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OHIO ENVIRONMENTAL PROTECTION AGENCY

OHIO HAZARDOUS WASTE FACILITY INSTALLATION AND OPERATION PERMIT RENEWAL

Permittee: PPG Industries, Inc.

Mailing Address: 4829 Fairland Road
Barberton, Ohio 44203

Owner: PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272

Operator: PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272

Location: PPG Industries, Inc.
4829 Fairland Road
Barberton, Ohio 44203

Ohio Permit No.:	**02-77-0453**
US EPA ID:	**OHD 004 198 917**
Issue Date:	Sept. 24, 2010
Effective Date:	Sept 24, 2010
Expiration Date:	Sept 24, 2020

AUTHORIZED ACTIVITIES

In reference to the application of PPG Industries, Inc. for an Ohio Hazardous Waste Facility Installation and Operation Renewal Permit under Ohio Revised Code (ORC) Chapter 3734 and the record in this matter, you are authorized to conduct at the above-named facility the following hazardous waste management activities:

- Renewal: Container Storage of Hazardous Waste & Corrective Action.

PERMIT APPROVAL

I certify this to be a true and accurate copy of the official documents as filed in the records of the Ohio Environmental Protection Agency.

Chris Korleski, Director
Ohio Environmental Protection Agency

By: _____ Date: 9.24.10

This permit approval is based upon the record in this matter which is maintained at the offices of the Ohio Environmental Protection Agency. The Director has considered the application, accompanying information, inspection reports of the facility, a report regarding the facility's compliance or noncompliance with the terms and conditions of its permit and rules adopted by the Director under this chapter, and such other information as is relevant to the operation of the facility. The Director has determined that the facility under the existing permit has a history of compliance with ORC Chapter 3734, rules adopted under it, the existing permit, or orders entered to enforce such requirements that demonstrate sufficient reliability, expertise, and competency to operate the facility henceforth under this chapter, rules adopted under it, and the renewal permit.

Entered into the Journal of the Director this 24 day of SEPTEMBER 2010.

By _____ of the Ohio Environmental Protection Agency.

MODULE A - GENERAL PERMIT CONDITIONS

A. GENERAL PERMIT CONDITIONS

A.1 Effect of Permit
ORC Sections 3734.02 (E) and (F) and 3734.05
OAC Rule 3745-50-58(G)

(a) The Permittee is authorized to store hazardous waste in containers in accordance with the terms and conditions of this Ohio hazardous waste permit (hereinafter "permit"), ORC Chapter 3734, all applicable Ohio hazardous waste rules, all applicable regulations promulgated under the Resource Conservation and Recovery Act (RCRA), as amended, and the permit application. The permit application was first submitted to Ohio EPA on March 30, 1998, but no final action was issued. The permit application, as resubmitted on September 4, 2008, and updated on July 6, 2009, and September 18, 2009, is hereby incorporated into this permit. In the instance of inconsistent language or discrepancies between the above, the language of the more stringent provision shall govern.

(b) Any management of hazardous waste not authorized by this permit is prohibited, unless otherwise expressly authorized or specifically exempted by law. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, or invasion of other private rights. Compliance with the terms and conditions of this permit does not obviate Permittee's obligation to comply with other applicable provisions of law governing protection of public health or the environment including but not limited to the Community Right to Know law under ORC Chapter 3750.

A.2 Permit Actions
OAC Rule 3745-50-58(F)

This permit may be modified or revoked as specified by Ohio law. The filing of a request by the Permittee for a permit modification, or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay any permit term or condition.

A.3 Permit Effective/Expiration Date
OAC Rule 3745-50-54

The effective date of this permit is the date the permit is entered into the Director's Journal. The permit expiration date is ten years after the date of journalization of this permit.

A.4 Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

A.5 Duty to Comply
OAC Rule 3745-50-58(A)

The Permittee must comply with all applicable provisions of ORC Chapter 3734, all applicable Ohio hazardous waste rules, and all terms and conditions of this permit, except to the extent and for the duration such noncompliance is authorized by the laws of the State of Ohio. Any permit noncompliance, other than noncompliance authorized by the laws of the State of Ohio, constitutes a violation of ORC Chapter 3734 and is grounds for enforcement action, revocation, modification, denial of a permit renewal application or other appropriate action.

A.6 Duty to Reapply and Permit Expiration
OAC Rules 3745-50-40(D), 3745-50-58(B), 3745-50-56 and ORC Section 3734.05(H)

(a) If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must submit a completed permit application for a hazardous waste facility installation and operation permit renewal and any necessary accompanying general plans, detailed plans, specifications, and such information as the Director may require, to the Director no later than one hundred eighty (180) days prior to the expiration date of this permit, unless a later submittal date has been authorized by the Director upon a showing of good cause.

(b) The Permittee may continue to operate in accordance with the terms and conditions of the expired permit until a renewal permit is issued or denied if:

(i) the Permittee has submitted a timely and complete permit application for a renewal permit under OAC Rule 3745-50-40; and

(ii) through no fault of the Permittee, a new permit has not been issued pursuant to OAC Rule 3745-50-40 on or before the expiration date of this permit.

(c) The Corrective Action obligations contained in this permit will continue regardless of whether the facility continues to operate or ceases operation and closes. The Permittee is obligated to complete facility-wide Corrective Action under the conditions of this permit regardless of the operational status of the facility. The Permittee must submit an application for permit renewal at least 180 days before the expiration date of this permit pursuant to OAC Rule 3745-50-40(D) unless a) the permit has been modified to terminate the Corrective Action schedule of compliance and the Permittee has been released from the requirements for financial assurance for Corrective Action; or b) a later submittal date has been authorized by the Director.

A.7 Need to Halt or Reduce Activity Not a Defense
OAC Rule 3745-50-58(C)

It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce a permitted activity in order to maintain compliance with the conditions of this permit.

A.8 Duty to Mitigate
OAC Rule 3745-50-58(D)

The Permittee must take all reasonable steps to minimize releases to the environment and must carry out such measures as are reasonable to prevent significant adverse impact on human health or the environment resulting from noncompliance with this permit.

A.9 Proper Operation and Maintenance
OAC Rule 3745-50-58(E)

The Permittee must at all times properly operate and maintain the facility (and related appurtenances) to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective management practices, adequate funding, adequate operator staffing and training, and where appropriate, adequate laboratory and process controls, including appropriate quality assurance/quality control procedures. This provision requires the operation of

back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the terms and conditions of this permit.

A.10 Duty to Provide Information
OAC Rule 3745-50-58(H)

The Permittee must furnish to the Director, within a reasonable time, any relevant information which the Director may request to determine whether cause exists for modifying or revoking, or to determine compliance with, this permit. The Permittee must also furnish to the Director, upon request, copies of records required to be kept by this permit.

A.11 Inspection and Entry
OAC Rules 3745-50-58(I) and 3745-50-30, and ORC Section 3734.07

(a) The Permittee must allow the Director, or an authorized representative, upon stating the purpose and necessity of the inspection and upon proper identification, to:

(i) enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the terms and conditions of this permit;

(ii) have access to and copy, at reasonable times, any records required to be kept under the terms and conditions of this permit;

(iii) inspect and photograph at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the terms and conditions of this permit; and

(iv) sample, document, or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by ORC Chapter 3734 and the rules adopted thereunder, any substances or parameter at any location.

(b) Any record, report or other information obtained under the hazardous waste rules or Chapter 3734 of the Revised Code shall not be available to the public upon the Permittee's satisfactory showing to Ohio EPA that all or part

of the information would divulge methods or processes entitled to protection as trade secrets pursuant to Ohio Trade Secret Law and OAC Rule 3745-50-30.

A.12 Monitoring and Records
OAC Rule 3745-50-58(J)

(a) Any sample and measurement taken for the purpose of monitoring must be representative of the monitored activity. Further, a sample must be a representative sample, as such term is defined and used in the Ohio hazardous waste rules. The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from Appendix I of OAC Rule 3745-51-20, Laboratory Methods. Laboratory methods must be those specified in Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, EPA Publication SW-846, Third Edition (November 1986), as amended by Updates I (dated July 1992), II (dated September 1994), IIA (dated August 1993), IIB (dated January 1995), III (dated December 1996) and IIIA (dated April 1998), and additional supplements or editions thereof; Standard Methods for the Examination of Water and Wastewater: Twentieth Edition, 1999; or an equivalent method as specified in the approved waste analysis plan, or as this term is defined and used in the Ohio hazardous waste rules.

(b) Records of monitoring information must specify the:
(i) date(s), exact place(s), and time(s) of sampling or measurements;

(ii) individual(s) who performed the sampling or measurements;

(iii) date(s) analyses were performed;

(iv) individual(s) who performed the analyses;

(v) analytical technique(s) or method(s) used; and

(vi) results of such analyses.

A.13 Signatory Requirement and Certification of Records
OAC Rules 3745-50-58(K) and 3745-50-42

All applications, reports or information must be properly signed and certified in accordance with OAC Rule 3745-50-58(K).

A.14 Retention of Records and Information Repository
OAC Rules 3745-50-40(G), 3745-50-58(J), 3745-50-58(M) and 3745-50-58(N)

(a) The Permittee must retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, the certification required by OAC Rule 3745-54-73(B)(9), and records of all data used to complete the application for this permit, for a period of at least three (3) years from the date of the sample, measurement, report, certification, or application.

(b) The record retention period may be extended by request of the Director at any time and is automatically extended during the course of any unresolved enforcement action regarding the facility.

(c) The Permittee must maintain, in accordance with the Ohio hazardous waste rules, records of all data used to complete the permit application and any amendments, supplements or modifications of such application. The Permittee must retain a complete copy of the current application for the effective life of the permit as indicated in Permit Condition A.3.

(d) The Permittee must maintain records from all ground water monitoring wells and associated ground water surface elevations for the active life of the facility, and for disposal facilities for the post-closure care period as well.

(e) The director may require the Permittee to establish and maintain an information repository at any time, based on the factors set forth in OAC rule 3745-50-39(C)(2). The information repository will be governed by the provisions in OAC rules 3745-50-39(C)(3) through (C)(6).

(f) Corrective Action records must be maintained at least three (3) years after all Corrective Action activities have been completed.

A.15 Planned Changes
OAC Rules 3745-50-51 and 3745-50-58(L)(1)

The Permittee must give notice to the Director as soon as possible of any planned physical alterations or additions to the facility. All such changes must be made in accordance with OAC Rule 3745-50-51.

A.16 Waste Shipments
OAC Rule 3745-53-11, ORC Section 3734.15(C)

The Permittee must only use properly registered transporters of hazardous waste to remove hazardous waste from the facility, in accordance with all applicable laws and rules.

A.17 Anticipated Noncompliance
OAC Rule 3745-50-58(L)(2)

The Permittee must give advance notice to the Director of any planned changes in the permitted facility or operations which may result in noncompliance with the terms and conditions of this permit. Such notification does not waive the Permittee's duty to comply with this permit pursuant to Permit Condition A.5.

A.18 Transfer of Permits
OAC Rules 3745-50-52, 3745-50-58(L)(3) and 3745-54-12

(a) The permit may be transferred to a new owner or operator only if such transfer is conducted in accordance with ORC Chapter 3734 and the rules adopted thereunder. This permit may be transferred by the Permittee to a new owner or operator only if the permit has been modified under OAC Rule 3745-50-51. Before transferring ownership or operation of the facility, the Permittee must notify the new owner or operator in writing of the requirements of ORC Chapter 3734 and the rules adopted thereunder (including all applicable Corrective Action requirements).

(b) The Permittee's failure to notify the new owner or operator of the requirements of the applicable Ohio law or hazardous waste rules does not relieve the new owner or operator of its obligation to comply with all applicable requirements.

A.19 Compliance Reports
OAC Rules 3745-50-58(L)(5) and 3745-50-50

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule (developed in accordance with OAC Rule 3745-50-50) of this permit must be submitted to the Director no later than fourteen (14) days following each scheduled date.

A.20 Immediate Reporting of Noncompliance
OAC Rule 3745-50-58(L)(6)

(a) The Permittee must report orally to Ohio EPA's Division of Emergency and Remedial Response within twenty-four (24) hours from the time the Permittee becomes aware of any noncompliance with this permit, ORC Chapter 3734 or the rules adopted thereunder, which may endanger human health or the environment, including:

(i) information concerning the release of any hazardous waste that may cause an endangerment to public drinking water supplies; and

(ii) any information of a release or discharge of hazardous waste or a fire or explosion from the hazardous waste facility, which could threaten the environment or human health outside the facility.

(b) The report must consist of the following information (if such information is available at the time of the oral report):

(i) name, address, and telephone number of the owner or operator;

(ii) name, address, and telephone number of the facility;

(iii) date, time, and type of incident;

(iv) name and quantity of material(s) involved;

(v) the extent of injuries, if any;

(vi) an assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and

(vii) estimated quantity and disposition of recovered material that resulted from the incident.

A.21 Follow-Up Written Report of Noncompliance
OAC Rule 3745-50-58(L)(6)(c)

(a) A written report must also be provided to Ohio EPA's Division of Emergency and Remedial Response and the Division of Hazardous Waste Management Northeast District Office within five (5) days of the time the Permittee becomes aware of the circumstances reported in Permit Condition A.20.

(b) The written report must address the items in Permit Condition A.20 and must contain a description of such noncompliance and its cause; the period(s) of noncompliance (including exact dates and times); whether the noncompliance has been corrected; and, if not, the anticipated time it is expected to continue; and steps taken or planned to minimize the impact on human health and the environment and to reduce, eliminate, and prevent recurrence of the noncompliance.

(c) The Permittee need not comply with the five (5) day written report requirement if the Director, upon good cause shown by the Permittee, waives that requirement and the Permittee submits a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances.

A.22 Other Noncompliance
OAC Rules 3745-50-58(L)(10) and 3745-50-58(L)(4)

The Permittee must report to the Director all other instances of noncompliance not provided for in Permit Conditions A.19 and A.20. These reports must be submitted at the time monitoring reports are submitted, or, in cases in which there is no corresponding monitoring report relating to the compliance issue, within (30) days of the time at which the Permittee is aware of such noncompliance. Such reports must contain all information set forth within Permit Condition A.20.

A.23 Reserved.

A.24 Other Information
OAC Rule 3745-50-58(L)(11)

If at any time the Permittee becomes aware that it failed to submit any relevant facts, or submitted incorrect information to the Director, the Permittee must promptly submit such facts, information or corrected information to the Director.

A.25 Confidential Information
OAC Rule 3745-50-30
In accordance with ORC Chapter 3734 and the rules adopted thereunder, the Permittee may request confidentiality for any information required to be submitted by the terms and conditions of this permit, or any information obtained by the Director, or an authorized representative, pursuant to the authority provided under Permit Condition A.11.

A.26 Ohio Annual Permit, Disposal, and Treatment Fees
OAC Rules 3745-50-33 through 3745-50-36

The annual permit fee, calculated pursuant to OAC Rule 3745-50-36 and payable to the Treasurer of the State, must be submitted to the Director on or before the anniversary of the date of issuance during the term of the permit. For the purpose of the payment of the Ohio Annual Permit Fee, the date of issuance is the date the permit was entered into the Journal of the Director of Ohio EPA.

A.27 Compliance Schedule - Documents
OAC Rules 3745-50-50 and 3745-50-51

(a) Unless specified otherwise, Permittee must submit the documents listed below to:

Ohio EPA, Director
c/o DHWM, Regulatory and Information Services
P.O. Box 1049
Columbus, Ohio 43216-1049

Ohio EPA, DHWM
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087

(b) The Permittee must submit to the Ohio EPA within sixty (60) days after permit journalization, in accordance with Ohio's hazardous waste rules, the following information to be incorporated in the permit application:

(i) Updated Closure/Post-Closure Cost Estimate
OAC Rules 3745-55-42 and 3745-55-44

Section I of the permit application containing the financial assurance mechanism for closure must be updated to include a copy of the current closure/post-closure cost estimate as set forth in OAC Rules 3745-55-42 and 3745-55-44.

(ii) Updated Financial Assurance Mechanism for Closure
OAC Rules 3745-55-43

Section I of the permit application containing the financial assurance mechanism for closure must be updated to include a copy of the current financial assurance mechanism, as set forth in OAC Rules

3745-55-43, and as specified by the wording requirements of OAC Rule 3745-55-51. The value of the financial assurance mechanism must reflect at least the current amount of the closure/post-closure cost estimate.

During the life of the permit the facility may change the financial assurance mechanism as stated in OAC Rules 3745-55-43. The facility must submit the financial assurance mechanism documentation to the Director of Ohio EPA in accordance with the parameters set forth in OAC Rules 3745-55-43.

(iii) Updated Liability Requirements
OAC Rule 3745-55-47

Section I of the permit application containing the mechanism used to demonstrate third party liability coverage must be updated to include a copy of the current liability mechanism as set forth in OAC Rule 3745-55-47 and as specified by the wording requirements of OAC Rule 3745-55-51.

During the life of the permit the facility may change the mechanism used to demonstrate liability coverage as stated in OAC Rule 3745-55-47. The facility must submit the liability mechanism documentation to the Director of Ohio EPA in accordance with the parameters set forth in OAC Rule 3745-55-47.

This information must be submitted in accordance with OAC Rule 3745-50-51.

