

STATE OF MISSISSIPPI SOLID WASTE MANAGEMENT PERMIT

TO OPERATE A SOLID WASTE MANAGEMENT FACILITY IN
ACCORDANCE WITH THE REGULATIONS GOVERNING
SOLID WASTE MANAGEMENT

THIS CERTIFIES THAT

Denali Water Solutions, LLC

has been granted permission to operate a solid waste management facility

located at

Sections: 14, 15, 17 – 22, 27 – 29,

Township: 16N, Range: 3W

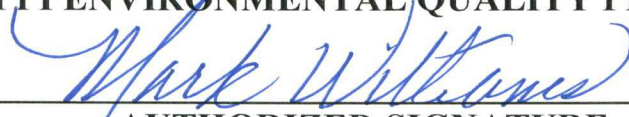
Section: 22, Township: 16N, Range: 4W
of Humphreys County

under the name of

Humphreys County Industrial Land Application Sites

This permit is issued in accordance with the provisions of the Mississippi Code Annotated, and the regulations and guidelines adopted and promulgated thereunder.

MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD



AUTHORIZED SIGNATURE

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

Issued: September 10, 2019
Expires: August 31, 2029

Permit No. SW0270030577

CONDITIONS

A. EFFECT OF PERMIT

The permittee shall operate the solid waste management facility in accordance with the Mississippi Nonhazardous Solid Waste Management Regulations (11 Miss. Admin. Code Pt. 4, Ch. 1), applicable state and federal regulations, the approved permit application, and the conditions of this permit. Any changes, alterations, or modifications of the above referenced regulations which pertain to any condition of this permit shall supersede and replace the affected conditions of this permit. In such instances, the permittee shall comply with the altered condition(s) of the regulations.

B. PERMIT ACTIONS

This permit may be modified, revoked, and/or reissued for good cause or noncompliance with the terms and conditions of the permit. The filing of a request for a permit modification, reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

C. SEVERABILITY

The provisions of the 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.

D. DUTIES AND REQUIREMENTS

1. Duty to Comply. The permittee shall comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Mississippi Code Annotated and regulations promulgated thereunder and is grounds for enforcement action, permit termination, revocation, reissuance, or modification, or for denial of a permit renewal application.
2. Duty to Reapply. If the permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 days before this permit expires.
3. Duty to Mitigate. The permittee shall take all reasonable steps to minimize, prevent, or correct any adverse impact on human health or the environment resulting from noncompliance with this permit.

4. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all equipment and systems which are installed or used by the permittee to achieve compliance with the conditions of this permit and application as submitted and approved by the Department of Environmental Quality (Department).
5. Duty to Provide Information. The permittee shall furnish to the Department, within a reasonable time, any relevant information which the Department may request to determine whether cause exists for modifying, revoking, reissuing, or terminating this permit or to determine compliance with this permit.
6. Inspection and Entry. The permittee shall allow an authorized representative of the Department upon the presentation of credentials and other documents as may be required by law to:
 - a. Enter on the permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy at reasonable times any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment, practices, or operations regulated or required under this permit;
 - d. Sample or monitor at reasonable times for the purposes of assuring permit compliance.
7. Property Rights. It is the responsibility of the permittee to possess and maintain a sufficient interest in or right to the use of the properties described in this permit, including the access route(s).

The issuance of this permit does not convey any property rights or interest in either real or personal property; nor does it authorize any injury to private property, invasion of personal rights, or impairment of previous contract rights; nor any infringement of Federal, State, or local laws or regulations outside the scope of the authority under which this permit is issued.

8. Anticipated Noncompliance. The permittee shall give written notice to the Department at least 30 days in advance of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this permit or the Mississippi Nonhazardous Solid Waste Management Regulations.

9. Modification of Permits. Any proposed modification to the approved application or plan of operations resulting in an expansion of the disposal area or a significant change in the method of waste management must be approved by the Permit Board or the Board's designee prior to implementation. Other proposed modification to the approved facility design or operations must be approved by the Department prior to implementation.
10. Transfer of Permits. This permit is not transferable to any person except after notice to and approval of the Mississippi Environmental Quality Permit Board. The Permit Board may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary.
11. Disclosure. The permittee shall submit an updated disclosure statement to the Department by February 28 of each year. If all information from the previously submitted disclosure statement is unchanged, a letter stating such may be submitted in lieu of an updated disclosure statement.
12. Signature Requirements. The permittee shall ensure that an application for the reissuance, modification or transfer of this permit and all reports required by this permit or by state regulations shall be signed in accordance with Rule 1.2 of the Mississippi Nonhazardous Solid Waste Management Regulations
13. Contract Operator. If the permittee executes a contract with a private entity to operate the land application site and/or sludge storage operations, a complete disclosure statement for the contractor shall be submitted and approved by the Permit Board or the Permit Board's Designee as set forth in state law and regulations prior to the contractor beginning operations.

