

**AGU 1703-K-05 PERMIT RENEWAL APPLICATION**

**FOR THE LAND TREATMENT**

**OF**

**RESIDUAL WASTE**

**ON THE**

**SCHIFF FARMS, INC.  
16054 South DuPont Highway  
Harrington, Delaware 19952**

**SUBMITTED BY:**

**Denali Water Solutions, LLC.  
1221 Bruceville Road, Unit B,  
Keymar, MD 21757  
(410) 339-1754**

**AUGUST 2021**

# Project Development Report

## General Information

Denali Water Solutions, LLC. is requesting to renew the current Agriculture Utilization of Waste Permit (AGU 1703-K-05) for several farms under the management of Schiff Farms, Inc. (T.J. Schiff). The permit is due to expire February 28, 2022.

Denali Water Solutions specializes in the design and operation of agricultural projects for the beneficial re-use of biosolids or residuals for agronomic crop production. Denali Water Solutions will be responsible for the removal, transportation and agricultural land application of several food processing residual materials generated from poultry (including one Pet Food) processing facilities within Delaware and Maryland and Virginia (Please see below for complete list of generators). Schiff Farms will be utilized for the application of DNREC approved residual wastes. These farms are all located in Kent County, DE. (Please see below for specific farms and locations). Residual waste will be transported to the site in accordance with a current Delaware Waste Transporters Permit where the material will be land applied at agronomic rates according to a current Nutrient Management Plan for the farm operation.

## Residual Waste Materials to be Utilized

The operation involves the land application of DAF solids and other approved residuals, generated at the following food processing plants:

- Amick Hurlock, Maryland
- Allen's Harbeson, Delaware
- Valley Protein, Maryland
- Pet Poultry, Delaware
- Tyson Temperanceville, Virginia
- Mountaire Selbyville, Delaware
- Allen Millsboro Pinnacle, Delaware
- Perdue Georgetown, Delaware
- Perdue Milford, Delaware
- Perdue Salisbury, Maryland
- other land treatable wastes as approved by DNREC.

Note: There is no sanitary waste comingled with any of the residual materials listed above.

By the authorization from the Delaware Department of Natural Resources and Environmental Control, Denali Water Solutions will beneficially use residual waste from the above poultry & pet food wastewater treatment facilities listed in this permit application as part of the current nutrient management program for Schiff Farms, Inc. farm operation.

## The permittee legal name, address is:

Denali Water Solutions, LLC.  
Charlie Golden – General Manager  
1221 Bruceville Road, Unit B,  
Keymar, MD 21757  
(410) 339-1754

The Farm legal name, address is:

SCHIFF FARMS, INC.

T.J. Schiff

16054 South DuPont Highway

Harrington, DE. 19952

Phone: (302) 398-8014

## **Farms and Locations for Land Application of Residual Waste**

### Farms currently under Permit

Schreiber Farm (Feedlot 2) – Whiteleysburg Road and Ingram Branch Road

Seeney Farm - Whiteleysburg Road and Ingram Branch Road

Cain Farm - Indian Point Road and Canterbury Road (Route 15)

Masten Farm - Little Mastens Corner Road and Reeves Crossing Road

Bergold Farm - Midstate Road and Chimney Hill Road

Winkler Farm - DuPont Highway (Rt. 13), south of Paradise Alley Road (Road 426)

Harrison Farm - John Hurd Road and Spectrum Farms Road

Home Farm - Burnite Mill Road and Edwardsville Road

Collison Farm - South DuPont Highway and Paradise Alley Road

### Proposed additional Farm (added to permit)

Luff Farm – High Stump Road and Gallo Road, Harrington, DE

## **Waste Product Characterization** – Brief Description of Wastewater

### Treatment Process

#### Amick Hurlock, Maryland

The Amick Hurlock wastewater treatment plant facility treats strictly poultry processing water. First stage wastewater pretreatment is provided by operation of an aerated flow equalization basin and a dissolved air flotation (DAF) cell operated with polymer coagulation/flocculation. DAF residuals are transferred to a holding tank located at the plant. These residuals are then pumped into a tanker and transported to the field or a storage facility during inclement weather.

There is no sanitary waste comingled with the DAF residuals. The sanitary waste at the Hurlock Plant is discharged to the Town of Hurlock WWTP.

#### Allen's Harbeson, Delaware

Allen's Harbeson waste processing and characterization is very similar to Amick Hurlock, Maryland. The two processing plants were previously under the same company name and used similar processes to treat generated waste.

First stage wastewater pretreatment is provided by operation of an aerated flow equalization basin and a dissolved air flotation (DAF) cell operated with polymer coagulation/flocculation. DAF residuals are transferred to a holding tank located at the plant. These residuals are then pumped into a tanker and transported to the field or a storage facility during inclement weather.

