

STATE OF UTAH  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF WATER QUALITY  
WATER QUALITY BOARD  
P.O. BOX 144870  
SALT LAKE CITY, UTAH 84114-4870

**Ground Water Discharge Permit  
Permit No. UGW010016**

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953, as amended, the Act,

**Smithfield Hog Production  
P.O Box 100  
Milford UT 84751**

Hereafter referred to as the Permittee, is granted a Ground Water Discharge Permit the operation of the Pinnacles Finisher Sites hog production facilities at 52 farm sites north of Milford, Utah. The farm sites are located in Salt Lake Base & Meridian:

Section	Township	Range	County
29,30,31,32,33	25S	9W	Millard
7,17,18,19,20,30,31	26S	9W	Beaver
13,15,23,26,27,33,34,35	26S	10W	Beaver
5	27S	9W	Beaver
3	27S	10W	Beaver

Centralized Lat Lon: North Area: 38.57167 -112.9069 South Area: 38.5167 -112.9405

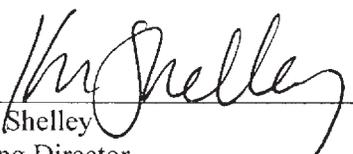
This permit is based on representation made by the Permittee and other information contained in the administrative record. It is the responsibility of the Permittee to read and understand all provisions of this permit.

The facility shall be constructed and operated in accordance with conditions set forth in the permit and the Utah Administrative Rules for Ground Water Quality Protection (UAC R317-6).

This permit shall become effective on June 1, 2017

This permit and authorization to operate shall expire at midnight May 31<sup>st</sup>, 2022

Signed this 31<sup>st</sup> day of May, 2017.

  
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Kim Shelley  
Acting Director

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APPENDIX A Summary of Construction Details for Primary and Secondary Lagoons

Applicable Smithfield Operations Documents for this permit include but are not limited to:

Smithfield Sampling and Analysis Plan

Anaerobic Lagoon Systems Operation and Maintenance Manual

Spill Prevention and Response Manual

Sludge Disposal and Farm Closure Plan

**PART I CONSTRUCTION PERMIT ISSUANCE**

**A. AUTHORIZED CONSTRUCTION**

As part of this ground water discharge permit, a construction permit is hereby issued to Pinnacle Finisher Farms as summarized below and detailed in Appendix A. Construction for this project will consist of 52 farm sites with 4 barns for a total of 208 barns. Each Farm Site will have two Waste Containment Basins, one deeper Primary Containment Basin and one Shallow Evaporation Basin. Application Addendum #1 also requested that there be an option of installing Digester Technology with an Evaporation Basin rather than the deeper Primary Containment Basin. Since the Digester Technology has not yet been determined, a new Addendum to the Construction Permit will need to be submitted and approved by DWQ. At a minimum, all Digesters and Basins will be required to have the same groundwater protection measures such as 60 mil HDPE liner, compacted soil subliner, and monitoring wells. A truck wash facility for the Pinnacle Finisher Farms will be built.

**B. DESIGN AND CONSTRUCTION**

Under authority of the Utah Water Quality Act, Section 19-5-108(1) Utah Code Ann. 1953, as amended and Utah Administrative Code R317-1, the authorized facilities will be constructed in accordance with the engineering design plans and specifications attached as Appendix A.

The following is a summary of the proposed major construction projects:

Construction of 52 Finisher Farm Sites each with the following:

- 4 Finisher Barns, each barn can contain up to 4800 hogs sized from 60 to 250 lbs.
- 2 Wastewater Containment Basins – One deeper Primary Containment Basin (17.5 million gallons, 53.7 ac-ft) and one shallow Secondary Evaporation Basin (4.8 million gallons, 14.7 ac-ft). The Digester Technology may replace the deeper Primary Containment Basin.

Construction of a Truck Washing Facility with a 1.3 million gallon pond (3.99 ac-ft).

