitat
 - Red Lion Creek (AOC 3) which is located north of the Facility and flows from west to east into the Delaware River.
 - The Tributary (AOC 8) which is approximately 3 acres of shallow open water that lies north of the former plant area within the dense *Phragmites*.
 - SD-6 (AOC 11) which is a small (approximately 0.3 acres) isolated water body northeast of Waste Lake 2 (SWMU 2).
- Dense *Phragmites* Marsh Habitat
 - Dense marsh area north of the Process Area (AOC 12), the area north of Waste Lake 2 (AOC 4) and portions of AOC 14.

A summary of the evaluation for each media is provided in the following sections. The methodology and results of this assessment are presented in their entirety in the ERA Report.

A. TERRESTRIAL HABITAT (SOIL)

During the RFI, potential risks to worm-eating wildlife, primarily from mercury and methyl mercury, were identified. Paired samples of earthworms and surface soil were collected to better refine potential risks and estimate Site-specific rates of bioaccumulation. Concentrations of methyl mercury in a small area were identified at levels that could potentially pose a risk. Cleanup Levels were developed as part of the ERA. Based on the results, a Cleanup Level of 11.1 mg/kg for total mercury in soil was established.

B. OPEN WATER (AQUATIC) HABITAT (SEDIMENT AND SURFACE WATER)

The ERA evaluation identified potential risks posed by impacted sediments and surface water in the Tributary. Concentrations of mercury, manganese, and chlorobenzenes in sediment and surface water exceeded the risk-based screening criteria used in the evaluation. Cleanup Levels were developed as part of the ERA. The Cleanup Level for mercury in water is the water quality criterion for protection of aquatic life, 0.77 micrograms per liter (ug/L) as dissolved mercury. The Cleanup Level for mercury in sediments is 10 mg/kg. These Cleanup Levels were also determined to be protective of other receptors, such as fish-eating birds and aerial insectivores. The Cleanup Levels for chlorobenzenes are 33 mg/kg in sediments and 620 ug/L in surface water.

The ERA evaluation found no unacceptable risks in water, sediments, fish, and macroinvertebrates in Red Lion Creek or at SD-6 (AOC 11).

C. DENSE PHRAGMITES MARSH HABITAT

A survey of the dense *Phragmites* marsh was conducted to determine whether the area constituted good habitat. This survey showed that the marsh is essentially a monoculture of *Phragmites*, a non-native invasive plant which is not readily consumed by native wildlife. Dense *Phragmites* marshes do serve as nesting and resting habitat for marsh birds; however, potential risks from COCs exposure are unlikely.

VII. SUMMARY OF PROPOSED REMEDY

Based on the findings set forth in the RFI, EPA has determined that past operations at the Facility have resulted in soil, groundwater, sediment and surface water contamination. The proposed remedy for the Facility emphasizes source removal and source control through excavation, consolidation and capping of soils and sediments with concentrations of contaminants above Cleanup Levels. The primary sources of groundwater contamination are being and will continue to be controlled by barrier walls and free product removal, and targeted in-situ treatment will be used to address areas outside of the barrier wall containment areas and thereby restore groundwater to drinking water standards, or MCLs. In addition, EPA proposes that ICs be implemented to prevent current and potential future exposure to contamination.

Since the proposed remedy was identified on the basis of its ability to protect human health and the environment, and because of the likelihood that it can be implemented efficiently while facilitating reuse of the site, EPA did not find it necessary to provide a detailed analysis of all the remedial alternatives identified for the site as part of this SB. A description and analysis of the other alternatives considered by EPA can be found in the CMS Report prepared by OxyChem.

A. CORRECTIVE ACTION OBJECTIVES

The following Corrective Action Objectives (CAOs) were developed for each media based on conditions at the Site, identified current and future potential risks to human health and the environment, and applicable regulatory criteria and guidance.

(1) Soil

The CAOs for soil are to:

- Meet Cleanup Levels in surface soil.
- Eliminate exposure pathways in subsurface soil.