There is no sanitary waste comingled with the DAF residuals. The sanitary waste at Harbeson Plant is comingled with the waste activated biosolids, dewatered, and then land applied by Clean Delaware.

#### Valley Protein, Maryland

The Valley Protein poultry rendering facility processes strictly poultry. There are no ruminants processed at this rendering facility. The processing facility produces a DAF type material in which wastewater pretreatment is provided by operation of an aerated flow equalization basin and a dissolved air flotation (DAF) cell operated with polymer coagulation/flocculation. DAF effluent is pumped to one activated sludge aeration basin followed by one new final clarifier and final effluent disinfection by chlorination/dechlorination before discharge to receiving stream. DAF float sludge will be disposed by off-site rendering and waste activated sludge will be aerobically digested in a sludge holding tank prior to ultimate disposal by land application. Sanitary waste produced at Valley Protein is discharged into an approved septic drain field located at the plant.

#### Pet Poultry, Delaware

Process waste (non-sanitary) is piped to a wire basket to remove large items then pumped through a rotary screen to a 500-gallon grease trap to an equalization pit, from there through the DAF unit that sludge and the grease trap is pumped to the waste tanker for removal. The effluent off the DAF goes to aeration tank for 30-day detention time then pumped back through the DAF to discharge to the town. That sludge is returned to the aeration tank, Cationic polymer is used to treat all water. Average discharge is between 5000 and 7000 gallons per day.

Sanitary waste from Pet Poultry/ Cannon Cold Storage is piped separate from process waste and discharged straight to town sewer.

#### Tyson Temperanceville, Virginia

Treatment process is accomplished through Dissolved Air Flotation from the Tyson Temperanceville Facility. The plant processes about 1,000,000 birds per week. There is a sanitary system that handles all human waste that is piped to a separate wastewater system. The sanitary wastes at Tyson Temperanceville are discharged into an approved septic drain field located at the plant.

#### Mountaire Selbyville, Delaware

The Mountaire Selbyville plant facility treats strictly poultry processing water. Process water (non-sanitary) leaving the poultry processing operation is screened of large particles through both primary and secondary screening. This water is then pumped to three Dissolved Air Flotation (DAF) systems. The wastewater first enters the low shear mixing pipe flocculator where coagulant and flocculants may be introduced to increase the particle size along with "whitewater". The wastewater then enters the vessel across the length of the system. At the surface a skimming mechanism moves this material into a hopper. It is then pumped into a tanker trailer to be hauled off site as DAF residuals. Treated wastewater is then discharged to the town POTW.

#### Allen Millsboro Pinnacle, Delaware

The Pinnacle deboning facility handles the further processing of poultry for human consumption. This product is comprised of washdown/production water and particles from

the processing of poultry. The percent solids in this waste stream are low so there is no DAF system at this plant, like there is at Allen Harbeson. No sanitary waste is included in this waste stream.

#### Perdue Georgetown, Delaware

Perdue, Inc. processes poultry for human consumption. Process water leaving the processing operation is screened of large particles through both primary and secondary screening. This water is then pumped to the primary DAF system. The solids from this process are removed and sent to a holding tank, and liquid continues through the wastewater plant. These solids are then removed from the tank to be hauled off site as DAF residuals. Sanitary waste is a separate waste stream from the DAF system.

#### Perdue Milford, Delaware

This Perdue, Inc. poultry processing facility treats strictly poultry processing water. The plant processes about 225,000 birds a day. The processing water treatment is accomplished through Dissolved Air Flootation (DAF). There is a sanitary system that handles all human waste that is piped to the Kent County wastewater system. There is an offal room that handles the heavy solids feathers, viscera, and blood. The balance of water goes to an Equalization basin (EQ). The water from EQ goes to two DAF tanks. These solids removed by this process are then hauled off site as DAF residuals.

#### Perdue Salisbury, Maryland

Perdue Salisbury is very similar to the Perdue locations in Georgetown and Milford. It processes poultry for human consumption. Process water leaving the processing operation is screened of large particles through both primary and secondary screening. This water is then pumped to the primary DAF system. The solids from this process are removed and sent to a holding tank, and liquid continues through the wastewater plant. These solids are then removed from the tank to be hauled off site as DAF residuals. Sanitary waste is a separate waste stream from the DAF system.

