



RICK SNYDER
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



KEITH CREAGH
DIRECTOR

May 19, 2016

Mr. Scott Bemis
Responsible Care Leader
Environment, Health, & Safety
The Dow Chemical Company, Michigan Operations
1790 Building, Washington Street
Midland, Michigan 48674

Dear Mr. Bemis:

SUBJECT: Amendment 3; Hazardous Waste Facility Operating License;
Approval of Salzburg Landfill - Cells 20-22 Final Cover Design Submittal;
The Dow Chemical Company, Michigan Operations, Midland;
MID 980 617 435

The Department of Environmental Quality (DEQ), Office of Waste Management and Radiological Protection (OWMRP), has completed technical reviews of the Salzburg Landfill - Cells 20-22 Final Cover Design Submittal that was submitted by The Dow Chemical Company (Dow) on February 11, 2016, and updated on February 17, 2016, April 7, 2016, and May 10, 2016 (submittals collectively hereinafter referred to as the Design Submittal). These reviews were conducted in accordance with the requirements of the administrative rules promulgated pursuant to Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); and Dow's hazardous waste management facility operating license, effective September 25, 2015 (License).

Based on these reviews, the Design Submittal was found to be acceptable and is hereby approved. Construction of the final cover for Cells 20-22 may proceed in accordance with the approved design plans (February 11, 2016, Drawings: B2-003-141499, B2-004-141499, B2-005-141499, B2-006-141499, B2-008-141499, B2-009-141499, and B2-014-141499; April 7, 2016, Drawings with Bulletin #1: B2-007a-141499, B2-007b-141499, B2-010-141499, B2-011-141499, B2-012-141499, B2-015-141499, B2-016-141499, and B2-017-141499; and May 10, 2016, Drawing B2-013-141499 with revised anchor trench) and specifications, subject to the following stipulations:

1. A minimum of one week advance notice of the following key construction events shall be provided by telephone or e-mail to the OWMRP, Hazardous Waste Section (contact Mr. Joe Rogers at 517-284-6569 or rogersj5@michigan.gov or Mr. Dan Dailey at 517-242-7261 or daileyd@michigan.gov) and the Saginaw Bay District Office (contact Ms. Trisha Confer at 989-225-7968 or confert@michigan.gov).
 - a. Removal of three inches of the intermediate cover soils, and subsequent grading and compaction; or where materials are excessively wet or unstable, scarifying, drying and compaction of soils, or removal and replacement of soils for the foundation layer;
 - b. Cutting through the foundation layer and into the daily cover material;
 - c. Installation of the two landfill gas management system vent trenches;
 - d. Placement of the two layers of geosynthetic clay liner (GCL);
 - e. Placement of the 40 mil linear low-density polyethylene (LLDPE) geomembrane;

- f. Placement of the single bonded (on two percent slopes) and double-bonded (on side slopes) geocomposite drainage layer;
 - g. Placement of the 18-inch protective soil layer;
 - h. Placement of the 6-inch topsoil layer;
 - i. Installation of the permanent diversion berms along the east, west and south side slopes for storm water runoff; and
 - j. Placement of seed mix and establishment of vegetative growth.
2. Dow shall make all contractor submittals and test results referenced in the Design Submittal available to the OWMRP for inspection on-site. Copies of such documents shall be provided to the OWMRP upon request.
3. Written notification of the chosen earthwork contractor, geosynthetic installation contractor, and geosynthetic construction quality assurance consulting firm, including key personnel qualifications not previously provided in the Design Submittal, shall be provided to the OWMRP staff identified above prior to the start of the applicable work or testing/oversight responsibilities. Such notification shall also be provided to the OWMRP if any significant changes in contractors or key personnel occur during the project.
4. The Construction Certification Report shall include the following information related to soil permeability testing consistent with the information required for the sub-base certification approval:
 - a. Sample identifying information;
 - b. Descriptive information on method of compaction;
 - c. Initial dimensions of the specimen;
 - d. Magnitude of total back pressure;
 - e. Degree of saturation prior to permeability test;
 - f. Maximum and minimum effective consolidation stress;
 - g. Range of hydraulic gradient used;
 - h. Final length, diameter, water content, dry unit weight, and degree of saturation of the test specimen;
 - i. Graph or table of changes of hydraulic conductivity with time of pore volumes of flow; and
 - j. Determination of hydraulic conductivity.
5. The Construction Certification Report shall include the map locations and elevations of all construction quality assurance testing conducted during the construction of the final cover for Cells 20-22 (e.g., permeability, moisture, density).
6. In addition to submittal of the Certifying Engineer's overall certification document for the project, pursuant to R 299.9610(4), the document must include a certification by an authorized facility owner/operator representative, which contains the wording specified in Title 40 of the Code of Federal Regulations, Section 270.11(d), that the project was constructed in accordance with the approved Design Submittal engineering plans and specifications.
7. Dow shall submit as-built engineering drawings within 90 days of the completion of the construction as part of the certification document for the project. Three paper copies and one electronic copy of the certification document and as-built drawings shall be submitted to the OWMRP. This paper copy distribution is the same as specified in Item 1 of this letter. The electronic copy shall be submitted to Mr. Dan Dailey of the OWMRP, Hazardous Waste Section.

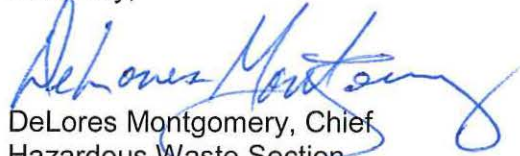
Based on the changes to the design plans in the Design Submittal when compared to the design plans in Attachment 6 to the License, this approval constitutes a minor license modification pursuant to R 299.9519(5)(b)(xii). In accordance with R 299.9519(5)(b)(xii), Dow may put into effect changes that the construction quality assurance officer certifies will provide equivalent or better certainty that the unit components meet the design specifications. The certification shall be provided in the facility operating record.

Required Follow Up

In accordance with R 299.9519(6)(b) of the administrative rules promulgated pursuant to Part 111 of Act 451, Dow is required to send notice of minor modifications to all persons on the facility mailing list and to the appropriate units of state and local government. Such notice must be provided within 90 calendar days of this approval. The updated facility mailing list is enclosed. Please notify the OWMRP of any addresses on the facility mailing list that are returned to sender and provide a scan of the returns or the original envelope for our records.

If you have any questions or concerns regarding this approval letter, please contact Mr. Dan Dailey at the telephone number or e-mail address provided above, or you may contact me.

Sincerely,



DeLores Montgomery, Chief
Hazardous Waste Section
Office of Waste Management and
Radiological Protection

Enclosure

cc: Mr. Brent Gaudreau, Dow
Mr. John Davis, Dow
Mr. Kurt Detrich, Dow
Mr. Richard Gains, Dow
Mr. Doug Wehner, Dow
Mr. Phil Roycraft, DEQ
Ms. Trisha Confer, DEQ
Ms. Virginia Himich, DEQ
Mr. Dan Dailey, DEQ
Dr. Dan Qian, DEQ
Mr. Joe Rogers, DEQ
Construction File