(2) Groundwater

The CAOs for groundwater are to:

- Reduce the groundwater contribution of Tributary COCs to Cleanup Levels as soon as practicable (Short-Term).
- Restore groundwater quality to its most beneficial use, including achieving MCLs while recognizing that these standards will take decades to achieve (Long-Term).
- Achieve surface water Cleanup Levels in the Tributary surface water downgradient of groundwater AOCs that discharge to surface water (Long-Term).
- Isolate, contain, and/or remove DNAPL.

(3) Sediment

The CAO for sediment is to:

- Protect the benthic ecological community in areas of known or potential ecological toxicity.

(4) Surface Water

The CAOs for surface water are to:

- Meet Cleanup Levels in surface water which are described in Section VI.B.
- Eliminate exposure pathways in surface water.

Sediment and groundwater corrective measures are being proposed, in part, to meet surface water CAOs.

(5) Indoor Air

The CAO for indoor air is to eliminate exposure pathways to indoor air.

B. REMEDIATION STANDARDS

Cleanup Levels were selected based on applicable federal and state requirements and established Site-specific criteria through the risk assessment evaluations. EPA has identified the following human health remediation standards (Cleanup Levels) for the Key COCs for soil and groundwater.

Key COCs	Direct Contact (surface soil) Industrial Worker (mg/kg)	Direct Contact (surface and subsurface soil) Construction/Utility Worker (mg/kg)	Groundwater ⁽¹⁾ (ug/L)
Benzene	NC	24	5
Chlorobenzene	NC	NC	100
1,2-Dichlorobenzene	NC	NC	600
1,3-Dichlorobenzene	NC	NC	600 ⁽²⁾
1,4-Dichlorobenzene	NC	84	75
1,2,4-Trichlorobenzene	NC	170	70
Mercury	61	11	2
Manganese	3,600	540	730

NC- Not considered a COC in the Human Health Risk Assessment.

(1) Cleanup Levels are EPA-Drinking Water MCLs or EPA RBCs. If, for a given parameter, there is a primary MCL, then the MCL applies. If there is a secondary MCL or no MCL, then the EPA Region III tap water RBC applies (November 2010). EPA National Primary Drinking Water Regulations- Maximum Contaminant Levels (MCLs) (EPA 816-F-03-016, June 2003).

(2) There is no established EPA MCL or RBC for 1,3-Dichlorobenzene; as a guide the NJ MCL is cited (2011).

C. PROPOSED REMEDY

The proposed remedy consists of a soil component, a sediment component, a groundwater component, and facility wide non-engineering controls or ICs. The location and approximate extent of the various elements of the proposed remedy are depicted on Figure 9. The proposed remedy for each SWMU/AOC is presented on Table 2. Groundwater, soil and sediment remediation will allow surface water concentrations to meet the applicable surface water Cleanup Levels.

(1) Soil

The proposed final remedy for soil consists of hot spot excavation, consolidation on-Site at the former cell building portion of the process area (AOC 5), and capping. Excavation will occur at locations in the Process Area (AOC 5), the Tributary (AOC 8), the Former Lay Down Area (AOC 10), and Outfall 003 (SWMU 6). The proposed final remedy for

soil will utilize EPA's Area of Contamination (AOC) policy (see Management of Remediation Waste under RCRA, EPA 530-F-98-026, October 1998) to facilitate implementation of the remedy. The AOC policy allows for consolidation and other *in situ* waste management techniques to be used within an area of generally dispersed contamination or "area of contamination" without triggering permitting, land disposal restrictions or minimum technology requirements. The AOC policy has particular application because the Site exhibits contiguous areas of generally dispersed contamination that are linked through historical operational activities and the potential migration of constituents of concern from operational areas. Some portions of the Stormwater Drainage Pond (SWMU 6) and the Former Lay Down Area (AOC 10) will be capped/covered. The former landfills and waste lakes are capped/covered and no additional remedies are required. In addition, Site-wide ICs will be implemented to provide non-engineering controls to prevent potential future exposure and to prevent activities which could interfere with the integrity and protectiveness of the remedy.