**Waste Constituent Characterization**

SEE ATTACHED FOR EACH RESIDUAL MATERIAL

## **Operations Overview**

Denali Water Solutions, LLC., will be responsible for the removal and transportation of Department approved DAF food processing residual materials generated from several Delaware poultry (one Pet Food) processing facilities, one in Maryland and one in Virginia. These poultry processing materials will be utilized as a part of a residuals management program for the Schiff Farms, Inc. Farm operation located in Harrington, Delaware. All farms to be utilized are located in Kent County, DE. Schiff Farms, Inc. has been successfully utilizing waste residuals as well as animal manures as a nutrient source for agronomic crop production for several years.

Application of DAF residuals and other land treatable wastes, as approved by the Department, will be delivered in sealed containers and land applied in accordance with sound agronomic practices and according to a current Nutrient Management Plan (NMP) developed by a Delaware Department of Agriculture certified nutrient management consultant. The timing of waste application to the land treatment sites, as well as the quantity and quality of waste to be land applied, will be specified in the annual Nutrient Management Plan (NMP) for the farm operation.

## **Operations**

The land application of these waste materials will be provided by Schiff Farms Inc. Denali Water Solutions will assist with the flagging and depth to groundwater testing to ensure the application of waste is in accordance with the current State Permit and Department regulations.

All residual waste is transported from the processing plants using 5,000 – 6,000-gallon enclosed watertight vessels and delivered to one of several storage tanks located on the Schreiber Farm (Feedlot 2). The storage tanks were previously utilized to store animal manure. The storage tanks were designed and approved by the Natural Resources Conservation Service and are capable of holding approximately 6,600,000 gallons of waste material. The storage tanks are now mainly utilized by Denali to store residual waste throughout the cropping year when land application is not feasible. Residual waste is delivered to the site, where it is pumped off the vessel and into the storage tank. These materials remain in storage until crop and field conditions permit the use of these materials to be utilized for crop nutrient needs.

Once fields conditions permit, and the timing is close to planting as possible, the stored residual waste is mixed using a Godwin pump. Once the waste is thoroughly mixed, a sample (or samples) of the waste is taken and analyzed for nutrient content. This test may include analysis for metals, and other required analysis, depending on permit requirements. Residual waste is pumped from the storage tank onto a liquid manure injector and applied using injection to the field according to the agronomic nutrient rate for the crop to be grown. The material may also be transported from the storage tank using 5,000 – 6,000-gallon totally enclosed watertight vessels and transported to the approved land application sites.

Land application will be performed by using standard agricultural equipment. Liquid residuals will be land applied by use of Houle 9,500-gallon capacity and 6,500-gallon capacity Dietrich injectors. To ensure adequate control of the application rate for each field, the equipment used for spreading the residuals will be calibrated prior to the start of each land application event.

The process of waste application will be in accordance with the current DNREC Agriculture Utilization of Waste permit for the site. The waste will be land applied by means of subsurface injection or alternatively by means of surface application with incorporation with separate written Department approval. Other application methods such as applying residual waste through Spray Irrigation may be requested and will require a separate written approval by the Department.

The application rate of the material will be followed in accordance with the crop's nitrogen requirement specified in the current NMP. Mineralized nitrogen from prior applications of waste or manure will be considered in calculating nitrogen application rates. In addition, the application rate may be limited should a fields soil phosphorus levels require a Phosphorus Site Assessment. If so, the nutrient application rate will be adjusted depending on the P-Assessment rating.

### **Residual Application Buffer Zones**

Residual waste will not be land applied within the following buffer zones:

(Table 1)

	<b>Surface Application</b>	<b>Surface Injection</b>
Occupied off-site dwelling	200 feet	100 feet
Occupied on-site dwelling	100 feet	50 feet
Potable wells	100 feet	100 feet
Non-potable wells	25 feet	25 feet
Public roads	25 feet	15 feet
Property lines	50 feet	25 feet
Bedrock outcrops	50 feet	25 feet
Streams, tidal waters, or other water bodies	50 feet	33 feet
Drainage ditches	25 feet	25 feet

All fields which are scheduled to receive residual waste will be buffered using field flags to mark areas where land application is prohibited. See (Residual Application Buffer Zones, Table 1). Note: The land application of residual waste buffer for the Property Lines may be eliminated should an adjacent landowner give permission by signing the *Adjacent Landowner Authorization to land apply residuals without Property Line buffer Setbacks* (attachment B).



In addition, any soils which are considered “restricted” during the time of application due to a shallow depth to groundwater reading, will be buffered using field flags and not applied.

In addition to buffer zones being marked prior to land application, Denali will perform groundwater level readings using a hand auger to characterize separation distances from groundwater to the depth of tillage of application. These readings will be documented using the *Land Application of Waste, Auger Boring Record* (attachment I). This document will provide the date when the auger borings were taken as well as date(s) when borings may need to be checked, area where borings were taken, number of borings taken, depth of borings and result. Should water-level readings indicate that areas of the field have or likely will have a water table that is within 20 inches of the depth of tillage, application in these areas shall not occur until the limiting situation has passed.