A.28 Information to be Maintained at the Facility
OAC Rule 3745-54-74

(a) Unless otherwise specified by the hazardous waste rules, the Permittee must maintain at the facility, until closure is completed and certified by an independent, registered professional engineer, pursuant to OAC Rule 3745-55-15, and until the Director releases the Permittee from financial assurance requirements pursuant to OAC Rule 3745-55-43, the following documents (including amendments, revisions and modifications):

(i) waste analysis plan, developed and maintained in accordance with OAC Rule 3745-54-13 and the terms and conditions of this permit;

(ii) contingency plan, developed and maintained in accordance with OAC Rule 3745-54-53 and the terms and conditions of this permit;

(iii) closure plan, developed and maintained in accordance with OAC Rule 3745-55-12 and the terms and conditions of this permit;

(iv) cost estimate for facility closure, developed and maintained in accordance with OAC Rule 3745-55-42 and the terms and conditions of this permit;

(v) personnel training plan and the training records, developed and maintained in accordance with OAC Rule 3745-54-16 and the terms and conditions of this permit;

(vi) operating record, required by OAC Rule 3745-54-73 and the terms and conditions of this permit; and

(vii) inspection schedules, developed in accordance with OAC Rules 3745-54-15, 3745-55-74 and 3745-55-95 and the terms and conditions of this permit.

(viii) annually-adjusted cost estimate for facility closure as required by OAC Rules 3745-55-42 and 3745-55-44 and the terms and conditions of this permit.

(ix) all other documents required by Module A, Permit Condition A.12

(b) The Permittee must maintain copies of all inspection logs at the facility for a period not less than three (3) years from the date of inspection.

A.29 Waste Minimization Report
OAC Rules 3745-54-73 and 3745-54-75

(a) The Permittee must submit a Waste Minimization Report describing the waste minimization program required by OAC Rules 3745-54-75(H), (I), and (J); 3745-54-73(B)(9); and 3745-52-20(A) at least once every five years. The provisions of OAC Rules 3745-54-75(H), (I) and (J); and 3745-54-73(B)(9) must be satisfied annually.

(b) The Permittee must submit the Waste Minimization Report to Ohio EPA's Office of Compliance Assistance and Pollution Prevention within one hundred eighty (180) days of the effective date of this permit, and must submit updates to this report once every five years thereafter.

MODULE B - GENERAL FACILITY CONDITIONS

B. GENERAL FACILITY CONDITIONS

B.1 Design and Operation of Facility
OAC Rule 3745-54-31

(a) The Permittee must design, construct, maintain and operate the facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, ground water or surface waters which could threaten human health or the environment.

B.2 Required Notices
OAC Rule 3745-54-12

(a) Hazardous Waste from Off-Site Sources

The Permittee shall manage only wastes generated at the PPG Barberton facility designated by USEPA identification number OHD 004 198 917.

B.3 General Waste Analysis Plan
OAC Rule 3745-54-13

(a) Before an owner or operator treats, stores, or disposes of any hazardous wastes, or nonhazardous wastes if applicable under OAC Rule 3745-55-13(D), he must obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, this analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with the requirements of Chapters 3745-54 to 3745-57, 3745-205, and 3745-270 of the Administrative Code.

(b) The Permittee must follow the procedures described in the waste analysis plan found in Section C of the permit application and the terms and conditions of this permit.

(c) The Permittee must verify the analysis of each waste stream annually as part of its quality assurance program, in accordance with Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, EPA Publication SW-846, or equivalent methods approved by the Director. At a minimum, the Permittee must maintain proper functional instruments, use approved sampling and analytical methods, verify the validity of sampling and analytical procedures, and perform correct calculations. If the Permittee

uses a contract laboratory to perform analyses, then the Permittee must inform the laboratory in writing that it must operate under the waste analysis conditions set forth in this permit.

B.4 Security
OAC Rule 3745-54-14

The Permittee must comply with the security provisions of OAC Rule 3745-54-14(B)(2), and (C) and Section F of the permit application.

B.5 General Inspection Requirements
OAC Rules 3745-54-15 and 3745-54-73

The Permittee must inspect the facility in accordance with OAC Rule 3745-54-15 and the inspection schedule set forth in Section F of the permit application. The Permittee must remedy any deterioration or malfunction discovered by an inspection, as required by OAC Rule 3745-54-15(C). Records of inspection must be kept for a minimum of three years from the date of inspection. These records must be a part of the facility's operating record as required by OAC Rule 3745-54-73.

B.6 Personnel Training
OAC Rule 3745-54-16

The Permittee must conduct personnel training, as required by OAC Rule 3745-54-16. This training program must contain at least the elements set forth in Section H of the permit application. The Permittee must maintain training documents and records as required by OAC Rule 3745-54-16(D) and (E).

B.7 General Requirements for Ignitable, Reactive, or Incompatible Wastes
OAC Rule 3745-54-17

(a) The Permittee must comply with the requirements of OAC Rule 3745-54-17 and must follow the procedures for handling ignitable, reactive, and incompatible wastes set forth in Section F of the permit application.

(b) The Permittee must provide electrical grounding for all containers and tanks, and transport vehicles during all operations involving the handling of ignitable or reactive wastes.

(c) The Permittee must provide, and require the use of, spark proof tools during all operations involving the handling of all ignitable or reactive wastes.

(d) The Permittee must prohibit smoking and open flames in each area where ignitable, reactive or incompatible hazardous wastes are managed and must post appropriate signs.

B.8 Reserved.

B.9 Required Equipment
OAC Rule 3745-54-32

At a minimum, the Permittee must maintain at the facility all the equipment required by OAC Rule 3745-54-32 and the equipment set forth in the contingency plan contained in Section G of the permit application.

B.10 Testing and Maintenance of Equipment
OAC Rule 3745-54-33

The Permittee must inspect, test and maintain the equipment required by Permit Condition B.9 as necessary to assure its proper operation in time of emergency, as specified in OAC Rule 3745-54-33, Section F of the permit application and the terms and conditions of this permit.

B.11 Access to Communications or Alarm System
OAC Rule 3745-54-34

The Permittee must maintain access to the communications and alarm systems, as required by OAC Rule 3745-54-34, Section F of the permit application and the terms and conditions of this permit.

B.12 Required Aisle Space
OAC Rule 3745-54-35

At a minimum, the Permittee must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, as required by OAC Rule 3745-54-35.

B.13 Arrangements with Local Authorities
OAC Rule 3745-54-37

(a) The Permittee must comply with the requirements of OAC Rule 3745-54-37 (A) by making a diligent effort to:

(i) make arrangements and familiarize all emergency response agencies which are likely to respond in an emergency with the location and layout of the facility, properties of hazardous waste managed at the facility and associated hazards, places where facility personnel will normally be working, entrances to and roads inside the facility, and possible evacuation routes as depicted and explained in Section G of the permit application;

(ii) make arrangements with Ohio EPA emergency response teams, emergency response contractors, and equipment suppliers;

(iii) make arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and types of injuries or illnesses which could result from fires, explosions, or releases at the facility; and

(iv) make agreements designating primary emergency authority to a specific police and a specific fire department and make agreements with any others to provide support to the primary emergency authority, where more than one police and fire department may respond to an emergency.

(b) Where authorities decline to enter into such agreements or arrangements set forth in OAC Rule 3745-54-37(A), the Permittee must document the refusal in the operating record as required by OAC Rule 3745-54-37(B).

B.14 Implementation of Contingency Plan
OAC Rules 3745-54-51 and 3745-54-56

The Permittee must immediately carry out the provisions of the contingency plan and follow the emergency procedures described in OAC Rule 3745-54-56, whenever there is a fire, explosion, or release of hazardous waste or hazardous

waste constituents which threatens or could threaten human health or the environment.

In regard to spills and related toxic gas releases, the plan must describe the criteria to be used by the emergency coordinator to determine when the plan will be implemented. At a minimum, the plan must be implemented in the following situations:

(a) Any fire involving hazardous waste; or

(b) Any explosion involving hazardous waste; or

(c) Any uncontrolled hazardous waste reaction that produces or has the potential to produce hazardous conditions, including noxious, poisonous, flammable and/or explosive gases, fumes, or vapors; harmful dust; or explosive conditions; or

(d) Any hazardous waste release, outside of a secondary containment system, that causes or has the potential to cause off-site soil and/or surface water contamination; or

(e) Any hazardous waste release that produces or has the potential to produce hazardous conditions, including noxious, poisonous, flammable and/or explosive gases, fumes, or vapors; harmful dust; or explosive conditions.

B.15 Content of the Contingency Plan
OAC Rule 3745-54-52

The Permittee must comply with OAC Rule 3745-54-52 and the contingency plan, as set forth in Section G of the permit application.

B.16 Contingency Plan - Released Material and Emergency Response Material and By-products
OAC Rule 3745-54-56(G)

(a) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

(b) All liquid or solid material resulting from fire, explosion, released material or emergency response material and by-products that the Permittee is required to evaluate to determine whether such material is hazardous waste in accordance with OAC Rule 3745-52-11, must be collected and managed as a hazardous waste unless the Permittee can demonstrate that such waste is not hazardous in accordance with OAC Rule 3745-51-03(C) and (D).

B.17 Amendments to Plan
OAC Rule 3745-54-54

The Permittee must review the contingency plan at least annually and upon the occurrence of any event listed in OAC Rule 3745-54-54. If necessary or appropriate, the Permittee must amend the contingency plan as required by OAC Rule 3745-54-54 in accordance with OAC Rule 3745-50-51.

B.18 Copies of Plan
OAC Rule 3745-54-53

(a) The Permittee must comply with the requirements set forth in OAC Rule 3745-54-53 regarding contingency plan distribution. The Permittee must maintain at the facility a copy of the contingency plan and all revisions to the plan.

(b) The Permittee must, in accordance with OAC Rule 3745-54-53, submit a copy of the contingency plan to all local police departments, fire departments, hospitals and local emergency response teams that may be called upon to provide emergency services. The Permittee must notify such agencies and the local authorities, in writing of any significant changes to the plan which will impact their ability to respond to an emergency, within ten (10) days of the effective date of any amendments of, revisions to, or modifications to the contingency plan.

(c) The Permittee must, in accordance with OAC Rule 3745-54-53, submit a copy of the contingency plan to the Ohio Environmental Protection Agency's Division of Emergency and Remedial Response.

B.19 Emergency Coordinator
OAC Rule 3745-54-55

The Permittee must comply with the requirements set forth in OAC Rule 3745-54-55 regarding the emergency coordinator.

B.20 Emergency Procedures
OAC Rule 3745-54-56

The Permittee must comply with the requirements regarding emergency procedures set forth in OAC Rule 3745-54-56, Section G the permit application and the terms and conditions of this permit.

B.21 Availability, Retention and Disposition of Records
OAC Rule 3745-54-74

All records shall be furnished by the Permittee upon request to, and made available at all reasonable times for inspection by, Ohio EPA, in accordance with OAC Rule 3745-54-74.

B.22 Operating Record
OAC Rule 3745-54-73

The Permittee must comply with the requirements set forth in OAC Rule 3745-54-73 regarding an operating record, including information to be recorded and the maintenance thereof.

B.23 Contingency Plan Records
OAC Rule 3745-54-56(J)

The Permittee must note in the operating record the time, date, and details of any incident that requires the implementation of the contingency plan. Within fifteen (15) days after any such incident the Permittee must submit to the Director a written report of the incident containing the elements set forth in OAC Rule 3745-54-56(J).

B.24 Manifest System
OAC Rules 3745-54-70, 3745-54-71, 3745-54-72 and 3745-54-76

In managing waste at the facility the Permittee must comply with OAC Chapter 3745-52 and OAC Rules 3745-54-71, 3745-54-72 and 3745-54-76 with regard to the manifest system.

B.25 Annual Reports and Additional Reports
OAC Rules 3745-54-75 and 3745-54-77

The Permittee must comply with the annual report requirements set forth in OAC Rule 3745-54-75 and the additional report requirements set forth in OAC Rule 3745-54-77.

B.26 Closure Performance Standard
OAC Rule 3745-55-11

During facility closure, the Permittee must implement the provisions of the closure plan found in Section I of the permit application in such a manner as to achieve compliance with OAC Rule 3745-55-11.

B.27 Closure Plan
OAC Rules 3745-55-10, 3745-55-11 and 3745-55-13

The Permittee must implement those procedures detailed within Section I of the permit application, in accordance with OAC Rules 3745-55-10 through 3745-55-20.

B.28 Amendment of Closure Plan
OAC Rules 3745-55-12 and 3745-50-51

Should a change in the facility closure plan become necessary, the Permittee must amend the closure plan in accordance with OAC Rule 3745-55-12 (C).

B.29 Content of Closure Plan
OAC Rule 3745-55-12

The Permittee must maintain the closure plan at the facility which contains the elements set forth in OAC Rule 3745-55-12 and all elements required by the terms and conditions of this permit.

B.30 Notification of Closure
OAC Rule 3745-55-12

The Permittee must notify the Director in writing at least 45 days prior to the date on which he expects to begin final closure of a facility, as required by OAC Rule 3745-55-12(D).

B.31 Time Allowed For Closure
OAC Rule 3745-55-13

Within ninety (90) days after receiving the final volume of hazardous waste, the Permittee must remove from the facility, or treat or dispose of on-site, all hazardous waste in accordance with the closure plan. The Director may approve a longer closure period if the Permittee complies with all applicable requirements for requesting a modification to the permit as set forth in OAC Rule 3745-55-13(A). The Permittee must complete all closure activities within one hundred eighty (180) days after receiving the final volume of hazardous waste in accordance with OAC Rule 3745-55-13. The Director may approve a longer closure period if the Permittee complies with all applicable requirements for requesting a modification to the permit as set forth in OAC Rule 3745-55-13 (B).

B.32 Disposal or Decontamination of Equipment, Structures, and Soils
OAC Rule 3745-55-14

(a) The Permittee must decontaminate or dispose of all contaminated facility equipment, structures, and soils, as required by OAC Rule 3745-55-14, the closure plan and the terms and conditions of this permit.

(b) The Permittee must notify the Ohio EPA Northeast District Office within five (5) working days prior to all rinseate and soil sampling.

B.33 Certification of Closure
OAC Rule 3745-55-15

The Permittee and an independent, registered professional engineer must certify that each hazardous waste management unit or the facility has been closed in accordance with the specifications in the closure plan and the terms and conditions of this permit, as required by OAC Rule 3745-55-15. The Permittee must furnish to the Director, upon request, documentation supporting the certification.

B.34 Reserved.

B.35 Reserved.

B.36 Cost Estimate for Facility Closure
OAC Rule 3745-55-42

(a) The Permittee's most recent closure cost estimate, prepared in accordance with OAC Rule 3745-55-42 is specified in Section I of the permit application.

(b) The Permittee must adjust the closure cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with OAC Rule 3745-55-43

The Permittee must adjust the closure cost estimate for inflation within 30 days after the close of the Permittee's fiscal year and before submission of updated information to the Director, as specified in OAC Rule 3745-55-42(B).

(c) The Permittee must revise the closure cost estimate whenever there is a change in the facility's closure plan that increases the cost of closure, as required by OAC Rule 3745-55-42(C).

(d) The Permittee must submit to the Ohio EPA and keep at the facility the latest closure cost estimate as required by OAC Rule 3745-55-42(D) and (E).

B.37 Financial Assurance for Facility Closure

The Permittee must maintain continuous compliance with OAC Rule 3745 55-43 and 55-46 and provide documentation of financial assurance, which meets the

requirements of OAC Rule 3745-55-51, in at least the amount of the cost estimates required by Permit Condition B.36.

B.38 Liability Requirements

The Permittee must maintain continuous compliance with the requirements of OAC Rule 3745-55-47 and the documentation of liability by providing liability coverage which meets the requirements of OAC Rule 3745-55-51 for sudden accidental occurrences in the amount of at least $1 million per occurrence, with an annual aggregate of at least $2 million, exclusive of legal defense costs.

B.39 Incapacity of Owners or Operators, Guarantors, or Financial Institutions
OAC Rule 3745-55-48

The Permittee must comply with requirements set forth in OAC Rule 3745-55-48 regarding the incapacity of owners, operators, guarantors or financial institutions.

B.40 General Requirements for Land Disposal Restrictions
OAC Chapter 3745-270

The Permittee must comply with all applicable regulations regarding land disposal prohibitions and restrictions as required by OAC Chapter 3745-270.

MODULE C - CONTAINER STORAGE AND MANAGEMENT

C. CONTAINER STORAGE AND MANAGEMENT

The Hazardous Waste Storage Building (HWSB) is the only permitted storage area at the PPG Barberton Plant. It contains three rooms, the "north" and "south" rooms being used for hazardous waste container storage and the "middle" room being used for storage of operating supplies, spill clean-up materials, and tools.

The north container storage room in the HWSB is 73 feet by 20 feet. The maximum storage capacity of this room is 9,680 gallons (one hundred seventy-six (176) 55-gallon drums). Ignitable (D001), toxic (D004-D011, D018, D019, D022, D028, D029, D035, D039, D040, D043) and listed (F002, F003, F005, F027; U002, U080, U228, U239; P005) hazardous wastes are typically stored in this location. Secondary containment is provided by the concrete floor, coated with an impermeable coating, surrounded by a 1.75 inch concrete curb for a containment capacity of 1,500 gallons.