E. AUTHORIZED WASTES

1. The permittee is authorized to accept, manage, store and land apply the following sludges:
 - a. Consolidated Fish facility in Belzoni, MS
Waste: Residual sludge from cleaning of existing treatment ponds
 - b. Koch Foods facility in Morton, MS
Waste: Food Processing Residuals
 - c. Tyson Foods facility, (CERES) location in Vicksburg, MS
Waste: Food Processing Residuals

- d. Tyson Foods, (RVAF) location in Forrest, MS
Waste: Food Processing Residuals
 - e. Sanderson Farms in Flowood, MS
Waste: Food Processing Residuals
 - f. Water Valley Poultry in Water Valley, MS
Waste: Food Processing Residuals
- 2. The Department may approve sludges from new sources, restricted to food recycling, food processing, and animal food processing operations specifically, after having received and reviewed written documentation of the name and address of the generator; the sludge analysis for all parameters listed under paragraph G.4 of this permit; and any other information deemed pertinent.
 - 3. The permittee shall ensure that new sources are located within the service area described in the Humphreys County Solid Waste Management Plan. Solid waste generated in areas not within the approved service area shall be prohibited from acceptance for storage and land application at the sites authorized under this permit.

F. SLUDGE STORAGE UNIT REQUIREMENTS

- 1. The permittee is authorized to store authorized sludges in the sludge storage units located in Sections 14 and 15; Township 16N; Range 3W owned by the permittee.
- 2. Prior to the deposit of sludge in the units, the permittee shall ensure that storage pond liner certification activities, preparation, and/or construction, are conducted in accordance with the approved plans.
- 3. The permittee must demonstrate to the Department that the storage units have been constructed with an adequate liner system, prior to the placement of authorized waste in the ponds as follows:
 - a. The existing liner must consist of low-permeability earthen materials extending at least two (2) feet beneath the surface and having an average hydraulic conductivity of 1×10^{-7} cm/sec or less. Existing liners failing to meet these criteria shall be re-constructed in accordance with Condition F.4.a prior to use.
 - b. At least two weeks prior to the placement of authorized waste in the storage unit, the permittee shall submit a report confirming that the liner, whether existing or newly constructed, meets the standards

described in Condition F.3.a. The report shall include the results of at least three samples taken in accordance with the approved construction plans, and shall contain a certification from an independent professional engineer registered with the State of Mississippi. The report shall also include field logs, results of testing, subgrade survey, top of liner survey, and construction testing methods.

4. The permittee shall ensure that, where necessary, the construction of storage unit liners is conducted in accordance with the following requirements, unless otherwise approved by the Department:
 - a. Existing liner materials which do not meet the requirements of F.3.a above shall be removed and disposed of at a permitted disposal facility unless determined to be still appropriate for use as liner material after appropriate conditioning.
 - b. Any constructed liner shall consist of a minimum of 2 feet of re-compacted soil having a permeability of 1×10^{-7} cm/sec, unless an alternate liner demonstration is submitted and approved by the Department. The liner shall be constructed in lifts of loose materials that are re-compacted to 6 inch lifts. Each lift shall be evenly compacted to the density and moisture content required. Placement of the liner on the side slopes shall be in lifts along the slope, not in horizontal lifts. Between lifts, the surface shall be scarified for proper bonding.
 - c. During construction of the soil liner, the surface shall not be allowed to dry out and crack before placement of the next layer. If desiccation cracks do form, the surface shall be rewetted, re-homogenized, and re-compacted to the depth of the cracks before placement of the succeeding layer.
 - d. Field density, moisture content, and permeability tests shall be conducted in accordance with the approved plan. Test holes in the soil liner shall be sealed with bentonite, or another method approved by the Department.
 - e. All required construction of storage unit liners shall be conducted by qualified and experienced personnel.
5. The permittee shall ensure that the sludge storage activity is conducted in accordance with the following conditions:
 - a. The permittee shall initially restrict sludge storage to Storage Unit 1 and Storage Unit 2 as designated in the approved plan of operations. Additional storage units may be activated and utilized upon written

consent of MDEQ. Such written consent will be based on the documentation of the need for the increased capacity, the suitability of the liner systems, the history of the operations of Units 1 and 2 and other pertinent factors determined by MDEQ.

- b. The permittee shall ensure that the storage and handling of sludge is conducted in a manner that prevents objectionable off-site odors including the following:
 - 1. The permittee shall take the necessary actions to minimize the time for surface crust formation over the units in accordance with the approved plan.
 - 2. The permittee shall perform storage pond filling and draining activities in such a way as to minimize both disturbance of the established surface crust as well as the length of time required to remove the sludge materials from the unit.
 - 3. The permittee may be required to implement additional odor controls such as chemical treatment, physical covering of the units, removal of sludges, or other controls, if deemed necessary to comply with this condition.