(2) Groundwater

Proposed final remedies for groundwater consist of the existing barrier walls and extraction and treatment systems at the Process Area (AOC 5) and Waste Lake 1 (SWMU 1). DNAPL will be addressed through periodic removal or extraction from the recovery wells constructed as part of the IM. Groundwater outside the barrier walls (AOC 7 and AOC 9) will be addressed with active remedies as detailed below. Groundwater remedies will be performed with the short-term goal of protection of surface water in the Tributary and with the long-term goal of achieving MCLs.

IMs will be continued as part of the proposed final remedy for groundwater. Groundwater extraction and treatment inside the barrier walls will continue to be implemented to create a neutral or inward gradient, which will control the migration of contaminated groundwater. DNAPL recovery will continue until it can no longer be extracted, or until less than one inch per month of free-phase DNAPL accumulates in all four recovery wells, whichever occurs first.

For AOC 7, In-Situ Enhanced Bioremediation (ISEB) at the Source Area & Air Sparge Treatment Curtain at the Tributary is proposed as the final remedy. ISEB is a treatment process whereby contaminants are metabolized into less toxic or non-toxic compounds by naturally occurring microorganisms. ISEB will degrade chlorobenzenes and benzene to carbon dioxide, water, chloride and chloride salts. The In-Situ air sparge curtain will treat volatile organic groundwater contaminants and manganese prior to discharge to the Tributary (AOC 8). Groundwater extraction and treatment will be implemented as a contingency remedy if the in-situ remedy is determined to not be effective in meeting the cleanup objectives and cleanup levels for AOC 7. The time frame and criteria to be used for evaluating the effectiveness of the in-situ remedy will be developed in greater detail as part of the implementation plans for the selected corrective measures, and will be subject to EPA review and approval.

For AOC 9, In-Situ Redox Management (ISRM) is the proposed final remedy. ISRM will be designed to precipitate mercury in an innocuous essentially insoluble form and treat the chlorinated solvents including tetrachloroethene and carbon tetrachloride at the same time. Groundwater extraction and treatment will be implemented as a contingency

remedy if the in-situ remedy is determined not to be effective in meeting the cleanup objectives and cleanup levels for AOC 9. The time frame and criteria to be used for evaluating the effectiveness of the in-situ remedy will be developed in greater detail as part of the implementation plans for the selected measures, and will be subject to EPA review and approval.

(3) Sediment

Proposed final remedies for Tributary (AOC 8) sediment consist of placing a reactive cap or mat over the east Tributary, dredging and backfilling the west Tributary and ICs. No sediment remedy is required for Red Lion Creek (AOC 3).

(4) Surface Water

Sediment and groundwater corrective measures are being performed, in part, to meet surface water CAOs. Once these measures are performed, the CAOs for surface water will be met.

(5) Institutional Controls

Certain ICs have been developed and already implemented to support the corrective measures at the Site. The existing ICs include:

- Heavy industrial zoning prohibiting residential development.
- An Excavation Procedure and Health & Safety Plan that guides how workers handle materials encountered during subsurface work at the Facility.
- Restrictions on potable use of groundwater at the Facility. An existing IC for groundwater is currently in place. The Site is located in a GMZ that restricts installation of potable drinking water supply wells. DNREC established the GMZ on April 10, 2008.
- DNREC well permitting program with regard to the installation of monitoring and supply wells.

Additional ICs are necessary to support the corrective measures to be implemented at the Site. Given the extent and nature of impacted media left in place, more than one IC is necessary to prevent activities which could interfere with the integrity and protectiveness of the remedy. The ICs will be implemented by an enforceable document such as an order and/or an Environmental Covenant recorded in a manner consistent with the Delaware Uniform Environmental Covenants Act (UECA), Title 7 of the Delaware Code, Chapter 29, Subchapter II. Accordingly, EPA's proposed remedy includes the following ICs to ensure the short and long-term effectiveness of the remedy:

- Restrictions on the property deed to prevent conversion to residential use.
- Restrictions on the property deed to prevent potable use of groundwater at the Site.
- Restrictions for land disturbance at the Site.
- A Materials Management Plan, including an Excavation Procedure and Health & Safety Plan that will guide how future workers will handle materials encountered during future subsurface work at the Facility.