The south container storage room is 35 feet by 20 feet. Maximum storage capacity of this room is 3,960 gallons (seventy-two (72) 55-gallon drums). Corrosive (D002), toxic metals (D004-D011) and amines (D038), and listed (F005; U012, U196) hazardous wastes are typically stored in this location. Secondary containment is provided by the concrete floor, coated with an impermeable coating, and surrounded by a 1.75 inch concrete curb for a containment capacity of 700 gallons.

Waste will be stored in 55 gallon drums, 500 gallon portable containers, 250 gallon bulk containers, 30 gallon containers, and 5 gallon containers and other DOT approved containers. All drums must meet DOT specifications.

C.1 Container Storage/ Quantity Limitation

(a) The Permittee is authorized to store 6,500 gallons of hazardous waste at any given time in the permitted container area located in the north room and the south room of the permitted container area located in the Hazardous Waste Storage Building.

(b) For the purpose of compliance with the capacity limitation of this permit, each container will be considered to be storing an amount of hazardous waste equal to its capacity, regardless of the actual quantity stored in the container.

(c) Permit Conditions C.1(a) and C.2 shall not apply to the Permittee's activities as a generator accumulating hazardous waste on-site in compliance with OAC Rule 3745-52-34 and 40 CFR Part 265, subparts AA, BB, and CC.

However, when accumulating waste within the permitted container storage area, in accordance with OAC Rule 3745-52-34 and 40 CFR Part 265, subparts AA, BB, and CC, the Permittee must not, for the total amount of hazardous waste stored and accumulated, exceed the maximum container storage inventory established under this permit condition.

C.2 Reserved.

C.3 Waste Identification

The Permittee must store in containers only the hazardous waste codes specified below:

D001, D002, D004, D005, D006, D007, D008, D009, D010, D011, D018, D019, D022, D028, D029, D032, D033, D034, D035, D038, D039, D040, D043; F002, F003, F005, F024, F039; K016, K030, K073; P005; U002, U012, U080, U196, U228, U239.

C.4 Condition of Containers
OAC Rule 3745-55-71

If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the Permittee must transfer the hazardous waste from such container to a container that is in good condition or otherwise manage the waste in compliance with the conditions of this permit and the hazardous waste facility chapters of the OAC.

C.5 Compatibility of Waste with Containers
OAC Rule 3745-55-72

The Permittee must use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

C.6 Management of Containers
OAC Rule 3745-55-73

(a) The Permittee must keep all containers closed during storage, except when it is necessary to add or remove waste, and must not open, handle, or store containers in a manner which may rupture the container or cause it to leak.

(b) All container storage shall be conducted within the container storage containment system described in Condition C.1. of this permit and Section D of the permit application.

C.7 Containment Systems
OAC Rule 3745-55-75

(a) The Permittee must maintain the containment system in accordance with the plans and specifications contained in Section D of the permit application.

(b) The Permittee must maintain the containment system as described in the permit application, designed with sufficient capacity to contain ten percent of the total volume of the containers or the volume of the largest container, whichever is greater. The containment system must be free of cracks and gaps and sufficiently impervious to contain leaks and spills and accumulated precipitation until the collected material is detected and removed.

(c) The base of the containment system must be sloped or the containment system must be otherwise designed and operated to drain and remove liquids resulting from leaks, spills, or precipitation, unless the containers are elevated or are otherwise protected from contact with accumulated liquids.

(d) Run-on into the containment system must be prevented unless the collection system has sufficient excess capacity in addition to that required in Permit Condition C.7(b) above.

(e) Spilled or leaked waste and accumulated precipitation must be removed from the sump or collection area in a timely manner. This time period is not to exceed twenty-four (24) hours from the time spilled and/or leaked waste is discovered to have reached the hazardous waste pad sump.

C.8 Prohibition of Container Storage
ORC Section 3734.02(F)

The Permittee must not store any container of hazardous waste received from any off-site source.

C.9 Inspection Schedules and Procedures
OAC Rules 3745-54-15 and 3745-54-73

The Permittee must inspect the container storage area in accordance with the inspection schedule contained in Section F of the permit application and in accordance with OAC Rule 3745-54-15.The inspection schedule must be designed

to detect for leaking containers, deteriorating containers, and/or containment systems. The Permittee must note the results of these inspections in the inspection log along with any remedial action taken.

Areas subject to spills, such as loading or unloading areas, shall be inspected daily when in use pursuant to the inspection procedure described in Section F of the permit application. The Permittee must maintain these inspection results in the facility operating record.

C.10 Recordkeeping
OAC Rule 3745-54-73

The Permittee must comply with all recordkeeping requirements of OAC Rule 3745-54-73 as part of the facility operating record.

C.11 Special Container Provisions for Ignitable or Reactive Waste
OAC Rules 3745-54-17 and 3745-55-76

(a) The Permittee must not store ignitable or reactive waste except in accordance with OAC Rules 3745-54-17 and 3745-55-76.

(b) The Permittee must not locate containers holding ignitable or reactive waste within 15 meters (50 feet) of the facility's property line.

(c) The Permittee must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste and shall follow the storage procedures specified in Section F the permit application.

C.12 Special Container Provisions for Incompatible Waste
OAC Rules 3745-54-17(B) and 3745-55-77

(a) The Permittee must not store incompatible waste except in accordance with OAC Rules 3745-54-17(B) and 3745-55-77.

(b) The Permittee must not place hazardous waste in an unwashed container that previously held an incompatible waste or material.

(c) The Permittee must separate or protect (by means of a dike, berm, wall, or other device) a storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments.

C.13 Reserved.

C.14 Closure and Post-Closure

OAC Rules 3745-55-10 through 3745-55-20, and 3745-55-78

At closure of the container area, the Permittee shall remove all hazardous waste and hazardous waste residues from the containment system, in accordance with the procedures in the closure plan set forth in Section I of the permit application.

MODULE D – RESERVED

MODULE E - CORRECTIVE ACTION REQUIREMENTS

PPG and U.S. EPA entered into an Administrative Order on Consent ("AOC"), on April 5, 1991. Pursuant to the implementation of the AOC, PPG is in compliance with the Corrective action requirements of the orders, including requirements set forth in Ohio Administrative Code Rule 3745-54-101.

The AOC scope of work included seven Interim Measures (IM's), a RCRA Facility Investigation (RFI) and a Corrective Measures Study (CMS). Ohio EPA has participated in the review of PPG's implementation of the AOC, which included commenting on the IM's, RFI and CMS, as well as other submittals. Five of the seven IM's have been completed. The active IM's are IM-II (Leachate Collection and Treatment) and IM-III (Public Access Controls). The final RFI report was approved by U.S. EPA on May 19, 1997. As a voluntary effort, PPG conducted site-specific human health and ecological risk assessments. These risk assessments were used to assess the data collected during the RFI and develop the CMS. A Draft CMS report was submitted to U.S. EPA on September 19, 1997, but it was never formally approved. U.S. EPA left the traditional Corrective Action administrative process at this point, and instead authorized PPG to implement a performance based approach.

Beginning in 1999, the U.S. EPA established reforms to the RCRA Corrective Action Program (RCRA Reforms). Progress at the Barberton Facility under these RCRA Reforms has been measured by two initial nationwide environmental indicators. Indicator CA-725 was established to determine if exposures to human health were currently under control. PPG achieved a "YES" determination on December 20, 2001. Indicator CA-750 was established to determine if the migration of contaminated groundwater is currently under control. PPG achieved a "YES" determination on January 22, 2007.

Another element of the RCRA Reforms was to allow the use of a performance-based approach to corrective action. The performance-based concept is to initially reach agreement on the goals for a remedial action site, as well as the specific measurements to demonstrate achievement of those goals. A facility would then be allowed to design and implement a remedial action based on the pre-determined goals and measurements. PPG and U.S. EPA entered into the Performance Based Approach (PBA) Agreement in August 2001. Ohio EPA provided a letter of support to the PBA Agreement. The PBA Agreement is a voluntary program used to implement RCRA Corrective Action. Several remedies have been implemented under the PBA Agreement.

A Media Focus Document (MFD) was developed to outline the various WMU's and other areas identified for corrective action. The MFD summarized the goals of a

remedial action as further elaborated in the Draft CMS. Additionally, the MFD identified the specific performance measurements used to evaluate compliance with the goals and summarized relevant project milestones. The latest version of the MFD was dated July 2007.

With the issuance of a renewed RCRA Permit by the State of Ohio, the Ohio EPA will become the lead agency working with PPG with respect to the remaining Corrective Action activities. PPG will attempt to terminate the AOC and the Performance Based Agreement with U.S. EPA after the issuance of the renewed Ohio Permit according to the termination sections provided by the agreements. Additional Corrective Action activities will be continued under the Ohio Permit.

Goals may be achieved through the implementation of corrective measures, the assessment and management of risk, institutional controls, monitored natural attenuation or a combination thereof.

E.1 Corrective Action at the Facility
OAC Rules 3745-50-10 & 3745-54-101

In accordance with OAC Rule 3745-50-10 a waste management unit means any discernible unit at which solid waste, hazardous waste, infectious waste (as those terms are defined in ORC Chapter 3734), construction and demolition debris (as defined in ORC Chapter 3714), industrial waste, or other waste (as those terms are defined in ORC Chapter 6111), has been placed at any time, irrespective of whether the unit was intended for the management of waste or hazardous waste. Such units include any area at a Facility at which wastes have been routinely and systematically released. For the purpose of Corrective Action, Facility is defined as all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA. The terms Interim Measure (IM), RCRA Facility Investigation (RFI), Corrective Measures Study (CMS) and Corrective Measure Implementation (CMI) are defined in U.S. EPA's Corrective Action Plan (CAP) (OSWER Directive 9902.3-2A, May 1994).

The Permittee must institute Corrective Action as necessary to protect human health and the environment for all releases of hazardous wastes or hazardous constituents from any waste management units (WMUs) at the Facility, regardless of the time at which waste was placed in such units.

E.2 Corrective Action Beyond the Facility Boundary
OAC Rule 3745-54-101

The Permittee must implement Corrective Action beyond the Facility property boundary, where necessary to protect human health and the environment, unless

the Permittee demonstrates to the satisfaction of Ohio EPA that, despite the Permittee's best efforts, the Permittee was unable to obtain the necessary permission to undertake such actions. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the Facility boundary where off-site access is denied. On-site measures to address such releases will be addressed under the RFI, CMS, and CMI phases, as determined to be necessary on a case-by-case basis.

E.3 Identification of WMUs
OAC Rules 3745-50-44(D) and 3745-54-101

A major tool created to guide the performance based approach to the corrective action activities at PPG was a Media Focus Document (MFD), which grouped selected WMUs into several primary media focus areas. The draft CMS report formed the basis of the selected areas for the MFD. The MFD document, used as a project planning tool, evolved as corrective action data gathering, planning and measure implementation proceeded. The WMUs are grouped based on the primary media focus areas and the progress that has been made. There are three progress groupings: (1) Remedy Complete/ No Further Action; (2) Remedy construction with long-term operation and maintenance; and (3) Ongoing Remedy Evaluation and/or Implementation. A summary of activities conducted thus far is also included.

Category 1 – Remedy Complete/No Further Action

West Plant WMU 92
Former Ohio Brass Settling Ponds WMU 110
North Spoils Area WMU 96
South Spoils Area WMU 97

Category 2 – Remedy Construction Complete with long-term operation and maintenance

Lower Hudson Run Surface Water Focus Area
Hudson Run Reservoir
Contractor's Landfill
Main Plant Soils Focus Area, which includes:
- Sand Quarry WMUs 83, 84, 87, 88, and 89
- WMUs #9, 61, 66, 81, and 90

Sitewide Groundwater, which includes for this purpose:
- Main Plant Ground Water Focus Area
- South Facility Focus Area
- Lime Lakes #3, #4, and #5

Tuscarawas River Dredge Spoils

Category 3 – Ongoing Remedy Evaluation and/or Implementation

Lower Hudson Run Sediment Focus Area
Tuscarawas River and Wolf Creek
Impounding Reservoir
Lime Lakes #1 and #2
Lime Lake #6

CATEGORY 1: REMEDY COMPLETE/NO FURTHER ACTION

WEST PLANT WMU 92

DESCRIPTION: The West Plant was developed in the 1940's as a source of limestone for soda ash production. The mine operated from 1942 until 1976. Other operations included asphaltic concrete manufacture, Portland cement manufacture, refractory brick reclamation, and stockpiling.

STATUS: 96 acres of the property, and three of the four WMUs, were sold to Norton Energy Storage LLC in 1999. The remaining unit was formerly a coal and waste brick pile. All materials had been removed prior to the RFI. Results from the RFI showed slightly elevated levels of metals and aromatics commonly associated with coal. The draft CMS evaluated the data, and concluded that no further action was necessary for that WMU. Ohio EPA concurs with that conclusion.

FORMER OHIO BRASS SETTLING PONDS WMU 110

DESCRIPTION: Two settling ponds formerly used for wastewater treatment by a lessee. After termination of the lease, the ponds were re-graded. Currently, the unit is an open, grassy field.

STATUS: The RFI found no evidence of contamination in surface soils or ground water, and no further action is required.

NORTH SPOILS AREA WMU 96

DESCRIPTION: An approximately 3 acre unit. The unit was used for the disposal of slaker sands, clean fill, and demolition debris. It was also used as a staging area for pipe salvage during well abandonment activities. In 1991, during Facility characterization activities, drum fragments were observed. Geophysical investigation found magnetic anomalies. In April 1996, under Interim Measure VII,

remediation activities were conducted. Approximately 1800 cubic yards of PCB - contaminated soil and seven drums were removed. Samples of soil, drum contents, surface water and excavation water were sampled and analyzed. Confirmatory sampling completed, the excavation was backfilled and re-vegetated.

STATUS: Remedy completed. No further action.

SOUTH SPOILS AREA WMU 97

DESCRIPTION: This unit was used for general disposal from 1980 until 1992. The materials consisted of soil, concrete, asphalt, sand, limestone, brick, clay tile and silt. It covers approximately 45,000 square feet. In July 1996, the unit was re-graded and vegetated under authorization received pursuant to OAC Rule 3745-27-13. The ground surface was cleared, re-graded and seeded. Swales were excavated to control precipitation runoff, and to minimize horizontal infiltration. Seeps were also eliminated under this measure. The unit is fenced to restrict access.

STATUS: Remedy completed. No further action.

CATEGORY 2: REMEDY CONSTRUCTION COMPLETE WITH LONG-TERM OPERATION AND MAINTENANCE

LOWER HUDSON RUN (LHR) Surface Water Focus Area

DESCRIPTION: A channelized stream running approximately 2,275 feet from the outlet of Hudson Run Reservoir to Wolf Creek, between Lime Lake One and Lime Lake Two. There are two low head dams in the channel.

REMEDIAL GOAL: Meet applicable Ohio ambient water quality standards for Constituents of Concern (COCs).

CORRECTIVE MEASURES COMPLETED UNDER PBA AND INTERIM MEASURE 2: PPG separated surface water from contaminated ground water infiltrating from Lime Lakes #1 and #2 by raising the surface water elevation above the ground water potentiometric surface in designated areas of the stream. The surface water elevation was raised by installing a low head dam in November 2006 similar to the Low Head Impoundment installed in 1997 near the mouth of this waterway. Interim Measure 2 also actively diverts leachate (from the lime lakes) from entering the waterway. The subsurface capping of the Hudson Run Reservoir described above also prevented a source of constituents of concern from entering Lower Hudson Run from upstream.

STATUS: Engineering Controls which were installed to contain potential sources of contamination to LHR will require ongoing operation and maintenance and performance monitoring to ensure performance standards continue to be met. In August 2008, hexachlorobenzene was detected in surface water above Water Quality Criteria. The source was most likely contaminated sediments in the Lower Hudson Run. Therefore, sediment contamination needs to be addressed.

HUDSON RUN RESERVOIR (HRR) Sediment Focus Area

DESCRIPTION: A four to seven foot deep reservoir covering approximately 36 acres. Inflow is controlled by the upstream dam creating Lake Dorothy. Water level and outflow are controlled by a low to medium rise dam at the eastern end of the reservoir.

REMEDIAL GOAL: Eliminate, to the extent necessary, potential human and ecological exposure to contaminated sediment. Meet applicable Ohio ambient water quality standards.

CORRECTIVE MEASURE COMPLETED UNDER PBA: A sediment cap was installed on 7 acres in late fall 2003. The purpose of the in-situ subaqueous capping was to separate clean surface water from the contaminated sediments.

STATUS: Engineering Controls installed to contain contaminated sediments will require ongoing inspection and maintenance and performance monitoring (as needed) to ensure performance standards are maintained.

CONTRACTOR'S LANDFILL

DESCRIPTION: A former open-pit clay mine that subsequently served as a disposal site for contractors' construction and demolition debris. The ground water is known to be contaminated with volatile organic compounds. For some compounds, concentrations exceed the Maximum Contaminant Limit for drinking water (OAC 3745-81-12 and OAC 3745-54-94) (MCLs).

REMEDIAL GOAL: Isolate to extent practicable sources of chlorinated organic compounds from Contractor's Landfill to Main Plant area ground water by reduction of leachate production and Monitored Natural Attenuation (MNA) in the regional aquifer.

RATIONALE FOR GOAL: Contractor's Landfill has been identified as a source area affecting Main Plant area ground water.