If compliance with this condition is not maintained, closure of the sludge storage units may be required by the Department.

- c. The permittee shall take all reasonable steps to prevent attraction of disease-carrying vectors to the storage unit area.
- d. The permittee shall ensure that all authorized waste placed in the storage unit is contained within the unit until removal for land application purposes as follows:
 - 1. A minimum freeboard of 2 feet shall be maintained in each unit to prevent overflow or uncontrolled discharge of sludge from the units.
 - 2. No authorized waste accepted at the site for storage shall be placed on the ground outside of the storage units except for authorized land application in the permitted fields.
 - 3. The permittee shall ensure that no discharge from the storage units to waters of the State of Mississippi is allowed. Such discharge shall constitute a violation of this permit unless authorized under a separate permit pursuant to Section 402 of the Clean Water Act.
- e. The permittee shall establish reasonable controls on the access to the storage units to restrict unauthorized personnel from entering the area.

6. The permittee shall ensure that closure of the storage units is conducted in accordance with the approved closure plan. An updated closure plan shall be submitted to the Department at least 30 days prior to discontinuation of storage activities.

G. LAND APPLICATION REQUIREMENTS

1. Areas of Application

- a. The permittee is authorized to land apply authorized wastes as per Section E to the approved fields designated in the application and in part G.1.b in accordance with the locational restrictions of this permit and the applicable locational restrictions of the Mississippi Nonhazardous Solid Waste Management Regulations. The application area boundaries shall be clearly marked or identified in accordance with the approved plan of operations during land application activities.
- b. The approved land application areas are described as follows:

The Silent Shade Site 8 Land Application sites include 13 fields located in Sections 14, 15, 17-22, and 27-29; Township 16 N; Range 3 W and Section 22; Township 16 N; Range 4 W of Humphreys County. The total property area is 2,660.7 acres with a proposed land application area of 2,027.4 acres.

Fields	Total Acres	Net Application Acres	Section/ Township/ Range
1	233.3	169.0	14-15; 16N; 3W
2	103.6	84.3	15, 22; 16N; 3W
3	506.9	464.2	20-21; 16N; 3W
4	150.6	130.2	17; 16N; 3W
5	31.7	20.4	17-18; 16N; 3W
6	235.1	186.8	19-20; 16N; 3W
7	418.2	381.2	20-21; 16N; 3W
8	207.6	170.7	28-29; 16N; 3W
9	113.1	73.4	28-29; 16N; 3W
10	123.3	35.1	28; 16N; 3W
11	51.0	47.9	28; 16N; 3W
12	330.7	145.1	27-28; 16N; 3W
13	155.6	119.1	22; 16N; 4W

- c. The permittee shall ensure that no sludge is applied within 200 feet of the property line, except in areas where the off-site view of the land application activity is restricted by natural or artificial screening. A

buffer of 100 feet may be used where adequate screening exists and is maintained as identified in the approved plan of operations. No sludge shall be applied within 100 feet of the adjacent property boundaries unless approved by the Department.

- d. The permittee shall ensure that no sludges are applied within 300 feet of any inhabited building, unless otherwise approved by the Department.
- e. The permittee shall ensure that no sludges are applied on delineated wetland areas, unless such application is conducted in accordance with requirements of the US Army Corps of Engineers and/or USDA Soil Conservation Service.
- f. The permittee shall ensure that no sludge is land applied within 250 feet of any river, stream, lake, reservoir or coastal water. The Department reserves the right to require greater buffer distances should the conditions of the operation warrant such change.

2. Operating Conditions

The permittee shall ensure that land application activities are conducted in accordance with the following conditions:

- a. The permittee shall provide written notification to the Department at least 7 days prior to beginning or resuming sludge application activities at any permitted field.
- b. Approved sludges shall be land applied in accordance with the approved plan of operations and the following methods:
 - 1. Subsurface injection to a minimum depth of six (6) inches below ground surface; or
 - 2. Subsurface injection to a depth of less than six (s) inches below ground surface followed by immediate incorporation; or
 - 3. Other acceptable land application methods approved by the Department.
- c. The permittee shall ensure that application of sludge to permitted fields shall be done such that overloading does not allow for sludge to remain above the ground surface. The Department may require a hydraulic loading rate if deemed necessary to meet this condition.
- d. The permittee shall ensure that the land application activity is conducted in a manner that would prevent objectionable off-site odors, vector attraction, and other off-site nuisances.