For those portions of the application areas where the depth to seasonal high-water table is less than 20 inches but greater than 12 or more inches, waste application will be limited to guidance specified in the land application permit for the site. Residual waste will only be applied when the actual water table depth is at least 20 inches below the maximum depth of tillage.

After a field has received its maximum load of residual waste, an appropriate application of nitrogen corresponding to the requirements of the growing or subsequent crop may be applied to the field according to the NMP. If supplemental nutrient sources are used on the portions of the field which have received waste, the total amount of plant available nitrogen applied will not exceed the total N requirement of the current crop.

Once the field application of residual waste is complete and the field has received any additional nitrogen according to the NMP, the field will be planted with an appropriate crop as specified in the NMP as soon as possible but no later than 1 month from the date of application. Should weather conditions not allow for crop germination, an appropriate crop will be planted as soon as practicable to reduce nitrogen losses.

A *Land Application of Waste, Daily Operational Record* (attachment H) will be utilized each day to document land application activities or when any other management activities are conducted at the site. This document provides the date(s) of application, rate of application, volume applied, the method of application and weather conditions.

The Schiff’s 5-year projected crop rotation includes: Irrigated Corn, Small Grain followed by Double Crop Soybeans. The application rate of the material will be in accordance with the crop's nitrogen requirement. Mineralized nitrogen from prior application(s) will also be considered in calculating nitrogen application rates. The application of approved residual waste will only occur once every 3-years on the planned field(s), however should the full agronomic rate not be achieved for the intended crop with the initial application, a second application may occur to satisfy crop nutrient needs within that cropping year or 365-day period. This is to reduce nutrient losses through leaching.

As noted above, the application rate may be limited or reduced should a field's soil test phosphorus level require a Phosphorus Site Assessment calculation. If so, the residual nutrient application rate will be adjusted depending on the P-Assessment rating. A current

nutrient management plan will be developed for Schiff Farms, Inc. by a Delaware certified nutrient management consultant where residual materials will be utilized to ensure the nutrient content of this material is accounted for. A background soil test and analysis will be performed to determine the Phosphorus and Potassium needs for the crop. Nitrogen needs will be calculated using the best 3 of 5 years of crop yield data. Application rates will be based on Nitrogen needs of the crop unless there is an excessive amount of Phosphorus indicated in the soil test results. If soil P is excessive, a Phosphorus Site Assessment calculation will be performed to determine the amount of residuals which can be applied.

### **Additional Operation Procedures**

All efforts will be made to significantly limit odors and reduce vector attraction from the application of residual waste. In most if not all cases, the application of waste will be injected into the soil to not only reduce odors but to also limit the amount of N loss.

Residual waste will not be applied from December 7 through February 15 according to Delaware Nutrient Management requirements. Waste will also not be applied during periods of rain or onto excessively wet ground.

### **Post Residual Application of Residuals**

After residual application occurs, Denali will immediately provide the farm operator a *Field Nutrient Balance Summary Report* (attachment J) which identifies the farm in which the residual application occurred, field number, acres, crop to be grown and application rate according to the current Agriculture Nutrient Management Plan. The report will also provide dates of residual waste application, amounts applied, the desired application rate along with actual amounts of N, P, K applied. Finally, Denali will provide the farm operator information for additional nutrients needed (if any) as a result of residual waste application.

### **Monitoring/Compliance**

All monitoring and compliance activities will be followed in accordance with the site permit. This includes testing of the residual waste as well as the soil. Denali will also provide an annual operation report of all land application activities which occurred throughout the year on or before February 1<sup>st</sup> of each year in a format acceptable to the Department.

## **Soil Map Units along with Map Unit Descriptions**

SEE ATTACHED

### **Additional Documents**

- A. Authorization to Land Apply Residuals
- B. Adjacent Landowner Authorization to land apply residuals without Property Line buffer setbacks
- C. Updated Aerial Photograph
- D. Soil Map/Application Suitability Map
- E. Description of the Soil Characteristics
- F. Depth to Water Table Map (for Luff farm only as this is a new farm being added to permit).
- G. Updated Operational Map with Buffer Zones & Application Acres
- H. Land Application of Waste, Daily Operational Record
- I. Land Application of Waste, Auger Boring Record
- J. Field Nutrient Balance Summary Report
- K. Nutrient Management Plan
- L. Soil Analysis
- M. Luff farm tax assessment
- N. DE Non-Hazardous Liquid Waste Transporters Permit