The plans and specifications, as submitted, comply with the Utah Water Quality Rules, (R317, Utah Administrative Code) and the following conditions:

1. Construction activities that disturb one acre or more are required to obtain coverage under the Utah Pollutant Discharge Elimination System (UPDES) Storm Water General Permit for Construction Activities. The permit requires the development of a storm water pollution prevention plan (SWPPP) to be implemented and updated from the commencement of any soil disturbing activities at the site until final stabilization of the project. For more information, or to obtain permit coverage on-line, please go to: <http://www.waterquality.utah.gov/UPDES/stormwater>.

2. Any revisions or modifications to the approved plans and specifications must be submitted to DWQ for review and approval, before construction or implementation thereof.
3. A written operations and maintenance manual, containing a description of the functioning of the facilities, an outline of routine maintenance procedures, and all checklists and maintenance logs needed for proper operation of the system, must be submitted and approved before the final inspection and operation of the system.
4. The approved facilities must not be placed in service unless DWQ has conducted a final inspection, reviewed and approved the As-Built Construction Certification Report, issued a ground water discharge permit for the facility, and provided written authorization to place the constructed facilities in service.

The plans and specifications for this project have been stamped and signed by a Professional Engineer currently licensed to practice in the state of Utah. The construction design, inspection supervision, and written construction certification of all work associated with this Construction Permit must be performed by a Professional Engineer licensed to practice in the state of Utah.

This Construction Permit will expire one year from the date of its issuance, as evidenced by the date of this letter, unless substantial progress is made in constructing the approved facilities or the plans and specifications have been resubmitted and the construction permit is reissued. This permit does not relieve you, in any way, of your obligations to comply with other applicable local requirements.

Because of the inherent hazard potential at lagoons and ponds, warning signs should be posted at these facilities to state the dangers of drowning and asphyxiation. Safety ropes running down the pond side slopes, and fastened to posts at the top of the dikes should be available to allow anyone trapped in the ponds to escape.

Upon completion of the project, a final inspection and approval of the As-Built Construction Certification Report is required before the approval to operate the completed facilities can be issued. Please remain in contact with Mr. Campbell to schedule the final inspection. The Construction Certification Report with final as-built drawings must include test results for the following construction quality assurance and quality control (CQA/QC) elements:

Soil Subgrade

- Proctor Curves,
- Soil Classification,
- Field Compaction Testing, and
- Subgrade Acceptance Certification.

Concrete

- Concrete Mix Verification;
- Concrete reinforcement;
- Waterstop placement;
- Concrete ASTM Testing Method, Frequency, and Results;
- Concrete Testing Pass/Fail Criteria, and
- Crack Inspection and Repair.

Flexible Membrane Liner

- Panel Placement Log,
- Trial Seam Test Log,
- Seaming Record,
- Seam Test Record,
- Repair Log,
- As-Built Drawing,
- Manufactures Certification including QA/QC Testing of the Rolls, and
- Professional Engineer Certification.

**PART II      SPECIFIC PERMIT CONDITIONS**

A.      GROUND WATER CLASSIFICATION

Ground water in the Escalante Valley near the Pinnacle Finisher Farm sites is classified as Class II and Class III Drinking Water Quality. This interim determination may be changed when subsequent compliance monitoring determines the ground water quality at the multi-farm sites.

B.      BACKGROUND GROUND WATER QUALITY

Based on regional Utah Geological Survey ground water quality report submitted with the application, total dissolved solids (TDS) concentrations in the general area range from 226 to 4,600 milligrams per liter (mg/l) and no parameters are above Utah Ground Water Quality Standards.

**Table 1: Range of Background Ground Water Quality  
of shallow aquifer in the Escalante Valley Milford area, UT\***

Parameter	(mg/l)
pH (units)	7.2
Total Dissolved Solids	226 – 4,600
Chloride	111 - 268
Nitrate as N	<1 – 5
Alkalinity total	238 – 515
Sulfate	67 – 274
Calcium	57 – 207
Magnesium	20 – 52
Potassium	3 – 6.5
Sodium	26 – 67

\*Utah Geological Survey Cooperative Investigations Report No. 56

C.      GROUND WATER PROTECTION LEVELS

Table 2 provides interim ground water protection levels for containment basin compliance monitoring wells. After completion of the accelerated background monitoring program in accordance with Part II.I.1 of this permit, ground water protection levels will be established for the site utilizing the provisions outlined in UAC R317-6-4 for the parameters listed in Table 2. The interim protection levels of Table 2 will be modified if necessary.