CORRECTIVE MEASURES COMPLETED: Leachate and ground water are intercepted by French drains, and conveyed to the on-site Waste Water Treatment Plant. A low permeability cover system and an upgradient ground water diversion system were installed in the summer of 2008, and completed in 2009.

PERFORMANCE STANDARDS: Permanent leachate flow reduction; Permanent leachate elevation reduction in key piezometers with historical baseline elevation data. Meet appropriate performance goals in the French drain discharges. Meet MCLs or risk-based standards in ground water.

STATUS: Further action (maintenance and monitoring) is required.

MAIN PLANT SOILS FOCUS AREA

DESCRIPTION: The plant is divided by Hudson Run into the North Plant and South Plant, containing chemical manufacturing facilities, storage areas, tanks, offices and other structures. Areas not covered by structures are generally paved. Contaminated soils are present below the paving. The vapor intrusion pathway was modeled, and excess lifetime cancer risks meet Ohio EPA performance standards. Exposures may occur during invasive activities.

REMEDIAL GOAL: Eliminate the risk to on-site excavation workers engaged in infrequent and short term activity for dermal exposure to hexachlorobenzene (HCB), dioxins (TCDD), and other contaminants when excavation is required.

STATUS: Currently, exposures are eliminated by implementation of a Health and Safety Plan (Barberton Excavation Plan) during invasive activities. PPG is maintaining institutional controls. Engineering and Institutional Controls such as maintaining the pavement covering the contaminated soils are required.

SAND QUARRY WMUs 83, 84, 87, 88, 89

DESCRIPTION: The sand quarry occupies approximately 31 acres, and is surrounded on three sides by nearly vertical high walls. Sand is no longer being mined. Five WMUs have been identified in this area.

WMU 83 is the permitted hazardous waste storage building (HWSB), which is subject to closure requirements, and the conditions of this permit's Module C. WMU 84, HWSB Outdoor Container Storage Area, was an outside pad previously used (all drums were removed prior to the RFI) for temporary storage of drummed waste generated during pre-RFI monitoring well installation and investigative activities. WMU 87 is the Sand Quarry Holding Basin, which formerly received storm water and may have received sand quarry wash water and a one-time historical release from the Catalyst Sump (WMU 78) overflow. WMU 88 is the

Former Sand Quarry Pond that was used for sand washing and is currently backfilled. WMU #89, the Former Catalyst Detonation Area was closed following RCRA and Ohio EPA regulations in 1985. The RFI concluded that there is no indication of a release from these five WMUs.

STATUS Further action to address potential soil contamination will be addressed under the Main Plant Soils Focus Area excavation plan (Barberton Excavation Plan) as outlined in E.10(f). The permitted unit will have to undergo closure according to the approved closure plan in the permit when it is taken out of service.

WMUs #'s 9, 61, 66, 81, and 90

DESCRIPTION: Wastewater tanks, floor drains, trenches and sumps in the Multi-Purpose Building (WMU #9 Multi Purpose Plant Floor Drains and Sumps), Chloroformate Process Area (WMU #61 Chloroformate Sump), CR-39 Process Area (WMU #66 CR-39 Sump and Trench System), and the Air Pollution Control system (WMU #81 APC Wastewater Tanks). Also, the former trichloroethene manufacturing plant (WMU #90 Former TCE Plant).

REMEDIAL GOAL: Address historical soil contamination, and prevent future releases.

RATIONALE FOR GOAL: Analysis of soils during the RFI showed evidence of potential contaminant release by the materials of the type historically and currently managed in these areas.

CORRECTIVE MEASURES COMPLETED: The units were inspected, and repaired as needed to prevent releases. The units are covered by buildings or concrete, limiting direct contact exposures. The vapor intrusion pathways were evaluated, and excess lifetime cancer risks meet Ohio EPA performance standards. Exposures may occur during invasive activities.

STATUS: Further action to address soil contamination will be addressed under the Main Plant Soils Focus Area excavation plan as outlined in E.10(g). Institutional controls will be evaluated.

MAIN PLANT GROUND WATER FOCUS AREA

DESCRIPTION: The main plant is divided by Hudson Run into the North Plant and South Plant, containing chemical manufacturing facilities, storage areas, tanks, offices and other structures. Areas not covered by structures are generally paved. In general, the ground water across the Facility at all depths above the shale confining layer has been affected by various Facility specific contaminants of

concern including organic chemicals and metals. The bedrock high area has been identified as source area contributing to Main Plant area ground water. Ground water is contaminated at levels unacceptable for potable use and also is a potential source of contamination to surface water.

The main contaminants of concern in the ground water include perchloroethene, trichloroethylene, cis-1, 2-dichloroethylene, vinyl chloride, chloride, dissolved solids, barium, calcium, and sodium. Source areas for the ground water contamination include the Lime Lakes, the production areas (*e.g.*, North and South Plants), and the former waste disposal areas (*e.g.*, Contractors' Landfill).

REMEDIAL GOAL: Restoration of ground water to meet all regulatory standards. Continued control of migration of contaminated ground water (Corrective Action Environmental Indicator Determination 750 - Yes). Prevent surface water contamination above water quality standards. Prevent extraction except for monitoring and remediation.

CORRECTIVE MEASURES COMPLETED UNDER PBA: Surface paving, utility repair, and storm water management improvements were implemented to reduce vertical infiltration into the subsurface. This was conducted for the purpose of isolating to the extent practicable a source of chlorinated organic compounds from the bedrock high area, and to reduce the release of contaminants to surface water and sediments in Hudson Run and the Main Plant Area ground water.

STATUS: Ground water level measurements did not achieve the predicted elevation reduction following the paving improvements. Migration of contaminated ground water is under control (Corrective Action Environmental Indicator Determination 750 - Yes). Indications suggestive of reductive dechlorination of halogenated Constituents of Concern (COCs) have been observed in some of the wells. Ground water contamination remains. Condition E.10(h) details the action required to address the ground water contamination.

LIME LAKES #3 THROUGH #5 – Southern Facility Ground Water

DESCRIPTION: Three Solvay soda ash process waste impoundments. Lime Lake #3 covers approximately 56 acres, rises about 38 feet above grade, and holds around 2.6 million tonnes of waste. Lime Lake #4 covers approximately 117 acres, rises about 40 feet above grade, and holds around 5.1 million tonnes of waste. Lime

Lake #5 covers approximately 113 acres, rises about 30 feet above grade, and holds around 3.1 million tonnes of waste.

STATUS: These units were reclaimed under Ohio EPA Approved Sludge Management Plans and Permits to Install under Ohio EPA's Division of Surface Water. The reclamation was contouring to facilitate surface water run-off, amending surface materials with wastewater treatment plant sludge, and then establishing a vegetative cover. PPG has been providing habitat enhancements in the process.

Lime Lake #4 was reclaimed under consensual Findings and Orders. Lime Lakes #3, #4, and #5 have completed the reclamation activities.

TUSCARAWAS RIVER DREDGE SPOILS

DESCRIPTION: In 1965, the Ohio Department of Public Works dredged the Tuscarawas River for flood control, and deposited the material on the banks of the river. Material was placed on PPG property in several locations. Materials consisted of sediments as well as bank materials from the widening and straightening of the river.

REMEDIAL GOAL: Eliminate unacceptable risks to human health and the environment due to the presence of contaminants (hexachlorobenzene) in the dredge spoils.

CORRECTIVE MEASURES COMPLETED: Fencing was installed in areas where hexachlorobenzene was detected in dredge spoil surface samples at concentrations greater than 100 mg/kg. Two areas of the Tuscarawas River bank were armored with riprap to prevent dredge spoil from re-entering the river due to river bank erosion.

STATUS: Maintain current controls. Condition E.10(j) describes the additional action required to ensure restricted access and to evaluate ecological risk.

CATEGORY 3: ONGOING REMEDY EVALUATION AND/OR IMPLEMENTATION

LOWER HUDSON RUN SEDIMENTS FOCUS AREA

DESCRIPTION: Contaminated sediments in the Lower Hudson Run Channel

REMEDIAL GOAL: Eliminate, to the extent necessary, potential human and ecological exposure to contaminated sediment. The sediment quality criteria are to be determined.
CORRECTIVE MEASURES COMPLETED UNDER PBA: Characterization activities have been conducted, and some limited removal of sediments has taken place.

STATUS: Contaminated sediments may have an impact on surface water and biota. Condition E.10(k) describes the additional activities required to address the possible impact on surface water and biota.

TUSCARAWAS RIVER AND WOLF CREEK

DESCRIPTION: The Tuscarawas River is Modified Warm Water Habitat, runs roughly six stream miles through the PPG Facility, and is a major tributary to the Muskingum River, part of the Ohio River watershed. It has been partially channeled by dredging in the 1960's.

Wolf Creek is a tributary of the Tuscarawas, and is also Modified Warm Water Habitat. Approximately the last 1.1 miles of the creek are adjacent to PPG. Contamination of the water column was found during the RFI. Subsequent investigations in conjunction with a remedial study (phytoremediation pilot) demonstrated that the Wolf Creek surface waters are currently in attainment of chemical Water Quality Standards. A 1994 Ohio EPA study reported biological impairment of the stream.

The Tuscarawas River sediments and surface water are contaminated with volatile and semi-volatile organics (VOCs and SVOCs), metals and dissolved solids (TDS). Wolf Creek sediments may also be contaminated with VOCs and SVOCs.

REMEDIAL GOAL: Attainment of chemical and biological criteria suitable for surface water and sediments in a Modified Warm Water Habitat.

CORRECTIVE MEASURES COMPLETED UNDER PBA: Chemical and Biological surveys of the Tuscarawas River were performed in 1994 (by Ohio EPA), 2001, and 2006. A chemical survey of Wolf Creek was performed over four quarters in 2002 and 2003.

STATUS: PPG conducted an updated assessment of the Tuscarawas River in 2006. The findings convey that the river has not attained the desired biocriteria, and is in partial nonattainment.

Wolf Creek sediments have not been investigated in over 15 years. The sediments must be re-examined to determine current contamination. Further action for both waterways is required as described in Condition E.10(l) which may require a Corrective Measures Study if a remedy selection is needed.

IMPOUNDING RESERVOIR

DESCRIPTION: An area of approximately 240 acres immediately north of Lime Lake 6. Between 1959 and 1985, it was used to store and then release decant waters from Lime Lake 6.

REMEDIAL GOAL: Eliminate unacceptable risks to human health and the environment due to soil exposures.

STATUS: Evaluation of risk to the environment is required through a review of the existing Preliminary Ecological Risk Assessment, and completion of a Tier 1 Ecological Screening assessment. Current human exposures are under control.

LIME LAKE #1:

DESCRIPTION: A 74 acre surface impoundment rising 40 feet from local grade. Approximately 3.6 million tonnes of waste are disposed here, mostly Solvay soda ash process wastes. Some chlorinated solvent process wastes, coal ash, and cinders are also disposed here.

REMEDIAL GOAL: Isolate to the extent practicable sources of chlorinated organic compounds from Lime Lake 1 to Main Plant area ground water, and nearby surface waters, by reduction of leachate production and dispersion. Prevent direct contact and wind dispersal.

CORRECTIVE MEASURES COMPLETED: A horizontal well leachate collection system was installed to control seep discharges to adjacent water bodies.

PERFORMANCE STANDARDS: Meet Ohio Surface Water Quality Standards for selected organic and inorganic constituents in adjacent surface water bodies (Wolf Creek and Lower Hudson Run). Eliminate impact to Main Plant ground water. Meet human health and ecological risk based standards.

STATUS: Migration of contaminated ground water is under control (Corrective Action Environmental Indicator Determination 750). Additional measures as described in Condition E.10(n) are required to control unit and minimize risk to human health and the environment.

LIME LAKE #2

DESCRIPTION: A 41 acre surface impoundment rising 55 feet from local grade. Approximately 2.3 million tonnes of waste are disposed here, mostly Solvay soda ash process wastes. Some chlorinated solvent process wastes, coarse asbestos,

and coal and ash cinders are also disposed here. Dense Non-Aqueous Phase Liquids from chlorinated solvent manufacturing waste are known to be present within Lime Lake 2.

REMEDIAL GOAL: Isolate to extent practicable sources of chlorinated organics from Lime Lake 2 to Main Plant area ground water, and nearby surface waters, by reduction of leachate production and dispersion. Prevent direct contact and wind dispersal.

CORRECTIVE MEASURES COMPLETED: A horizontal well leachate collection and Dense Non-Aqueous Phase Liquids removal system was installed to control seep discharges.

PERFORMANCE STANDARDS: Meet Ohio Surface Water Quality Standards for selected organic and inorganic constituents in Lower Hudson Run. Eliminate impact to Main Plant ground water. Meet human health and ecological risk based standards.

STATUS: Migration of contaminated ground water is under control (Corrective Action Environmental Indicator Determination 750). Additional measures as described in Condition E.10(o) are required to control unit and minimize risk to human health and the environment.

LIME LAKE #6

DESCRIPTION: A Solvay soda ash process waste impoundment that covers approximately 228 acres.

STATUS: This unit is being remediated under an Ohio EPA Approved Sludge Management Plan, and Permits to Install under Ohio EPA's Division of Surface Water. The remedy is contouring to facilitate surface water run-off, amending surface materials with wastewater treatment plant sludge, and then establishing a vegetative cover. PPG has been providing habitat enhancements in the process.

PPG has been remediating the unit since 2000. The estimated date of completion is 2016.

E.4 No Corrective Action Required at this Time
OAC Rule 3745-54-101

Reserved

E.5 RCRA Facility Investigation (RFI)
OAC Rule 3745-55-011

In the event of a newly discovered unit, the Permittee must conduct an RFI to thoroughly evaluate the nature and extent of any release of hazardous waste(s) and hazardous constituent(s) from all applicable WWUs identified in Condition E.10. The major tasks and required submittal dates are shown below. The scope of work for each of the tasks is found in U.S. EPA's CAP.

(a) RFI Workplan

The Permittee must submit a written RFI Workplan to Ohio EPA, in case of a newly discovered waste management unit, on a timeframe established by Ohio EPA.

(i) Within 45 days of receipt of any Ohio EPA comments on the RFI Workplan, the Permittee must submit either an amended or new RFI Workplan that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended or new RFI Workplan. The RFI Workplan, as approved or as modified and approved, shall be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved RFI Workplan must be authorized by Ohio EPA.

(b) RFI Implementation

The Permittee must implement the RFI Workplan according to the terms and schedule in the approved RFI Workplan.

(c) RFI Final Report

Within 60 days after the completion of the RFI, the Permittee must submit an RFI Final Report to Ohio EPA. The RFI Final Report must describe the procedures, methods, and results of the RFI. The Final Report must contain adequate information to support further decisions concerning Corrective Action at the Facility.

(i) Within 45 days of receipt of any Ohio EPA comments on the RFI Final Report, the Permittee must submit either an amended or new RFI Final Report that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended or new RFI Final Report. The RFI Final Report, as approved or as modified and approved, shall be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved RFI Final Report must be authorized by Ohio EPA.

E.6 Interim Measure (IM)

The following specific IM(s) have been identified and conducted:

- Develop and implement a sampling and analysis plan to monitor municipal waste water treatment plant sludge being accepted for amending the surface of Lime Lake Four.
- Install a leachate collection system in Lime Lakes One and Two, and Contractors' Landfill, and a waste water treatment plant to treat the collected leachate.
- Install fencing and security as needed to control and restrict public access.
- Investigate previously plugged and abandoned brine extraction wells. Four wells met criteria for re-plugging, which was done per Ohio Department of Natural Resources guidance.
- Evaluate risks to human health and the environment, identify sources and transport mechanisms, and identify appropriate remedial actions for contaminated sediments in affected adjacent waterways.
- Remove cement kiln dust from Waste Management Unit 94.
- Remove PCB contaminated materials in North Spoils Area.

The interim measures were implemented by PPG. The leachate collection and treatment systems and the inspection and maintenance of the fencing are on-going activities. All other Interim Measures are complete.

In the event the RFI Final Report or other information documenting a release of hazardous waste or constituents to the environment, Ohio EPA may require (or the Permittee may propose) the development and implementation of additional IM(s) (this may include an IM Workplan) at any time during the life of the permit to mitigate or eliminate a threat to human health or the environment. The Permittee must implement the IM upon a time frame established by Ohio EPA.

E.7 Determination of No Further Action

(a) Permit Modification

Based on the results of the completed RFI and other relevant information, the Permittee may submit an application to Ohio EPA for a permit modification under OAC Rule 3745-50-51 to terminate the Corrective Action tasks of the Schedule of Compliance. Other tasks identified in the Schedule of Compliance shall remain in effect. This permit modification application must conclusively demonstrate that there are no releases of hazardous waste or constituents from WMUs at the Facility that pose an unacceptable risk to human health and the environment.

If, based upon review of the Permittee's request for a permit modification, the results of the completed RFI, and other information, Ohio EPA determines that releases or suspected releases which were investigated either are nonexistent or do not pose an unacceptable risk to human health and the environment, Ohio EPA will approve the requested modification. Decisions regarding the completion of RCRA Corrective Action and no further action may be made for the entire Facility, for a portion of the Facility, or for a specific unit or release.

(b) Periodic Monitoring

A determination of no further action shall not preclude Ohio EPA from requiring continued or periodic monitoring of air, soil, ground water, or surface water, if necessary to protect human health and the environment, when site-specific circumstances indicate that a potential or an actual release of hazardous waste or constituents exists.