- Inspections and reporting to DNREC regarding compliance with the Environmental Covenant.
- Future development at the Site will include vapor barriers beneath buildings to eliminate the vapor pathway.

GSH will be required by EPA to submit biennial review reports on the effectiveness of the ICs in meeting the human health and environmental protection objectives. This review may include, but not be limited to, review of: GSH's compliance with the Environmental Covenant requirements; groundwater and land uses within 0.5 miles of the Facility; and zoning maps or planning documents that may affect future land use in the impacted area. Additionally, GSH will be required to submit five-year review reports on the progress of the remedial measures and of meeting the Cleanup Levels and/or CAOs. DNREC is essential to the effectiveness of the IC program proposed for the Site, and will be provided with GSH's biennial review reports and five-year review reports.

VIII. EVALUATION OF PROPOSED REMEDY

This section provides a description of the criteria EPA uses to evaluate proposed remedies under the RCRA Corrective Action Program. The criteria are applied in two phases. In the first phase, EPA evaluates three remedy threshold criteria as general goals. In the second phase, for those remedies that meet the threshold criteria, EPA evaluates seven balancing criteria to determine which proposed remedy alternative provides the best relative combination of attributes.

The proposed remedy selected by EPA (in consultation with DNREC) meets all of the evaluation criteria.

A. THRESHOLD CRITERIA

(1) Overall Protection of Human Health and the Environment

The following proposed remedial activities achieve the overall protection of human health and the environment for soil, groundwater, sediment, and surface water that present potential excess risk to human and ecological receptors.

For soil, the proposed final remedy of hot spot excavation, consolidation on-Site at the former cell building area, capping, and ICs, will eliminate the direct contact exposure pathway at the Facility. EPA proposes implementation of ICs to prevent potential future exposure due to unanticipated land use changes or potential future construction activities that may deviate from the current exposure scenario.

For groundwater, the barrier walls and extraction and treatment system have been operating at the Facility since 2003. DNAPL recovery has been performed since 2004. These IMs have controlled groundwater migration and reduced the source mass of COCs remaining on-Site. The proposed final remedy includes continued operation of the groundwater extraction and treatment systems inside the barrier walls and DNAPL recovery system. Implementation of in-situ groundwater remedies in the vicinity of Waste Lake 1 (AOC 7) and in the vicinity of the Process Area (AOC 9) will ensure protectiveness outside the barrier walls. Continued monitoring and the implementation of

groundwater use restrictions will ensure protectiveness of human health and the environment. EPA is proposing that groundwater use restriction ICs be maintained while the groundwater is being remediated to prevent future potential exposure to COCs. These include the existing DNREC GMZ and well permitting program, which prohibit current and future use of groundwater in the area of the Site.

For sediment, the Tributary (AOC 8) will be remediated through removal of impacted sediment and backfilling in the western portion and placement of a reactive cap or mat in the eastern portion. The removal will extend over the western portion of the Tributary where mercury concentrations pose an excess risk. The capping will extend over the eastern portion of the Tributary where both mercury and chlorobenzenes pose an excess risk. The remedy, combined with performance monitoring, will provide isolation of biota from mercury and chlorobenzenes.

For surface water, implementation of the groundwater and sediment corrective measures will result in the achievement of surface water Cleanup Levels and CAOs.

(2) Attainment of Media Cleanup Standards

For soil, the proposed remedy, hot spot removal and consolidation on Site, will meet the Cleanup Levels in the surface soil. The implementation of ICs will control exposure via the soil pathways. These controls will also provide guidance to the owner when utility and construction workers must excavate.

For groundwater, the proposed remedy meets the objectives of isolating, containing, and removing DNAPL, being protective of the Tributary (Short-Term) and achieving MCLs for the groundwater COCs (Long-Term). In addition, the proposed remedy will eliminate human exposure to groundwater via ICs (GMZ).

For sediment, the proposed remedy, removal or capping impacted sediments, will meet the Cleanup Levels.