**Table 2: Interim Ground Water Protection Levels**

Parameter	Protection Level (mg/l)
pH (units) <sup>(a)</sup>	6.5 - 8.5
Total Dissolved Solids	1500
Chloride <sup>(c)</sup>	250
Bicarbonate	250
Nitrate + Nitrite as N <sup>(b)</sup>	2.5

(a) Equals Ground Water Quality Standard  
 (b) Equals 0.25 x Ground Water Quality Standard.  
 (c) EPA Secondary Drinking Water Standard is 250 mg/l

D. BEST AVAILABLE TECHNOLOGY (BAT) STANDARD

The administration of this permit is founded on the use of Best Available Technology (BAT), in accordance with the requirements of UAC R317-6-1.3. The construction permit (PART I) issued with this discharge permit describes construction standards for the wastewater containment basins. Compliance with the requirements for use of BAT will be demonstrated by construction, operation and maintenance of the containment basins according to the construction permit.

Achievement of these performance standards will be demonstrated by:

- 1) Only hog wastes may be disposed of in the containment basins.

The hog waste is drained into a primary anaerobic digestion basin for treatment and storage. These farm sites each have at least one primary basin and one containment basin for evaporation. The primary basins are sized to accept up to 1.8 cubic feet of volume per pound of live animal weight (LAW) in the digestion basin and provide enough surface area for evaporation of water in the evaporative basin. The containment basins are lined with 60-mil flexible membrane liner (FML). The liners are designed to yield a liner hydraulic permeability coefficient no greater than  $1 \times 10^{-7}$  cm/sec. The liner type, dimensions, maximum operating depth, free board, liquid contact area, and operating volume of each primary and containment basin for each farm site are presented in the construction permits and construction permit applications covering those units. This information is summarized in Appendix A.

Manure Drying Pads – Smithfield Hog Production has 52 farm sites in operation for this permit, and each site has a primary anaerobic basin where manure solids are collected. It is necessary to remove accumulated solids from the bottom of each primary digestion basin at the farm sites. Circle Four Farm has implemented a program to remove the solids from the digestion basins and dry the manure on a drying pad constructed near the digestion basin. The manure is a nutrient source and the drying of the manure will allow the nutrients to be sold and applied to local cropland at agronomic rates.

Manure drying pads at any of the facilities covered by this permit may not be performed on any parcel of land without first notifying and receiving the approval of the Director. Pad construction must be performed in accordance with the most recently revised and approved version of the Manure Drying Program Plan.

2. Performance Standard for Best Available Technology

Compliance with the requirements for use of best available technology (BAT) will be demonstrated by construction, maintenance and operation of the digestion basin and evaporation basins according to the construction permit (Part I).

- a. Liner - Performance of FML liner will be evaluated for compliance with the requirements of this permit. Liner integrity will be evaluated prior to operation with the approved construction quality assurance/quality control (QA/QC) plans contained in the application for this permit.

The liner integrity must be maintained. Deterioration of materials or any other situation which prevents the liner from functioning according to the approved design

shall constitute non-compliance with this permit. After completion of construction, synthetic liners must remain in contact with the prepared soil base of the containment basins, as provided by liner slack and ballast when necessary to minimize billowing caused by the wind. Adequate slack and ballast when necessary will also be provided to minimize stresses and suspensions of the liner at the toe of the dikes due to variations in ambient temperature and incident solar radiation. Any large suspensions or billowing of synthetic liner is considered a failure of this performance standard. The formation of bulges or whales in the liner when the basins contain water is an indication of a leak in the liner. When whales form in the liner, the liner must be repaired in an expeditious manner. Impact to the underlying soils must be assessed in conformance with the provisions detailed in the most recently revised and approved version of the Spill Prevention and Response Plan.