(c) Further Investigations

A determination of no further action shall not preclude Ohio EPA from requiring further investigations, studies, or remediation at a later date, if new information or subsequent analysis indicates that a release or potential release from a WMU at the Facility may pose an unacceptable risk to human health or the environment. In such a case, Ohio EPA shall initiate a modification to the terms of the permit to rescind the determination made in accordance with Permit Condition E.7(a). Additionally, in the event Ohio EPA determines that there is insufficient information on which to base a determination, the Permittee, upon notification, is required to develop a Work Plan and upon Ohio EPA approval of that Work Plan, perform additional investigations as needed.

E.8 Corrective Measures Study (CMS)

If Ohio EPA determines, based on the results of additional evaluation or investigation, and any other relevant information, that corrective measures are necessary, Ohio EPA will notify the Permittee in writing that the Permittee must conduct a CMS either as described below or as described in Ohio EPA's notification to the Permittee. The purpose of the CMS will be to develop and evaluate the corrective action alternative(s) and to outline one or more alternative corrective measure(s) that will satisfy the performance objectives specified in Permit Condition E.9.

(a) CMS Workplan

The Permittee must submit a written CMS Workplan to Ohio EPA within 90 days from the notification by Ohio EPA of the requirement to conduct a CMS.

(i) Within 45 days of receipt of any Ohio EPA comments, the Permittee must submit either an amended or new CMS Workplan that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended or new CMS Workplan. The CMS Workplan, as approved or as modified and approved, must be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved CMS Workplan must be authorized by Ohio EPA.

(b) CMS Workplan Implementation

The Permittee must implement the CMS Workplan according to the terms and schedule in the approved CMS Workplan.

(c) CMS Final Report

Within 60 days after the completion of the CMS, the Permittee must submit a CMS Final Report to Ohio EPA. The CMS Final Report must summarize the results of the investigations for each remedy studied and must include an evaluation of each remedial alternative.

(i) Within 45 days of receipt of any Ohio EPA comments, the Permittee must submit either an amended or new CMS Final Report that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended or new CMS Final Report. The CMS Final Report, as approved or as modified and approved, must be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved CMS Final Report must be authorized by Ohio EPA.

E.9 Corrective Measures Implementation (CMI)

The Corrective Measure selected for implementation must: (1) be protective of human health and the environment; and as applicable (2) attain media cleanup standards; (3) control the source(s) of releases so as to reduce or eliminate further

releases of hazardous waste(s) (including hazardous constituent[s]); and (4) comply with all applicable standards for management of wastes.

If two or more of the Corrective Measures studied meet the threshold criteria set out above, Ohio EPA will authorize the Corrective Measures Implementation by considering remedy selection factors including: (1) long-term reliability and effectiveness; (2) the degree to which the Corrective Measure will reduce the toxicity, mobility or volume of contamination; (3) the Corrective Measure's short-term effectiveness; (4) the Corrective Measure's implementability; and (5) the relative cost associated with the alternative.

In authorizing the proposed Corrective Measures, Ohio EPA may also consider such other factors as may be presented by site-specific conditions.

(a) Permit Modification

Ohio EPA will initiate a permit modification as provided by OAC Rule 3745-50-51 to require implementation of the corrective measure(s) authorized.

The Permittee must not implement the corrective measure until the permit is modified pursuant to OAC Rule 3745-50-51.

(b) Financial Assurance
OAC Rule 3745-54-101

Within 45 days after receiving approval of the CMI, the Permittee must provide financial assurance in the amount necessary to implement the corrective measure(s) as required by OAC Rule 3745-54-101 (B) and (C).

E.10 Current Corrective Measures

The following Corrective Measures are a culmination of activities conducted under the PBA Agreement between the U.S.EPA and the Permittee, rather than through a more conventional CMS/CMI process. The Permittee must implement corrective measures as described below. A table of the schedule for deliverable documents is included at the end of Module E.

(a) The Permittee shall initiate entering into an Environmental Covenant with Ohio EPA pursuant to Ohio Revised Code Sections 5301.80 through 5301.92 within one year after the issuance of this Permit Renewal/Modification. The Environmental Covenant will restrict some portions of the property to industrial use. Other non-residential reasonable anticipated uses may also be considered, such as commerce, agriculture and recreation, for portions of the Facility. This restriction will run with the land and will be binding upon all future Facility owners should the Facility be transferred. The Environmental Covenant will include a legal description of the subject Facility, identifying the contaminated areas and describe acceptable and unacceptable land uses. The Permittee shall submit a survey plat and legal description with the Environmental Covenant, specifying the areas of the facility to be restricted, and indicating the anticipated future use for each parcel. Ohio EPA will monitor the Facility owner's adherence to the Environmental Covenant to ensure continued protection of human health and the environment. The types of limitations for this Facility may include:

(i) Industrial land use limitations. The Facility shall not be used for residential, commercial (other than those associated with and incidental to industrial operations) or agricultural activities, but may be used for certain industrial activities. The term "residential activities" shall include, but not be limited to, the following:

(A) Single and multi-family dwelling and rental units;
(B) Day care centers and preschools;
(C) Hotels and motels;
(D) Educational (except as a part of industrial activities within the Facility) and religious facilities;
(E) Restaurants and other food and beverage services (except as a part of industrial activities within the Facility);
(F) Entertainment and recreational facilities (except as a part of industrial activities within the Facility);
(G) Hospitals and other extended care medical facilities (except as a part of industrial activities within the Facility); and
(H) Transient or other residential facilities.

The term "industrial activities" includes manufacturing, processing operations and office and warehouse use, including but not limited to production, storage and parking/driveway use.

(ii) Agricultural land use limitations. The Facility shall not be used for residential or commercial activities, but may be used for certain

agricultural activities, such as growing crops, fruit production, or animal grazing, to be determined on a case-by-case basis, in consensus with the Facility.

(iii) The Facility may only be used for certain commercial activities, to be determined on a case-by-case basis, in consensus with the Facility.

(iv) The Facility may only be used for certain recreational activities, such as baseball or soccer fields, to be determined on a case-by-case basis, in consensus with the Facility.

(v) Prohibit the extraction of ground water for any purpose other than monitoring, disposal at the waste water treatment plant, or pursuant to a ground water remedial action on designated portions of the Facility.

CATEGORY 2: REMEDY CONSTRUCTION COMPLETE WITH LONG-TERM OPERATION AND MAINTENANCE

(b) Lower Hudson Run Surface Water Focus Area

Periodic inspections, particularly after major storm events, will be needed for the low head dams, as well as a plan for repairing the dams if they are damaged.

The Permittee shall prepare and submit an Inspection and Maintenance Plan (IMP) within one year after the issuance of this permit renewal.

(i) Within 45 days of receipt of any Ohio EPA comments on the IMP, the Permittee must submit either an amended or new plan that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended IMP or new IMP. The IMP, as approved or as modified and approved, shall be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved IMP must be authorized by Ohio EPA.

(c) Hudson Run Reservoir

The sediment cap is the remedy in place for this focus area. However, periodic inspection, particularly after major storm events, will be needed, as well as a plan for repairing the submarine cap if it is damaged.

The Permittee shall prepare and submit an Inspection and Maintenance Plan (IMP) within one year following the effective date of this permit renewal.

(i) Within 45 days of receipt of any Ohio EPA comments on the IMP, the Permittee must submit either an amended or new plan that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended IMP or new IMP. The IMP, as approved or as modified and approved, shall be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved IMP must be authorized by Ohio EPA.

(d) Contractors' Landfill

The Permittee shall prepare and submit an Operation and Maintenance (O&M) Plan for the cover system and the southern (base-of highwall) run-on diversion system within one year following the effective date of this permit renewal.

(i) Within 45 days of receipt of any Ohio EPA comments on the O&M plan, the Permittee must submit either an amended or new plan that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended O&M plan or new O&M plan. The O&M plan, as approved or as modified and approved, shall be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved O&M plan must be authorized by Ohio EPA.

The Permittee shall implement the work plan entitled *Contractors' Landfill Infiltration Control Performance Measures and Post Construction Monitoring*, approved April 11, 2008 by Ohio EPA with the concurrence of USEPA.

The Permittee shall continue to monitor the natural attenuation of pollutants in ground water, and ensure that the spatial extent of contamination is not

expanding. This would be a part of a larger, periodic, Facility-wide ground water monitoring program. The Permittee shall continue implementation of the existing Facility-wide ground water monitoring plan.

(e) Main Plant Soils Focus Area

The Permittee shall continue implementation of the Barberton Excavation Plan during invasive activities such as construction or utility repairs. The plan addresses preventing unacceptable exposures to workers conducting invasive activities at the Facility. The plan also addresses the safe and legal management of excavated contaminated soils.

Direct contact exposures to on-site personnel at the North and South Plants are currently limited by the presence of permanent structures and pavement over contaminated and potentially contaminated soils. The permittee shall maintain these permanent structures and paved areas over contamination in a manner consistent with preventing direct contact exposures to personnel engaged in routine, non-invasive activities at the North and South Plants.

Demolition and new construction addressed by the Barberton Excavation Plan shall be completed, at the end of the demolition/construction activities, in a manner which prevents direct contact of non-invasive workers with contaminated soils.

(f) Sand Quarry WMUs 84, 87, 88, 89

The Permittee shall address potentially affected soils on a Facility-wide basis, as part of the Main Plant Soils Focus Area. (Unit 83 is addressed in Module C.)

(g) WMU's #'s 9, 61, 66, 81, and 90.

The Permittee shall address affected soils on a Facility-wide basis, as part of the Main Plant Soils Focus Area.

(h) Main Plant Ground Water Focus Area

Surface paving, utility repair, and storm water management improvements were implemented as remedies to limit vertical infiltration. However, periodic inspection and maintenance of these remedies is required. The Permittee shall prepare and submit an Inspection and Maintenance Plan (IMP) within one year following the effective date of this permit renewal.

(i) Within 45 days of receipt of any Ohio EPA comments on the IMP, the Permittee must submit either an amended or new plan that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended IMP or new IMP. The IMP, as approved or as modified and approved, shall be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved IMP must be authorized by Ohio EPA.

The Permittee shall continue to monitor the natural attenuation of pollutants in ground water, and ensure that the spatial extent of contamination is not expanding. This would be a part of a larger, periodic, Facility-wide ground water monitoring program. The Permittee shall continue implementation of, the July 2003 Sitewide Groundwater Monitoring Program Plan (SWGWMP) and sampling and analysis procedures as documented in the March 2004 Sitewide Groundwater Monitoring Program Quality Assurance Project Procedures Addendum (QAPPA), and subsequent approved modifications.

Periodically the Permittee shall evaluate potential biological and chemical enhancements to natural attenuation in areas where the ground water plume may begin to migrate downgradient, or natural attenuation is stalled or not proceeding at an acceptable rate. The Permittee shall prepare a ground water attenuation enhancement feasibility study and report its findings within one year following the effective date of the permit renewal, and implement those enhancements which are considered beneficial. The Permittee shall initiate additional ground water attenuation enhancement feasibility studies upon notification by Ohio EPA of the requirement to conduct such.

(i) Lime Lakes #3 through #5

The Permittee shall continue O& M and GWM requirements for each Lime Lake.

The Permittee shall investigate the feasibility of improving the Qualitative Habitat Evaluation Index (QHEI) along the adjacent reach of Tuscarawas River. The Permittee will submit a report, and a work plan if improvements are feasible, by the end of three years of the effective date of this permit renewal.

(j) Tuscarawas River Dredge Spoils

The Permittee shall prepare and submit an Inspection and Maintenance Plan (IMP) for the existing security and river bank erosion control measures by the end of the first year following the effective date of this permit renewal.

(i) Within 45 days of receipt of any Ohio EPA comments on the IMP, the Permittee must submit either an amended or new plan that incorporates Ohio EPA's comments.

(ii) Ohio EPA will approve or modify and approve, in writing, the amended IMP or new IMP. The IMP, as approved or as modified and approved, shall be incorporated into this permit and become an enforceable condition of this permit. Subsequent changes to the approved IMP must be authorized by Ohio EPA.

The Permittee will conduct a scoping level ecological risk assessment per Ohio EPA Guidance to ensure that potential negative effects to sensitive receptor species are within acceptable boundaries. The remedies for this unit may need to be re-evaluated if the risk assessment documents unacceptable exposures. A report on these assessments shall be submitted by the end of three years of the effective date of this permit renewal.

CATEGORY 3: ONGOING REMEDY EVALUATION AND/OR IMPLEMENTATION

(k) Lower Hudson Run Sediments Focus Area

There is remaining contaminated sediment at higher concentrations which are primarily viewed as a potential contamination source that could affect surface water quality in the LHR or farther downstream. The Permittee shall be solely responsible for designing and implementing the corrective measure (focused dredging of sediment that has accumulated at the Low Head Impoundment as well as the sediment mounds). The Permittee will inform Ohio EPA five business days prior to beginning work, so that Ohio EPA can provide on-site oversight. The contaminated material must be disposed off-site. Water levels in LHR may be lowered temporarily to facilitate sediment removal. Water that may be generated during sediment removal actions or by solids dewatering must be treated on-site at the IM-II Plant. This will be accomplished according to a workplan and schedule developed by the Permittee and provided to Ohio EPA by the end of the first year following the effective date of this permit renewal. The Permittee shall use good faith efforts to reach consensus with Ohio EPA on corrective measures design and implementation issues.

PPG must submit a remedy construction completion report within 90 days after the corrective measures are implemented.

(l) Tuscarawas River and Wolf Creek

1) The Permittee shall evaluate the riparian zone, specifically the Qualitative Habitat Evaluation Index for both streams, and determine if habitat enhancements would be feasible and beneficial. The Permittee shall submit a report of these findings and, if enhancements are feasible, a work plan to Ohio EPA for approval within three years from the issuance of this permit renewal.

2) The Permittee shall develop a work plan to determine if sediments in Wolf Creek are contaminated with volatile organic compounds (per SW-846 Method 8260B), to Ohio EPA by the end of one year following the effective date of this permit renewal. The Permittee shall implement the plan following approval by the Ohio EPA, and submit a report to Ohio EPA upon completion, no later than three years following the effective date of this permit renewal. This report shall contain an evaluation of the need for remedial actions. If corrective measures are indicated, the Permittee shall develop and implement an Agency approved remedial action plan following Permit Condition E.8.

3) The Permittee shall evaluate the need for further remedial action following the completion of the Total Maximum Daily Loads for the Tuscarawas River Watershed process, and submit a report to Ohio EPA, by the end of three years following the effective date of this permit renewal, or the final issuance of the TMDL, whichever comes last. If corrective measures are indicated, the Permittee will follow Permit Condition E.8.

4) Determining the effectiveness of the remedies:

(a) Tuscarawas River. The 2006 and 2001 surveys of the Tuscarawas River between Long Lake and Chippewa Creek (RM 114.1-104.3) were performed to establish baseline conditions in this river reach. Following implementation of any required remedies and feasible enhancements, the permittee shall re-investigate this portion of the stream using methods which will enable direct comparison to the baseline studies. This study shall include an evaluation of the post-enhancement Qualitative Habitat Evaluation Index. Following completion and

evaluation of the studies, the permittee shall submit a report to Ohio EPA for approval. The timing of this re-evaluation will be negotiated based on the nature of the remedies and/ or enhancements, e.g., an enhancement which takes a significant time to develop will not require a re-evaluation until after the stream is likely to be affected by the enhancement.

(b) Wolf Creek. A survey of the lower mile of Wolf Creek was performed by Ohio EPA in 1993 (report dated July 30, 1994). Using the results of this survey as a baseline, the permittee shall evaluate post-enhancement conditions in Wolf Creek using the methods employed for the 1993 study. The permittee will also evaluate the post-enhancement (or remedy if required) Qualitative Habitat Evaluation Index for comparison to the survey required in permit Condition E.I.1. Following completion and evaluation of the studies, the permittee shall submit a report to Ohio EPA for approval. The timing of this re-evaluation will be negotiated based on the nature of the enhancements, e.g., an enhancement which takes a significant time to develop will not require a re-evaluation until after the stream is likely to be affected by the enhancement.

(m) Impounding Reservoir

The Permittee shall re-evaluate existing ecological and human health risk assessment data to ensure that potential negative affects to sensitive receptors are within acceptable boundaries. The remedies for this unit may need to be re-evaluated if the risk assessments document unacceptable exposures. A report on these assessments shall be submitted by the end of four years following the effective date of this permit renewal.

(n) Lime Lake #1

The permittee shall pursue an Environmental Covenant per Section E.10. (a) of this permit.

The Permittee shall continue to operate and maintain the existing leachate collection system, until and unless such time as a remedy or pilot study workplan is approved which does not require continued operation of this Interim Measure. The Permittee shall maintain and update the existing Operation and Maintenance Plan as necessary to ensure optimal operation of the system. An updated Operation and Maintenance Plan shall be

submitted for approval by the end of one year following the effective date of this permit renewal.

The Permittee shall continue to monitor the natural attenuation of pollutants in ground water, and ensure that the spatial extent of contamination is not expanding. This would be a part of a larger, periodic, facility-wide ground water monitoring program. The Permittee shall continue implementation of the July 2003 SWGWMP and sampling and analysis procedures as documented in the March 2004 Sitewide Groundwater Monitoring Program QAPPA, and subsequent approved modifications, per Module Z of this permit.