For surface water, implementation of the groundwater and sediment corrective measures will achieve the surface water Cleanup Levels.

(3) Source Control

The proposed remedy will control the source of releases by using barrier walls, engineered caps, and groundwater extraction and treatment where the sources of soil and groundwater impacts are located, the level of impact is highest, and where any DNAPL may be present. Source control will be achieved at the Site by the following steps:

- Consolidation and capping of soils to eliminate exposure to the most impacted soils and to eliminate leaching of COCs from those soils.
- Installation of barrier walls to isolate the source mass and eliminate the migration of impacted groundwater beyond the source areas.
- Removal of DNAPL from the subsurface.

- Targeted in-situ treatment of groundwater by ISEB and ISRM at certain areas outside of the barrier walls to reduce concentrations of COCs and enhance natural attenuation processes.
- Sediment removal and capping in the Tributary and select areas to remove and isolate the source mass and eliminate exposure.

B. BALANCING CRITERIA

(1) Long-Term Reliability and Effectiveness

The long-term reliability and effectiveness of the remedy is expected to be high. Long-term reliability and effectiveness of soil and sediment excavation and capping is considered to be high. Barrier wall containment has a high degree of reliability and effectiveness with lower maintenance requirements in comparison to other technologies used for containment. Soil consolidation and containment using low-permeability caps and vegetative cover is expected to have average long-term reliability and effectiveness when compared to other effective technologies. The combination of targeted in-situ groundwater treatment remedies for groundwater outside the containment areas is expected to have high long-term reliability and effectiveness, given source containment by the barrier walls. A combination of engineering controls, ICs, groundwater monitoring and operations and maintenance (O&M) will be required to maintain and ensure the long-term reliability and effectiveness of the proposed remedy. ICs will be necessary to limit land use at the Site to commercial and industrial purposes and to prevent uncontrolled exposure to environmental media remaining in place with concentrations of COCs above applicable Cleanup Levels.

(2) Reduction of Waste Toxicity, Mobility, or Volume

The proposed remedy will result in the reduction of the toxicity, mobility and volume of COCs present in environmental media at the Site. The mobility of COCs at the Site will be reduced by consolidation and capping of impacted media within barrier walls. Recovery wells and a collection trench will be used in the area inside the barrier walls to recover impacted groundwater. DNAPL recovery will remove accumulated free product, thereby further reducing the toxicity, mobility and volume of COCs. Targeted in-situ remediation of groundwater will reduce the toxicity, mobility and volume of COCs in groundwater outside the barrier walls containment areas. The removal and capping of shallow-impacted sediments will reduce both the volume and mobility of COCs remaining in the Tributary sediment.

(3) Short-Term Effectiveness

Potential short-term risks posed by the proposed remedy to workers at the Site, the environment, and the community will be controlled and minimized by implementation of good construction and work practices, use of appropriate health and safety measures, utilization of standard dust suppression techniques, implementation of erosion and sediment control measures, use of personal protection equipment, use of real-time air monitoring, and management of non-hazardous and hazardous waste in accordance with applicable federal and state requirements. The methodologies to safely perform these

activities and mitigate short-term risks will be described in greater detail in the corrective measures implementation plans and associated health and safety plans.

(4) Implementability

The proposed remedy is implementable.

Several components of the final remedy have already been implemented including:

- Barrier walls around the Process Area (AOC 5) and Waste Lake 1 (SWMU 1).
- Groundwater extraction and treatment system inside barrier walls.
- Capping/cover of former landfills and waste lakes.
- Removal of DNAPL at the DNAPL Area (AOC 13).
- Several ICs are in place (DNREC well permitting, Excavation Procedure, and GMZ).

Excavation and dredging are well-proven and readily implementable technologies that are commonly used to remediate contaminated sites. The areas at the Site where excavation/dredging of soils/sediments are expected to occur are readily accessible for equipment and there is sufficient room to set up required decontamination and staging areas. The shallow excavation/dredging depths that are proposed will not require shoring or stabilization and therefore excavation procedures will be relatively simple to undertake. Excavation and consolidation of materials, and construction of caps are well-proven and readily implementable technologies that are commonly used to remediate contaminated sites.