- e. The permittee shall ensure that land application of sludge or other residue is not applied to saturated ground. Saturation may be determined by digging a hole one-foot deep at the lowest point of the application area and observing for 30 minutes. If water appears in the hole, the soil is considered to be saturated.
- f. The permittee shall conduct the land application activities in such manner to ensure no contaminant will be allowed to enter any surface water or groundwater as a result of runoff or infiltration that would violate any water quality standard established by the Commission on Environmental Quality.
- g. The permittee shall maintain the soil pH of each receiving field at or above 6.5, unless otherwise approved by the Department. If the initial soil testing for the field pH is below 6.5, then the initial pH recorded is the lowest acceptable pH for that field.
- h. The permittee shall work with the receiving farming operations to ensure that food crops for indirect human consumption are not planted for 30 days after application of sludge.
- i. The permittee shall establish reasonable controls on the access to the fields utilized for land application to restrict unauthorized personnel from entering the land application areas during operation.
- j. The permittee shall strictly prohibit the grazing of animals during operations and 30 days after application.

H. MONITORING, RECORDS, AND REPORTING REQUIREMENTS

Unless otherwise approved by the Department, the permittee shall conduct sampling, monitoring, and reporting activities as follows:

- 1. The permittee shall ensure all sludge and soil samples taken as required under this permit for the purposes of monitoring or quality assurance shall be representative samples.
- 2. The permittee shall obtain sludge analyses for each source of sludge accepted at a minimum of once per year. The analyses (on a dry weight basis) must include pH, TKN, ammonia-nitrogen, nitrate-nitrogen, total arsenic, total cadmium, total copper, total lead, total mercury, total nickel, total selenium, total zinc, oil and grease concentrations, and percent solids.

3. The permittee shall obtain analyses for sludge from the storage units prior to each land application event. The analyses (on a dry weight basis) must include pH, TKN, ammonia-nitrogen, nitrate-nitrogen, total arsenic, total cadmium, total copper, total lead, total mercury, total nickel, total selenium, total zinc, oil and grease concentrations, and percent solids.
4. The permittee shall not store or land apply the sludge if the concentration of any pollutant (dry weight basis) in the sludge exceeds the following ceiling concentrations

<u>Pollutant</u>	<u>Ceiling Concentration</u> <u>(milligrams per kilogram)</u>
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Nickel	420
Selenium	100
Zinc	7500

5. The permittee shall not exceed an annual application rate for cadmium of 0.45 lbs/acre/year.
6. The permittee shall not exceed the following annual application rates for Plant Available Nitrogen (PAN) in accordance with the cover crop as listed below:

<u>Crop</u>	<u>Maximum PAN</u> <u>(lbs/Acre/Year)</u>
Bahia Grass	160
Bermuda Grass	300
Fescue	120
Cotton	180
Corn	240
Clover, Alfalfa, Vetch	450
Grain Sorghum	180
Silage Sorghum	300
Millet	150
Rye Grass	220
Soybeans	300
Wheat	135

7. The permittee shall not exceed the following cumulative pollutant loading rates from sludge application during the life of the sludge land application activity:

Cumulative Pollutant Loading Rates

<u>Pollutant</u>	<u>lbs/Acre</u>
Arsenic	36
Cadmium	34
Copper	1338
Lead	267
Mercury	15
Nickel	374
Selenium	89
Zinc	2497

8. The permittee shall maintain records listing the date(s) and areas on which sludge was applied, the quantity and source of sludge applied, and the types of crops grown on each area.
9. The permittee shall annually obtain at least one composite soil sample of each field of the permitted sites on which sludge was applied. The soil samples shall be analyzed for pH, nitrate, total arsenic, total chromium, total copper, total lead, total mercury, total nickel, total selenium, total zinc, and oil and grease.
10. The permittee shall retain records of all monitoring information, including copies of all reports and records required by this permit, for the a period of no less than 5 year. Records of monitoring information shall include:
 - a. The dates, exact place and time of sampling or measurements;
 - b. The individuals who performed the sampling or measurements;
 - c. The date(s) analyses were performed;
 - d. The individual(s) who performed the analyses;
 - e. The analytical techniques or methods used; and
 - f. The results of such analyses
11. The permittee shall submit an annual report to the Department on or before February 28th each year that includes information regarding the preceding calendar year. The report shall include the following information:
 - a. the total quantity, by weight in tons, of sludge or authorized waste land applied;
 - b. the source(s) of sludge or authorized waste received for land application including facility name, and physical address;
 - c. the total permitted land application area and total number of sites or fields within the permitted application area;
 - d. the total area used for land application during the calendar year;

- e. the name and/or number of sites/fields used and the type of crops grown on those fields during the calendar year;
- f. the analytical results of all monitoring required pursuant to paragraph H.2, H.3 and H.5 above including the soil analysis from each field used and the quantity of plant available nitrogen (PAN), arsenic, cadmium, copper, lead, mercury, nickel, selenium, zinc, and oil and grease applied to each field in lb/acre/year, and
- g. updated disclosure information.