The Permittee shall investigate the feasibility of improving the Qualitative Habitat Evaluation Index (QHEI) along the adjacent reach of Wolf Creek per Section E.10. (I) (1) of this permit.

The Permittee shall maintain the low head dams in Lower Hudson Run to prevent the unacceptable releases to surface water from this unit per Section E.10 (b) of this permit.

By the end of one year following the effective date of this permit renewal, the permittee shall:

- Complete a review of existing studies and data for this WMU
- Establish performance based goals, ***for example***, meet Ohio Water Quality Standards, minimize leachate generation or release, enhance run-on/run-off control, maximize unit stability, enhance habitat quality
- Propose a final remedy
- Propose an appropriate cover design
- Propose (if deemed appropriate) a pilot study to evaluate the effects of discontinuing operation of the leachate collection system, including a detailed evaluation of the potential for negative impacts to the environment during the test period and the means to monitor and mitigate such impacts
- Submit reports and workplans for these tasks to Ohio EPA for consensus and approval

By the end of two years following the effective date of this permit renewal, the permittee shall:

- Initiate the pilot study of shut down of the leachate collection system, if approved

- Monitor the implementation of the pilot study per the approved workplan

- Implement any other investigations identified by PPG to provide information relevant to the design of a final remedy

By the end of four years following the effective date of this permit renewal, the permittee shall:

- Submit a report of the pilot study implementation, and any other investigations undertaken, to Ohio EPA

- Complete the final remedy design, and submit an implementation workplan to Ohio EPA for approval

- Submit a schedule for remedy implementation to Ohio EPA

- Begin implementation of the final remedy

By the end of five years following the date of this permit renewal, the permittee shall complete construction of the final remedy. PPG may opt to implement any of these tasks earlier than called for in this permit, at its discretion.

PPG must submit a remedy construction completion report within 90 days after the final remedy is constructed.

(o) Lime Lake #2

The permittee shall pursue an Environmental Covenant per Section E.10. (a) of this permit.

The Permittee shall continue to operate and maintain the existing leachate collection system, until and unless such time as a remedy or pilot study workplan is approved which does not require continued operation of this Interim Measure. The Permittee shall maintain and update the existing Operation and Maintenance Plan as necessary to ensure optimal operation of the system. An updated Operation and Maintenance Plan shall be submitted for approval by the end of one year following the effective date of this permit renewal.

The Permittee shall continue to monitor the natural attenuation of pollutants in ground water, and ensure that the spatial extent of contamination is not

expanding. This would be a part of a larger, periodic, facility-wide ground water monitoring program. The Permittee shall continue implementation of the July 2003 SWGWMP and sampling and analysis procedures as documented in the March 2004 Sitewide Groundwater Monitoring Program QAPPA, and subsequent approved modifications, per Module Z of this permit.

By the end of two years following the effective date of this permit renewal, the permittee shall:

- Complete a review of existing studies and data for this WMU
- Establish performance based goals, ***for example*** meet Ohio Water Quality Standards, minimize leachate generation or release, enhance run-on/run-off control, maximize unit stability, enhance habit quality
- Develop conceptual corrective measures for dense non-aqueous phase liquids present in the WMU

- Initiate any required pilot studies and other investigations identified by PPG to provide information relevant to the design of a final remedy.

- Submit reports and workplans for these tasks to Ohio EPA for consensus and approval

By the end of three years following the date of this permit renewal, the permittee shall:

- Submit a report of the pilot study implementation, and any other investigations undertaken, to Ohio EPA for approval
- Propose a final remedy
- Propose an appropriate cover design
- Finalize DNAPL corrective measure(s) conceptual design
- Submit reports and workplans for these tasks to Ohio EPA for consensus and approval

By the end of five years following the effective date of this permit renewal, the permittee shall:

- Complete the final remedy design, and submit an implementation workplan to Ohio EPA for approval
- Submit a schedule for remedy implementation to Ohio EPA
- It is understood that the remedy implementation may require a staged approach due to the complex and interrelated issues of infiltration

control, leachate collection, DNAPL recovery, and the possibility of DNAPL mobilization

Permittee shall implement the final remedy following Ohio EPA's approval of the final remedy design and implementation workplan such that the remedy construction is completed by the end of the permit period. PPG may opt to implement any of these tasks earlier than called for in this permit, at its discretion.

PPG must submit a remedy construction completion report within 90 days after the final remedy is constructed.

(p) Lime Lake #6

The on-going reclamation of Lime Lake #6 is a part of the voluntary reclamation program applicable to Lime Lakes #3 thru #6 and is an element of the overall corrective action remedy for the waste management unit. The reclamation is currently being implemented and monitored pursuant to an approved January 2000 Sludge Management Plan and Permits to Install issued by Ohio EPA's Division of Surface Water. For as long as Permittee conducts reclamation and remains in substantial compliance with the requirements of the Division of Surface Water's Sludge Management Plan and Permits to Install, the Corrective Action obligations for this component of the remedy for Lime Lake #6 are met.

The Permittee shall investigate the feasibility of improving the Qualitative Habitat Evaluation Index (QHEI) along the adjacent reach of Tuscarawas River. The Permittee will submit a report, and a work plan if improvements are feasible, by the end of three years of the effective date of this permit renewal.

If PPG fails to complete the reclamation by the date nine (9) years after the effective date of this permit or the reclamation and other measures do not achieve Corrective Action goals and requirements, the remedy and remedial goals will be re-evaluated per Subsection E.8. of this permit.

PPG must submit a remedy construction completion report within 90 days after the final remedy is constructed.

(q) Summary of Facility-Wide Remedies and Obligations

The following summarizes remedies which apply to the facility as a whole, which are detailed in the relevant sub-sections of this permit.

The Permittee shall continue the inspection and maintenance of the Public Access Interim Measure. The Permittee may review the need for continued inspection and maintenance of the Public Access Interim Measure. There may be justification to discontinue some or all of this Interim Measure.

The Permittee shall address affected soils on a Facility-wide basis, through continued and on-going implementation of the Barberton Excavation Plan.

The Permittee shall restrict future use of the Facility, where appropriate, to specific land uses, and restrict the extraction and use of ground water in specific areas of the Facility, through an Environmental Covenant per Ohio Revised Code 5301.80 through 5301.92. (See § E.10. (a).)

The Permittee shall continue implementation of the Facility-wide ground water monitoring plan. (See Module Z)

All operations and maintenance plans, inspection and maintenance plans, soil management plans (excavation plans), ground water monitoring plans, and health and safety plans mentioned in this permit are hereby incorporated by reference into this permit.

Beginning with the month following the effective date of this permit renewal, PPG shall provide Ohio EPA with progress reports every other month on or before the tenth day of the month for which it is required. The progress reports shall conform to the format of the current reports required under the U.S. EPA Administrative Order on Consent.

(r) Financial Assurance
OAC Rule 3745-54-101

Within 18 months of the issuance of this Permit Renewal, the Permittee must provide financial assurance in the amount necessary to implement the corrective measures of Permit Condition E.10 as required by OAC Rule 3745-54-101 (B) and (C).

E.11 Newly Identified WMUs or Releases
OAC Rule 3745-54-101

(a) General Information

The Permittee must submit to Ohio EPA, within 30 days of discovery, the following information regarding any new WMU identified at the Facility by

Ohio EPA or the Permittee:

(i) The location of the unit on the site topographic map;
(ii) Designation of the type of unit;

(iii) General dimensions and structural description (supply any available drawings);

(iv) When the unit was operated; and

(v) Specification of all waste(s) that have been managed at the unit.

(b) Release Information

The Permittee must submit to Ohio EPA, within 30 days of discovery, all available information pertaining to any release of hazardous waste(s) or hazardous constituent(s) from any new or existing WMU.

E.12 Corrective Action for Newly Identified WMUs and Releases
OAC Rule 3745-54-101

If Ohio EPA determines that a RFI is required for newly identified WMUs, the Permittee must submit a written RFI Workplan to Ohio EPA upon a time frame established in written notification by Ohio EPA in accordance with Permit Condition E.5. This determination will be made based on the information submitted in accordance with Permit Condition E.11.

Further investigations or corrective measures will be established by Ohio EPA.

Permittee must make such submittal in accordance with time frames established by Ohio EPA.

E.13 Completion of Corrective Action
OAC Rule 3745-54-101

After completing Corrective Action as necessary to protect human health and the environment for all releases of hazardous wastes or hazardous constituents from any WMUs at the Facility, the Permittee shall submit a Corrective Measures Completion of Work (CMCW) Report. The CMCW Report shall document that Corrective Action construction is complete, cleanup objectives and standards have been met, and any releases of hazardous waste or constituents no longer pose an unacceptable risk to human health and the environment. The CMCW Report may be submitted for any part of the Facility for which corrective measures are complete, or for the entire Facility. The CMCW Report must be submitted as a request for permit modification pursuant to OAC Rule 3745-50-51.

E.14 Documents Requiring Professional Engineer Stamp
ORC Section 4733.01

Preparation of the following Corrective Action documents constitutes the "practice of engineering" as defined by ORC Section 4733.01:

Final Interim Measures Report

Corrective Measures Final Design

Corrective Measures Construction Completion Report

Corrective Measures Attainment of Groundwater Performance Standards Report

Corrective Measures Completion of Work Report

As such, the Permittee must ensure that these documents, as submitted to Ohio EPA, are stamped by a Professional Engineer licensed to practice in the State of Ohio.

PPG Barberton RCRA Permit

Module E Section E.10 Current Corrective Measures - Schedule of Tasks and Deliverables

Task / Deliverable	Schedule of Submittal Dates (End of year X following permit issuance)		Subsection of Permit Section E.10	
Initiate entering Environmental Covenant	1		a	
Hudson Run Reservoir sediment cap inspection and maintenance plan	1	resubmit within 45 days of OEPA comments	c	
Lower Hudson Run low head dam inspection and maintenance plan	1	resubmit within 45 days of OEPA comments	b & n	
Lower Hudson Run sediment removal workplan and schedule	1		k	
Tuscarawas River and Wolf Creek riparian zone and QHEI evaluation report and work plan	3	If corrective measures are indicated, enter Section E.8.	l (1) & n	
Wolf Creek work plan for sediment evaluation	1		l (2)	
Implement Wolf Creek work plan for sediment evaluation and submit report	3	If corrective measures are indicated, enter Section E.8.	l (2)	

Tuscarawas River TMD evaluation and report	3	If corrective measures are indicated, enter Section E.8.	I (3)	
Tuscarawas River, Hudson Run and Wolf Creek Re-Evaluation of Remedy Performance versus base-line	4		I (4)	See also Subsection j
North and South Plants infiltration control inspection and maintenance plan	1	resubmit within 45 days of OEPA comments	h	
Groundwater attenuation enhancement FS and report, and implementation schedule if corrective measures are indicated	1	Implement if corrective measures are indicated	h	Also see Section Z.8. (i) (F) (G)
Interim Measure II operation and maintenance Plan	1		n & o	
Lime Lake 1:Submit reports and workplans for these tasks: review existing information, propose performance based goals, propose final remedy, propose a cover design, propose IM II shut-down pilot if appropriate	1		n	
Lime Lake 1: (Implement pilot study if approved, monitor pilot study, implement other investigations deemed necessary) No specific deliverables.	2		n	

Lime Lake 1: Submit pilot study and additional investigation reports, complete final remedy design and submit implementation workplan, submit remedy implementation schedule	3		n	
Lime Lake 1: Complete construction of final remedy.	5		n	
Lime Lake 2: Submit reports and workplans for these tasks: review existing information, propose performance based goals, propose conceptual corrective measures for DNAPL	1		o	
Lime Lake 2: Submit reports and workplans for these tasks: propose final remedy, propose a cover design, finalize conceptual corrective measures for DNAPL	2		o	
Lime Lake 2: complete final remedy design and submit implementation workplan, submit remedy implementation schedule	3		o	
Lime Lake 2: Complete construction of final remedy.	5		o	
Lime Lakes 3 - 6 Tuscarawas River qualitative habitat evaluation, report, and possible work plan	3	If corrective measures are indicated, enter Section E.8.	i	

Contractors' Landfill operation and maintenance plan	1	resubmit within 45 days of OEPA comments	d	
Tuscarawas River Dredge Spoils inspection and maintenance plan	1	resubmit within 45 days of OEPA comments	j	
Tuscarawas River Dredge Spoils Ecological Risk Assessment and report	3		j & l (4)	
Impounding Reservoir revaluation of existing human health and ecological risk assessments	4		m	
Progress reporting	1 month	every other month thereafter	p	

MODULE F THROUGH MODULE Y - RESERVED

MODULE Z - INTEGRATED GROUND WATER MONITORING
OAC Rule 3745-54-101

The PPG Barberton facility historically covered approximately 3,250 acres of land in Summit County within the cities of Barberton, New Franklin, and Norton. The surrounding land uses include residential, industrial/commercial, agricultural, and forest/field/wetlands areas. The uppermost bedrock in the area consists of lower Pennsylvanian Age sandstones and shales of the Sharon Conglomerate, the lowest unit of the Pottsville Group. Below the Sharon Conglomerate lie Mississippian Age shales. These shales prevent or reduce the movement of ground water and contaminants from the Sharon Conglomerate into the underlying bedrock units. Erosion and glaciation has created deep buried valleys in the bedrock units. The area experienced a series of advances of continental glaciers during the Pleistocene Epoch. The final glacial advance occurred during the Wisconsin Stage. In its retreat, the glacier deposited a layer (10 to 30 feet thick) of sandy, silty till over the bedrock highs. It also filled the deep bedrock valleys with a heterogeneous mixture of tills and outwash deposits of silts, clays, sands and gravel on the valley floors overlain in some areas by lacustrine silts and clays.

Ground water occurs within the glacial deposits and in the Sharon Conglomerate. Shale layers within the Sharon Conglomerate create perched zones of ground water. Some of the perched ground water flows laterally toward outcrop areas at the edges of the bedrock forming local seeps and springs. The flow of ground water below the perched zones of the Sharon Conglomerate is mainly laterally toward the bedrock valleys filled with glacial outwash. Monitoring wells at the facility monitor several ground water zones including shallow bedrock, shallow glacial outwash, the base of the Sharon Conglomerate; the mid glacial outwash; the deep glacial outwash in the valleys; the source areas (leachate wells); the perched bedrock; the perched zones in the glacial outwash/fill; and other miscellaneous areas in the Sharon and sub-Sharon bedrock. In general, the ground water across the facility at all depths above the shale confining layer has been impacted by various facility specific contaminants of concern including organic chemicals and metals. The main contaminants of concern in the ground water include tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, vinyl chloride, hexachlorobenzene, chloride, dissolved solids, barium, calcium, and sodium. Source areas for the ground water contamination include the Lime Lakes, the production areas (e.g., North and South Plants), and the former waste disposal areas (e.g., Contractors' Landfill).

With respect to surface water, PPG is located within the Upper Tuscarawas River watershed. Streams that pass through or directly adjacent to the PPG facility include the Tuscarawas River plus two of its tributaries, Wolf Creek and Hudson Run. Based upon water level elevations in nested wells in the glacial outwash materials, it was determined that the ground water generally has an upward vertical flow direction in the vicinity of the streams. Therefore, it is assumed that the streams in the vicinity of the facility are mainly gaining streams with the ground water generally discharging into the surface water bodies.

PPG has completed various investigative and remedial activities at the site since the 1980s including an RFI/CMS, a sitewide human health risk assessment, and various interim measures. As a part of these projects, PPG has installed over 500 monitoring wells to monitor ground water at the multiple waste management units at the facility. Currently approximately 400 of these wells still exist at the site. The available ground water data collected periodically since the 1980s indicate that the facility has affected the quality of ground water at the site and that the documented ground water contamination plumes are intermingled and, thus, unit specific ground water monitoring is not practical. Appendix IX Volatile Organic Compounds and Semi-Volatile Organic Compounds, inorganic compounds, and Target Analyte List metals have been analyzed numerous times during the historic sampling of the site monitoring wells.

Based upon information gathered and processed during the RFI/CMS and the human health risk assessment, it was determined that the ground water exposure pathway is incomplete. This conclusion is based mainly upon the fact that current domestic wells and areas which may be developed and require domestic wells are upgradient of the source areas or are separated from the source areas by an hydraulic divide such as the Tuscarawas River, Wolf Creek, and Hudson Run. The ultimate receptors of the contaminated ground water are the surface water bodies located in or running through the PPG property. In addition, in December 2001, it was determined through an indicator CA-725 that exposures to human health were currently under control. In January 2007, it was determined through an indicator CA-750 that the migration of contaminated ground water is currently under control.

In August 2001, PPG and U. S. EPA entered into a Performance Based Corrective Action Agreement (PBA). Under the PBA, a long term sitewide ground water monitoring program was approved in September 2003. Details of the monitoring program are documented in the July 2003 Sitewide Groundwater Monitoring Program Plan (SWGWMP) and sampling and analysis procedures are documented in the March 2004 Sitewide Groundwater Monitoring Program Quality Assurance Project Procedures Addendum (QAPPA). The original ground water monitoring program included quarterly sampling of 25 monitoring wells and semi-annual sampling of an additional 56 wells. Eleven additional wells were included for static water level measurements, only. The first year of monitoring began in December 2003. During the first year of monitoring, samples from wells in the area around Lime Lake 2 also were analyzed for gross alpha, gross beta, and organochlorine compounds including pesticides and PCBs. The expanded list of analytes for LL-2 was part of a suspected buried drum investigation at that unit, only. In 2005 and 2006, the monitoring wells were sampled on an annual basis in July of each year. In 2007, PPG proposed moving to a triennial sampling program because the contaminant and MNA parameter concentrations are relatively stable. It was agreed that an evaluation of the data

from each subsequent sampling event will be used to determine if triennial sampling is still appropriate or if a different sampling frequency is indicated.