Targeted in-situ remediation techniques such as ISEB, air sparging, and ISRM are readily implementable technologies that are commonly used to remediate groundwater in conjunction with source containment. These technologies are proven technologies for treatment of the type of dissolved phase COCs that remain in groundwater outside the barrier wall containment areas. Furthermore, treatability and field pilot tests will be utilized, as needed, to confirm these technologies and design the final implementation. Groundwater extraction and treatment will be utilized as a contingency in the event that these technologies are not successful.

ICs are readily implementable to support the corrective measures proposed for the Site. The ICs will be implemented by an enforceable document such as an order and/or an Environmental Covenant recorded in a manner consistent with the Delaware Uniform Environmental Covenants Act (UECA), Title 7 of the Delaware Code, Chapter 29, Subchapter II.

(5) Cost

The total estimated cost to implement the proposed remedy is \$8,000,000 in capital, and \$11,000,000 in Operation and Maintenance (O & M) costs for the next 30 years. The previous costs incurred from 1998 to 2011 to construct and operate IMs at the Facility including O & M are in excess of \$12,000,000. The IMs included construction of the barrier walls, construction and operation of the groundwater extraction and treatment system, consolidation of materials, and construction and maintenance of the Waste Lake 1 (SWMU 1) engineered cap.

(6) Community Acceptance

Community Acceptance of EPA's proposed remedy will be evaluated based on comments received during the public comment period and will be described in the Final Decision and Response to Comments.

(7) State Acceptance

EPA's proposed remedy for the Facility was evaluated and accepted by DNREC prior to EPA's proposing the remedy in this SB. Furthermore, EPA has solicited state input throughout the investigation process.

IX. PUBLIC COMMENT

On September 26, 2011 EPA placed an announcement in the Delaware News Journal to notify the public of EPA's proposed remedy and the location of the Administrative Record. Copies of this SB will be mailed to anyone who requests a copy. The Administrative Record, including this SB, is available for review during business hours at two locations:

United States Environmental Protection
Agency Region 3
1650 Arch Street
Philadelphia, Pennsylvania 19103
Telephone Number: (215) 814-3427
Attn: Ms. Donna McCartney (3LC20)

and

Department of Natural Resources and Environmental Control
Division of Waste and Hazardous Substances
89 Kings Highway
Dover, Delaware 19901
Telephone Number: (302) 739-9403
Attn: Mr. Bryan A. Ashby

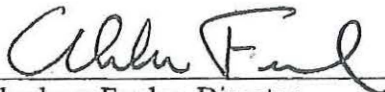
EPA is requesting comments from the public on the remedy proposed in this SB. The public comment period will last 30 calendar days beginning September 26, 2011 and ending October 26, 2011. Comments on, or questions regarding, EPA's proposed remedy may be submitted to:

United States Environmental Protection
Agency Region 3
1650 Arch Street
Philadelphia, Pennsylvania 19103
Telephone Number: (215) 814-3427
Fax Number: (215) 814-3113
Attn: Ms. Donna McCartney (3LC20)
Email: mccartney.donna@epa.gov

Following the 30-day public comment period, EPA will hold a public meeting on EPA's proposed remedy if sufficient public interest indicates that a meeting would be valuable for distributing information and communicating ideas. After evaluation of the public's comments, EPA will prepare a Final Decision Document and Response to Comments (FDRTC) that identifies the final selected remedy. The FDRTC will also address all significant written comments and any significant oral comments generated at the public meeting. The FDRTC will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are proposed to be made to the corrective measures identified by EPA in this SB, EPA may seek additional public comments.

The final remedy will be implemented using available legal authorities including, but not necessarily limited to, RCRA § 3008(h), 42 U.S.C. 6928(h). EPA anticipates that the remedy will be implemented through an Administrative Order on Consent with EPA.

9/12/11
Date


Abraham Ferdas, Director
EPA Region III
Land and Chemicals Division