The purpose of the long term sitewide ground water monitoring program is to evaluate the effectiveness of intrinsic bioremediation and monitored natural attenuation (MNA) at reducing the concentrations of contaminants in the ground water and to ensure that the spatial extent of the ground water contamination is not expanding. The rationale for monitoring well selection included:

- Wells were selected to provide a manageable sitewide ground water monitoring network. Unit specific sampling was not included. If required, additional remedy specific ground water sampling will be conducted as part of this or another program.

- Wells were selected at locations in or downgradient of the source areas to allow monitoring of intrinsic bioremediation/MNA processes over the long term and over a large area. Concentrations within source areas (e.g., North and South Plants, Lime Lake 2) are not expected to change appreciably in the short term, as long as free product remains present.

- Monitoring is focused on the shallow ground water since all ground water flows up through this zone prior to discharging into the local streams. However, wells are also included that monitor the deeper ground water in specific areas.

- Monitoring wells included in the program are all in or downgradient of the source areas. Because site specific background values for inorganic constituents were established statistically for both the bedrock and outwash aquifers during the RFI, no background sampling is performed as part of this program.

The original sitewide ground water monitoring program has been revised several times. These revisions include:

- Cyanide was added as an analyte for LL-2 and Contractors Landfill, only.

- Semi-volatile analyses were reduced to HCB, only. This applies to selected wells in the North and South plants and Lime Lake 2.

- Well NP-10 was found to be damaged. It was abandoned and replaced with a new well, NP-10*.

- Wells LL2-06B, LL2-06B-V2, and LL2-15A were replaced in the monitoring network by LL2-02B*, LL2-03B* and LL2-06B*-V1. The original wells had integrity problems and were abandoned.

- The Target Analyte List metals analyzed was reduced to arsenic, manganese, nickel, lead, copper, antimony, and thallium.

- Monitoring well TRN-02C was removed from the monitoring network because of an obstruction in the casing that hindered sampling activities. A replacement well was not added to the monitoring network.

- Sampling frequency was changed to triennial beginning with the sampling event conducted in 2009. Triennial sampling is sufficient at this time because concentrations of contaminants and MNA indicators are not changing rapidly. However, sampling frequency will be re-evaluated when each current sampling event data are evaluated.

- Well CLF-16B was added to the monitoring network as part of the post-construction infiltration control monitoring at the Contractors Landfill.

This module presents permit conditions addressing the requirements for an integrated ground water monitoring program at the PPG facility. Ground water contamination plumes from a number of units regulated under OAC Rule 3745-54-101 have comingled at the site. The units currently undergoing corrective actions in accordance with OAC 3745-54-101 include waste management units that closed prior to 1980 and manufacturing units not requiring hazardous waste permitting. All plumes are the result of pre-1980 activities at the facility. The only unit currently requiring a permit is a hazardous waste storage building (HWSB). This unit does not require ground water monitoring in accordance with OAC 3745-54-90 through 100 because it is completely enclosed and has secondary containment.

Because the contaminant plumes from the various units undergoing corrective actions are intermingled, it is not practical to separate them for ground water monitoring purposes. A more efficient multifaceted approach is a sitewide ground water monitoring program in accordance with OAC 3745-54-101, the July 2003 Sitewide Ground Water Monitoring Program Plan as modified by subsequent correspondence between PPG and U. S. EPA/Ohio EPA, and the March 2004 Sitewide Groundwater Monitoring Program Quality Assurance Project Procedures Addendum (QAPPA). This combined approach is hereafter referred to as the Integrated Ground Water Monitoring Program or IGWMP.

Z.1. Applicability
OAC Rule 3745-54-101

(a) The units currently undergoing corrective action in accordance with OAC 3745-54-101 include waste management units that closed prior to 1980 and manufacturing units not requiring hazardous waste permitting. All plumes are the result of pre-1980 activities at the facility. The only unit currently requiring a permit is a hazardous waste storage building (HWSB). This unit does not require ground water monitoring in accordance with OAC 3745-54-90 through 100 because it is completely enclosed and also has secondary containment. The Permittee must comply with the applicable requirements in OAC Rule 3745-54-101 and institute corrective action as necessary to protect human health and the environment for all releases of hazardous wastes or constituents from any waste management unit/area at the facility, regardless of the time at which waste was placed in such unit/area for the following units/areas:

Main Plant Area Ground Water including:
- Contractors Landfill (CLF)
- North Plant (NP)
- South Plant (SP)
- Lime Lake 1 (LL-1)
- Lime Lake 2 (LL-2)
- Former Sand Quarry (SQ)
- Tuscarawas River North (TRN)

Southern Facility Ground Water including:
- Lime Lakes 3 through 6 (LL-3 through LL-6)
- Tuscarawas River South (TRS)

These units/areas have previously been regulated under a Performance Based Corrective Actions Agreement that was entered into by PPG and U.S. EPA with Ohio EPA concurrence in August 2001. The ground water monitoring at these units has been in accordance with the Performance Based Corrective Action Agreement Sitewide Groundwater Monitoring Program Plan dated July 2003.

The Performance Based Corrective Action Agreement Sitewide Groundwater Monitoring Program Plan dated July 2003, and any subsequent modifications

approved by the Ohio EPA (and those modifications approved by USEPA prior to termination of the Administrative Orders on Consent) is hereby incorporated by reference as a permit condition.

(b) Reserved.

(c) The owner or operator must implement corrective actions beyond the facility property boundary, where necessary, to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the director that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such actions. The owner/operator is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis. Assurances of financial responsibility for such corrective action must be provided.

Z. 2. Ground Water Remediation Standard (GWRS)

Based upon the work done during the RFI/CMS, the Human and Ecological Risk Assessments, the CA-725 and CA-750, and a 2006 assessment of the Tuscarawas River, the ground water contamination is not moving offsite and the ground water contaminant plumes are not expanding. The risk assessment concluded that the ground water pathway is incomplete because the site ground water discharges to various surface water bodies prior to the surface water exiting the site. Chlorinated solvents were detected in the Tuscarawas River during the 2006 sampling event, but at levels below aquatic life water quality standards and human health drinking water quality standards.[1] The GWRS has been established in this Permit due to hazardous constituents being detected in the ground water. Because the ground water exposure pathway is incomplete, the GWRS are included as remediation goals for the site ground water. In the future, if the GWRS can be met at a particular unit, the Permittee may pursue a clean or risk based 'no further action' for that unit.

(a) List of Hazardous Constituents and Ground Water Clean-up Standards

The hazardous constituents listed in the Appendix to OAC Rule 3745-54-98 detected in the ground water underlying a unit/area and reasonably expected to be contained in or derived from the waste contained in the unit/area to

[1] Hexachlorobenzene was detected at concentrations exceeding human health drinking and non-drinking water standards, but it is believed that this is historical contamination, and not due to a current discharge of ground water to surface water. There is no aquatic life criterion for hexachlorobenzene.

which the GWRS applies and their ground water clean-up standards are listed in the attached Table 1.

In addition to the hazardous constituents listed in Table 1, the Permittee must monitor the following target analytes:

Intrinsic Bioremediation/Natural Attenuation and Field Analytes:

Chloride
TDS
Dissolved methane
Dissolved ethene
Dissolved ethane
Nitrate/nitrite
Total organic carbon (TOC)
pH (field)
Dissolved Oxygen (field)
Oxidation Reduction Potential (Eh, field)
Dissolved ferrous iron (field)

(b) Point of Action: At this time, it appears the ground water is discharging to on-site surface water bodies and, therefore, not leaving the site. If the routine evaluations required by Permit Condition Z-5 indicate that the ground water flow directions have changed and ground water does begin moving off site, then the Permittee will ensure that the GWRS is met at the property boundary throughout the upper most aquifer.

(c) Permit Period

The permit period, during which the GWRS applies, is equal to 10 years. The permit period must begin on the effective date of this permit renewal and must end 10 years after the effective date of this permit renewal. During the permit period the Permittee must continue its sitewide ground water monitoring program. The Permittee shall implement corrective action beyond the facility property boundary, where necessary, to protect human health and the environment.

Z.3. Well Location, Installation, Maintenance, and Removal

(a) The Permittee's ground water monitoring system is documented in the Sitewide Ground Water Monitoring Program Plan as modified by various correspondences between PPG and U. S. EPA and/or Ohio EPA. The uppermost aquifer at the site is comprised of the bedrock units of the Sharon

Conglomerate and the overlying glacial deposits. No background water quality samples will be collected as part of this program. Background water quality for inorganic constituents was determined statistically during the RFI. Samples must:

((i) Represent ground water quality at locations in and downgradient of source areas.

(ii) Demonstrate the effectiveness of intrinsic bioremediation/MNA processes.

(iii) Demonstrate that the spatial extent of ground water contamination is not expanding horizontally or vertically.

(iv) If required, additional remedy specific ground water sampling will be conducted as part of this or another program.

(b) The monitoring system consists of the ground water wells as specified in the Permit Application on Table 2. The locations of these wells are shown on Figures 1 and 2 in the Site Wide Ground Water Monitoring Plan.

(c) Wells included in the sitewide ground water monitoring program and identified in Permit Condition Z.3(b) must be cased in a manner that maintains the integrity of the monitoring well bore hole. The casing must be screened and packed with gravel or sand, where necessary, to enable collection of ground water samples. The annular space above the sampling depth must be sealed to prevent contamination of samples and the ground water.

(d) Removal or replacement of any monitoring well in Permit Condition Z.3(b) will be in accordance with the Appendix to OAC Rule 3745-50-51 permit modification process. Each change must be accompanied by a revised map showing the location of the well removed from and/or added to the monitoring network.

(e) Whenever any of the wells specified in Permit Condition Z.3(b) are replaced, the Permittee must demonstrate to Ohio EPA that the ground water sample quality at the replacement well meets the criteria in Permit Condition Z.3(a) within 60 days of the date of replacement using means appropriate to the reason for replacement.

Z.4. Sampling and Analysis Procedures

(a) The Permittee must implement an IGWMP that complies with the July 2003 Sitewide Ground Water Monitoring Program plan as modified by various correspondences between PPG and U. S. EPA and/or Ohio EPA and includes the procedures in the March 2004 Sitewide Groundwater Monitoring Program Quality Assurance Project Procedures Addendum (QAPPA). The sitewide ground water monitoring program includes consistent sampling and analysis procedures that ensure monitoring results that provide a reliable indication of ground water quality below the facility and are in compliance with this Permit Condition.

(b) The Permittee's IGWMP as per the March 2004 QAPPA includes sampling and analytical methods that are appropriate for ground water sampling and that accurately measure hazardous constituents in ground water samples.

(c) Data validation will be performed in accordance with the Ohio EPA Tier 1 data validation guidance and checklist. In the event that a more extensive validation is required, the Ohio EPA Tier 2 data validation guidance and checklist will be used.

Z.5. Ground Water Surface Elevation

The Permittee must determine the ground water surface elevation at each well identified in Table 2 in Permit Condition Z.3(b) each time ground water is sampled using the methods in the QAPPA.

Z.6. Sampling Frequency

Ground water sampling is currently conducted on a triennial basis. The next sampling event will take place in the summer of 2012.

After each sampling event, the sampling frequency will be evaluated by the Permittee and Ohio EPA to determine if triennial monitoring is still applicable. Sampling frequency may change during the life of the permit with Ohio EPA approval. Samples will be collected from each well listed on Table 2 each time the ground water is sampled, unless the "Rationale for Inclusion" indicates that the well is used for SWL (static water level), only.

The compounds to be sampled and analyzed at each well are documented on Table 2 and include the following:

- Appendix IX Volatile Organic Compounds, selected dissolved Target Analyte List metals (arsenic, manganese, nickel, lead, copper, antimony, and thallium), chloride, pH, TDS, and intrinsic bioremediation/MNA analytes including dissolved gases will be collected from each of the wells during each of the sampling events.

- Hexachlorobenzene samples will be collected from a subset of wells in the LL-2, North Plant, and South Plant areas during each sampling event. These wells are NP-08A, NP-12, NP-16, NP-19A, NP-29, NP-29V1, NP-29V2, LL2-02B*, LL2-03B*, LL2-06B*V1, LL2-14B*, SP-01B, SP-03B, SP10C, and SP-22B.

- Semi-volatile organic compounds, in addition to HCB, have been detected historically in the wells listed in the above bullet. Because the detections of Semi-Volatile Organic Compounds other than HCB have tended to be sporadic, these constituents have been omitted from the sitewide ground water monitoring program since 2005. However, periodic sampling of select wells should be performed to evaluate if the concentrations of these constituents are remaining stable. During the second ground water sampling event conducted during the permit period, samples from the wells listed in the above bullet shall also be analyzed for Appendix IX Semi-Volatile Organic Compounds.

- Organochlorine compounds including pesticides and PCBs historically were detected in some wells from the LL-2 area. During the second ground water monitoring event conducted during the permit period, the Permittee shall analyze samples from the following wells for these compounds: LL2-03B*, LL2-06B*V1, and LL2-14B*.

- Metals other than the selected Target Analyte List metals listed above historically have been detected in the site wells. During the second ground water monitoring event conducted during the permit period, the Permittee shall analyze samples from all the wells for the complete list of dissolved Target Analyte List metals.

The sampling procedures for each constituent are described in the March 2004 QAPPA.

Z.7. Statistical Procedures: Reserved.

Z.8. Operating Record and Reporting
OAC Rules 3745-54-73, 3745-54-75, and 3745-54-77

(a) Operating Record

The Permittee must enter all of the following information obtained in accordance with Permit Module Z. in the operating record:

(i) Ground water monitoring data collected in accordance with this permit including actual levels of constituents.

(ii) The laboratory results from each of the wells and their associated qualifiers including the laboratory sheets for the metals and full volatile and semi-volatile analyses (must include method codes, method detection limits, and units of measurement);

(iii) The date each well was sampled (tabulated);

(iv) The date, time, and identification of all blanks and duplicates;

(v) Any field log documentation of deviation from the procedures in the QAPPA, including documentation of parameter omissions during the sampling event;

(vi) The date the Permittee received the results from the laboratory;

(vii) The date the owner or operator completed their review of the analytical laboratory's verification of the accuracy and precision of the analytical data and determined its quality.

(viii) The results of the data validation review per Permit Condition Z.8(a)(vii) including: report completeness, chain of custody, sample receipt form, signed statement of validity, technical holding time review, data qualifiers including their definitions, dilutions, blank data, spikes, spike recovery %, surrogate recovery, and an explanation of any rejected results;

(ix) Results of all blanks and duplicates (trip, field, equipment, and method);

(x) Results of the field analyses;

(xi) Reserved: The statistical evaluation of the data (must include all computations, results of statistical tests, and date the statistical evaluation was completed);

(xii) Any change in well status (e.g. well integrity issues make the well unsuitable for sampling);

(xiii) Ground water surface elevations taken at the time of sampling each well;

(xiv) Data and results of the determination of the ground water flow rate and direction;

(xv) Evaluation of the efficiency of any corrective actions performed to bring the ground water quality into compliance with the GWRS per Permit Condition Z.2.

(xvi) Evaluation of aquifer conditions with respect to intrinsic bioremediation/MNA including whether the subsurface conditions continue to support reductive dechlorination.

(xvii) Recommendations for biological and/or chemical enhancements to bioremediation/MNA or other remedial options in areas where the ground water plume begins to migrate downgradient.

(b) Required Reporting

(i) Required Reporting

After each sitewide ground water monitoring event, the Permittee must submit a report to the Director within 60 days of receiving all analytical data from the laboratory.

The reports must include, at a minimum, the following:

(A) A summary of the analytical results including tables and text as needed;

(B) Presentation of ground water elevations and flow directions including a ground water flow map(s).

(C) Laboratory QA/QC information needed to perform a Tier 1 Data Validation.

(D) An electronic copy on disk using the Microsoft Excel platform of all ground water and blank data.

(E) A summary of the evaluation of the data including any graphs or maps needed to explain data trends or other conclusions drawn from the data.

(F) An evaluation of the effectiveness of bioremediation/MNA as a corrective action at the site. The facility will present an analysis based on the method found on pages 13 through 16 of Wiedemeier[2], as well as any other evidence the facility may wish to include to support its evaluation.

(G) If necessary, recommendations for biological and/or chemical enhancements to bioremediation/MNA or other remedial options in areas where the ground water plume begins to migrate downgradient or bioremediation/MNA processes are not proceeding at an acceptable rate, based on the screening analysis.

(H) Recommendations for future sampling frequency.

(ii) Required Annual Reporting: Reserved.

(iii) Required Semi-annual Reporting: Reserved.

(iii) Other Reports

The Permittee must comply with any other reporting requirements that become necessary under Permit Condition Z.9 in accordance with the schedules covered by that permit condition and as required by OAC Rule 3745-54-77(C).

[2] Weidermeir *et. al.* Overview of the Technical Protocol for Natural Attenuation of Chlorinated Aliphatic Hydrocarbons in Groundwater Under Development for the Air Force Center for Environmental Excellence. Air Force Center for Environmental Excellence. 1996.

Z.9. Integrated Ground Water Monitoring Program
OAC Rules 3745-54-101

(a) The Permittee is required to establish and implement a ground water corrective action program under OAC Rule 3745-54-101 and must take corrective action, as necessary; to ensure the GWRS as specified in Permit Condition Z.2 are not exceeded at the property boundary should the ground water pathway become complete in the uppermost aquifer.

(b) The Permittee must implement, as necessary, a corrective action program that prevents hazardous constituents specified in Permit Condition Z.2(a) from exceeding their respective clean-up standards specified in Permit Condition Z.2(a) at the downgradient property boundary, and beyond the property boundary during the permit period specified in Permit Condition Z.2(c) by removing the hazardous constituents or by treating them in place.

(c) Reserved

(d) The Permittee must establish and implement a ground water monitoring program to fully characterize the contaminated ground water as required by OAC Rule 3745-50-44(B)(8)(a) and to demonstrate the effectiveness of the corrective action program. Ground water monitoring must be effective in determining compliance with the GWRS in Permit Condition Z.2 and in determining the success of any corrective action program in this condition. The ground water monitoring program must include:

(i) Installation and maintenance of the ground water monitoring system documented in the Sitewide Groundwater Monitoring Program plan and as defined in Permit Condition Z.2(b), and, as necessary to protect human health and the environment, at and beyond the downgradient property boundary. The ground water monitoring system must comply with the requirements in Permit Condition Z.3.

All ground water monitoring wells at the site that are not included in the sitewide ground water monitoring program as defined in Permit Condition Z.2(b) also shall be cased and maintained in a manner that prevents contamination of the ground water. Alternatively, these wells may be properly abandoned following the standards in the Technical Guidance Manual. By the end of the first year following the effective date of this permit renewal, PPG will provide Ohio EPA with an

inventory of all of the monitoring wells still present at the site and a plan that identifies the wells to be maintained and their current conditions, a schedule for implementing any repairs needed to ensure that the integrity of the wells is maintained, documentation of the maintenance procedures to be followed in repairing the wells, and a schedule for regular inspections and maintenance of the wells in the future. The plan also should identify wells that will be abandoned, and should include a schedule for implementing and completing abandonment activities following the procedures included in the Technical Guidance Manual.

(ii) Collection, preservation, and analysis of samples pursuant to Permit Conditions Z.4, Z.5, and Z.6 and the approved QAPPA.

(iii) The Permittee must conduct a sampling program triennially or as mutually agreed upon by PPG and Ohio EPA for each chemical parameter and hazardous constituent specified in Permit Condition Z.2(a) and Z.6. from each well specified in Permit Condition Z.3(b) and Z.6.during the permit period and any extensions due to corrective action implementation.

(iv) Any additional sampling shall be taken at an interval (frequency) that assures, to the greatest extent feasible, that an independent sample is obtained, by reference to the uppermost aquifer's effective porosity, hydraulic conductivity, hydraulic gradient, and the fate and transport characteristics of the potential contaminants.

(v) Wells beyond the property boundary shall be sampled where necessary to protect human health and the environment, unless the Permittee demonstrates to the Agency that, despite the Permittee's best efforts, the Permittee was unable to obtain the necessary permission to undertake such action. The Permittee is not relieved of all responsibility to clean up a release that has migrated beyond the facility boundary where off-site access is denied. On-site measures to address such releases will be determined on a case-by-case basis.

(vi) The Permittee must maintain a record of ground water analytical data as measured for the permit period.

(vii) The Permittee must determine the ground water flow rate and direction in the uppermost aquifer during each ground water monitoring event using the procedures specified in the QAPPA.

(e) Response Action

(i) Based on the results of the Permittee's ground water monitoring program, intrinsic bioremediation/MNA are working as expected and contaminant concentrations are decreasing in areas of the plume and the plumes are not expanding spatially. Therefore, the Permittee shall continue under routine IGWMP monitoring.

(ii) If the ground water plume begins to migrate downgradient and/or intrinsic bioremediation/MNA processes stall and/or are not proceeding at an acceptable rate based on the analysis in Z.8 (b) (i) (f), the Permittee shall evaluate , propose, and (if practical) implement biological and/or chemical enhancements to the intrinsic bioremediation/MNA or shall evaluate, propose, and (if practical) implement other remedial options necessary to prevent the migration of the plume and/or increase the rate of contaminant degradation.

(iii) The Permittee must continue corrective action measures during the permit period to the extent necessary to ensure that the GWRS is not exceeded at the facility boundary. If the Permittee is conducting corrective action at the end of the permit period, the Permittee must continue corrective action for as long as necessary to achieve compliance with the GWRS.

At any time, the Permittee may conclude that a unit has met the remedial goal(s), and further monitoring is unnecessary. The Permittee may then initiate an accelerated monitoring program, and demonstrate that the clean-up standards listed in Permit Condition Z.2(a) have not been exceeded for eight consecutive quarters at any well in Permit Condition Z.3(b) that monitors the subject unit for any analyte listed in Permit Condition Z.2(a). At that point, the Permittee may submit a permit modification under OAC Rule 3745-50-51 to cease corrective action and ground water monitoring for that unit. Any monitoring wells associated with the unit at which corrective actions have been completed should be properly abandoned following the standards in the Technical Guidance Manual[3]. If the company chooses to maintain these wells, such a request should be included in the Permit modification along with the rationale for keeping the wells, provisions for future inspections and maintenance of the structural

[3] Ohio Environmental Protection Agency. Technical Guidance for Ground Water Investigations: Chapter 9 - Sealing Abandoned Monitoring Wells and Boreholes. Columbus. February 2005.
http://www.epa.state.oh.us/ddagw/Documents/TGM-9.pdf

integrity of the wells, and provisions for the proper abandonment of the wells when PPG decides they are no longer needed.

(f) The Permittee must report in writing to the Director on the effectiveness of the corrective action monitoring program after each sitewide ground water monitoring event according to Permit Condition Z.8.

(g) If the Permittee determines the corrective action program established by this permit no longer satisfies the requirements of OAC Rule 3745-54-101, the Permittee must, within ninety (90) days of that determination, submit an application for a permit modification per OAC Rule 3745-50-51 to make any appropriate changes to the program.

Table 1
Hazardous Constituents and Clean-up Standards

The following contaminants have been detected in ground water samples at PPG Barberton.

VOLATILE ORGANIC COMPOUNDS detected historically include:

Hazardous Constituents	Clean-up Standards (ug/L)
Tetrachloroethene	5
Trichloroethene	5
Cis-1,2-dichloroethene	70
Trans-1,2-dichloroethene	100
1,1-dichloroethene	7
1,1-dichloroethane	TBD
1,2-dichloroethane	5
1,1,1-trichloroethane	200
1,1,2-trichloroethane	5
1,1,2,2-trichloroethane	TBD
1,1,2,2-tetrachloroethane	TBD
1,1,1,2-tetrachloroethane	TBD
Vinyl chloride	2
Carbon disulfide	TBD
Carbon tetrachloride	5
Acetone	TBD
Methylene chloride	5
Benzene	5
Chlorobenzene	100
Toluene	1,000
Xylene	10,000
Ethylbenzene	700
Chloroform	80
1,4-dioxane	TBD
Isobutyl alcohol	TBD
Methyl methacrylate	TBD
Acetonitrile	TBD
Chloromethane	TBD
Chloroethane	TBD
Styrene	100
1,2-dichloropropane	5
2,4-dimethylphenol	TBD
2-hexanone	TBD
2-butanone	TBD
2-methyl-2-pentanone	TBD
1,2,3-trichloropropane	TBD

Semi-Volatile Organic Compounds detected historically include:

Hazardous Constituents	Clean-Up Standards (ug/L)
Hexachlorobenzene (HCB)	1
Hexachlorobutadiene	TBD
Hexachloroethane	TBD
1,2-dichlorobenzene	600
1,2,3-trichlorobenzene	TBD
1,2,4-trichlorobenzene	TBD
1,2,3,5-tetrachlorobenzene	TBD
1,2,4,5-tetrachlorobenzene	TBD
Pentachlorobenzene	TBD
1,3-dichlorobenzene	TBD
1,4-dichlorobenzene	75
Pentachloronitrobenzene	TBD
4-chloroaniline	TBD
Aniline	TBD
2-methylphenol	TBD
3-methylphenol	TBD
4-methylphenol	TBD
2,4-dichlorophenol	TBD
2,6-dichlorophenol	TBD
2,3,4,6-tetrachlorophenol	TBD
2-chlorophenol	TBD
di-n-octyl-phthalate	TBD
Diethyl phthalate	TBD
Bis-(2-ethylhexyl) phthalate	TBD
Bis-(2-chloroethyl) ether	TBD
Benzyl alcohol	TBD
Acetophenone	TBD
Isophorone	TBD
Indeno(1,2,3-cd) pyrene	TBD
m-cresol	TBD
o-cresol	TBD
p-cresol	TBD
Naphthalene	TBD
Phenol	TBD

Pesticides detected historically include:

Hazardous Constituents	Clean-up Standards (ug/L)
4,4-'DDD	TBD
4,4-'DDE	TBD
4,4-'DDT	TBD
Endrin	2
Endrin ketone	TBD
di-endrin	TBD
Endrin aldehyde	TBD
Endosulfan II	TBD
Alpha BHC	TBD
Beta BHC	TBD
Delta BHC	TBD
gamma chlordane	TBD
Heptachlor	0.4
Methyoxychlor	40

Within one years of the permit approval, PPG will provide to Ohio EPA for approval, risk-based GWRS for all compounds that do not have MCLs (i.e., all compounds on Table 1 that currently have TBD listed as the GWRS). The risk-based GWRS must be unrestricted use and must take the additive affects of the compounds into consideration.

Inorganic constituents detected historically:

Hazardous Constituents	Clean-up Standards (ug/L)*
Arsenic	10
Aluminum*	1,240/31
Antimony*	19/21
Iron*	1,570/3,400
Manganese*	1,274/2,390
Copper	1300
Nickel*	43/12
Lead	15
Thallium*	6/12.3
Beryllium	4
Cadmium*	5/6
Cobalt	13
Mercury	2
Selenium	50
Barium	2000
Cyanide	200
Chloride*	85,000/126,000

* Background concentrations derived during the RFI are used as clean-up standards for these target analytes. The first concentration is for the glacial outwash and the second concentration is for the Sharon bedrock. If the background concentrations were greater than the MCL, the background concentration was listed as the clean-up standard. If the MCL was greater than background, the MCL was used. In cases where there is no MCL, the background concentration was used.

Table 2.
Monitoring Wells Information

The following monitoring wells are included in the sitewide ground water monitoring program. Several aquifer zones are monitored including shallow, mid outwash, deep outwash, lower perched ground water, and the base of the Sharon Conglomerate. Some wells are used for static water level measurements, only.

Monitoring well ID	Depth monitored	Analytes	Rationale for inclusion
NP-05	Shallow GW	None	SWL, only
NP-08A	Shallow GW	Group B	MNA
NP-10*	Mid Outwash	Group A	MNA, Source area, Plume migration
NP-12	Shallow GW	Group B	Source area
NP-16	Shallow GW	Group B	Source area
NP-18A	Shallow GW	None	SWL, only
NP-19A	Shallow GW	Group B	MNA
NP-25A	Shallow GW	None	SWL, only
NP-29	Shallow GW	Group B	Degradation rates, MNA
NP-29V1	Shallow GW	Group B	Degradation rates, MNA
NP-29V2	Shallow GW	Group B	Degradation rates, MNA
NP-31A	Shallow GW	Group A	MNA
LL1-03A*	Shallow GW	Group A	Plume migration, MNA
LL1-04	Shallow GW	None	SWL, only
LL1-05B*	Shallow GW	Group A	Source area, plume migration, MNA
LL1-06A1	Shallow GW	Group A	Plume migration, MNA
LL1-09B	Shallow GW	None	SWL, only
LL1-11B	Shallow GW	Group A	Plume Migration, MNA
LL1-12B*	Shallow GW	None	SWL, only
LL1-14A	Shallow GW	Group A	Plume Migration, MNA
LL1-17B	Shallow GW	Group A	Source area, Plume migration, MNA
LL1-17C	Mid outwash	Group A	Source area, plume migration, MNA
LI1-22A	Shallow GW	Group A	MNA
LL1-22B	Mid outwash	Group A	MNA
LL1-22C	Deep outwash	Group A	MNA
LL1-23A	Shallow GW	Group A	Plume Migration, MNA
LL1-23B	Mid outwash	Group A	MNA
LL1-23C	Deep outwash	Group A	MNA
LL2-02B*	Shallow GW	Group B	Plume migration, MNA
LL2-03B*	Shallow GW	Group B	Plume migration, MNA
LL2-06B*V1	Shallow GW	Group B	Source area, Degradation Rate, MNA

LL2-08A	Shallow GW	Group A	Degradation Rates, MNA
LL2-08AV1	Shallow GW	Group A	Degradation Rates, MNA
LL2-08AV2	Shallow GW	Group A	Degradation Rates, MNA
LL2-11A	Shallow GW	Group A	MNA
LL2-12A	Shallow GW	Group A	MNA
LL2-14B*	Shallow GW	Group B	Source Area
LL3-02A	Shallow GW	Group A	MNA
LL3-04*	Shallow GW	Group A	MNA
LL3-05	Shallow GW	Group A	MNA
LL3-06	Shallow GW	Group A	MNA
LL3-12A	Shallow GW	Group A	MNA
LL4-04	Shallow GW	None	SWL, only
LL4-09	Shallow GW	Group A	MNA
LL4-12A	Shallow GW	None	SWL, only
LL4-13A	Shallow GW	Group A	MNA
LL4-15	Shallow GW	Group A	MNA
LL5-02	Shallow GW	Group A	MNA
LL5-04	Shallow GW	Group A	MNA
LL5-09A*	Shallow GW	Group A	MNA
LL5-10	Shallow GW	Group A	MNA
LL5-22A	Shallow GW	None	SWL, only
LL6-02	Shallow GW	None	SWL, only
LL6-04A	Shallow GW	Group A	MNA
LL6-21A	Shallow GW	Group A	MNA
CLF-07B	Lower perched	Group A	MNA, Post Construction
CLF-13D	Lower perched	Group A	MNA, Post construction
CLF-13E	BSC	Group A	MNA, Post construction
CLF-14C	BSC	Group A	MNA, Post construction
CLF-16B	Upper perched	Group A	MNA, Post construction
CLF-19B	Lower perched	Group A	MNA, Post construction
CLF-19C	BSC	Group A	MNA, Post construction
CLF-21A	Lower perched	Group A	MNA, Post construction
CLF-21B	BSC	Group A	MNA, Post construction
SP-01B	Lower perched	Group B	Source Area
SP-03B	Shallow GW	Group B	MNA
SP-10B*	Shallow GW	Group A	MNA
SP-10C	BSC	Group B	MNA
SP-17A	Shallow GW	Group A	MNA
SP-17B	BSC	Group A	MNA
SP-18C	BSC	Group A	MNA
SP-22B	BSC	Group B	MNA

SP-25	Shallow GW	Group A	MNA
SP-36A	Shallow GW	Group A	Degradation Rates, MNA
SP-36AV1	Shallow GW	Group A	Degradation Rates, MNA
SP-36AV2	Shallow GW	Group A	Degradation Rates, MNA
SP-43A	Shallow GW	None	SWL, only
SQ-02	Shallow GW	Group A	
SQ-02V1	Shallow GW	Group A	Plume migration, Degradation Rates, MNA
SQ-02V2	Shallow GW	Group A	Plume migration, Degradation rates, MNA
SQ-03A	Shallow GW	Group A	Plume migration, MNA
SQ-03B	BSC	Group A	Plume Migration MNA
SQ-07A	Shallow GW	Group A	Plume Migration, MNA
SQ-07B	BSC	Group A	Plume Migration, MNA
TRN-02B	Mid outwash	Group A	MNA
TRN-05A	Shallow GW	Group A	MNA
TRN-05C	Deep outwash	Group A	MNA
TRS-01A	Shallow GW	Group A	MNA
TRS-05A	Shallow GW	Group A	MNA

- Group A: Analytes include Appendix IX VOLATILE ORGANIC COMPOUNDS s, selected dissolved Target Analyte List metals (arsenic, manganese, nickel, lead, copper, antimony, and thallium), chloride, pH, TDS, and intrinsic bioremediation/MNA indicator analytes including dissolved gases will be collected from each of the wells during each of the sampling events. Cyanide will also be collected from wells located in LL-2 and CLF, only.

- Group B: All analytes from Group A plus HCB by SIMs or some other high resolution method at each sampling event.

- SWL, only. Wells with this designation are used to get water level elevation data, only.

- As per Permit Condition Z.6, during the second ground water sampling event conducted during the permit period, all wells will be sampled for the complete list of Target Analyte List metals. Subsets of wells, as defined in Permit Condition Z.6, will also be sampled for Appendix IX Semi-Volatile Organic Compounds and organochlorine compounds during this sampling event.

- **Upper and lower perched zones are in the bedrock. BSC stands for Base of the Sharon Conglomerate.**

END OF PERMIT CONDITIONS