b. *Digestion basins* - The performance standard for anaerobic digestion basin operation is based on operating and maintaining the digestion basins in a manner consistent with the design criteria detailed in the construction permits. The design of the primary lagoons is based on a total volumetric capacity of approximately 1.80 cubic feet per pound of LAW, consisting of 1.2 cubic foot for treatment and 0.6 cubic foot for 20-year sludge accumulation for finisher hogs. The evaporation basins are designed to have a normal operating depth with additional surface area needed to maintain a constant depth, at the same time of each year and evaporate the excess wastewater during each annual cycle. Construction dimensions for each primary and secondary at each farm site are summarized in Appendix A.

The anaerobic digestion basin system must be operated and maintained in accordance with the most recently revised and approved Smithfield Anaerobic Lagoon Systems Operation and Maintenance Manual. Performance of the anaerobic digestion basins will be demonstrated by the monitoring specified in Part II.F.2.b.

Smithfield may also choose to install a digester with an evaporation basin. The exact design of this system is not finalized yet, but construction drawings will be submitted and approved prior to construction. The design of the system will meet all of the minimum design criteria as stated above to protect groundwater quality.

- 3) No ground water degradation beyond permit limits established in Table 2 as measured by compliance monitoring wells.
- 4) Compliance Monitoring Wells - The Permittee will monitor one upgradient and two downgradient compliance monitoring wells at each of the containment basin systems.
- 5) Protection of Monitoring Wells - All compliance monitoring wells must be protected from damage due to surface vehicular traffic or contamination due to surface spills, and shall be maintained in full operational condition for the life of this permit. Any compliance monitoring well that becomes damaged beyond repair or is rendered unusable for any reason will be replaced by the Permittee within 90 days or as directed by the Director.

E. BEST MANAGEMENT PRACTICES

- 1) The Permittee shall operate the facility such that the ground water quality standards (UAC R317-6-2) and ground water protection levels in Table 2 that were developed

for this permit are not exceeded in the unconfined aquifer underlying the site, or other aquifers that may be impacted by facility operations. Utah ground water regulations also contain standards for contaminants such as metals, pesticides and volatile organic compounds. Accordingly, the Permittee must not discharge these or any other contaminants that could impair beneficial uses of the ground water.

- 2) Permittee shall ensure proper handling of plant wastewater, prompt cleanup of any releases, and an ongoing operation, inspection, and maintenance program for ancillary facilities associated with this permit.
- 3) Closure Plan - Any digestion basin system closure must be undertaken in compliance with the most recently revised and approved version of the Sludge Disposal and Farm Closure Plan that has been prepared by the permittee.

Prior to closure of any containment basin system, the permittee shall submit to the Director a site-specific closure plan for disposition of the liquids, solids and liner material of the basin(s) to be closed. A plan for land application of the liquids and solids at appropriate agronomic rates, on-site at manure drying pads, or other disposal methods, will be submitted for approval by the Director. The containment basin liner material will be tested according to an approved testing plan to determine an appropriate means of disposal, which will not lead to ground water contamination. The monitoring wells will continue to be sampled for a post closure monitoring period as determined by the Director.

F. COMPLIANCE MONITORING REQUIREMENTS

The permittee is required to monitor ground water quality and source activities that could potentially impact the ground water quality. Monitoring shall be performed according to the provisions of this permit.

The network of monitoring wells shall provide the ability to detect contamination in the uppermost groundwater aquifer, which could result from excess containment basin seepage. Under the provisions of this permit, ground water contamination in the shallow aquifer under the containment basin sites would be a reason for the permittee to take remedial action before further degradation occurs.

1. Compliance Monitoring Wells - The network of monitoring wells shall provide the ability to detect contamination in the uppermost groundwater aquifer, which could result from excess containment basin seepage. Under the provisions of this permit, ground water contamination in the shallow aquifer under the containment basin sites would be a reason for the permittee to take remedial action before further degradation occurs.
  - a) Location of Monitoring Wells - The permittee has installed a monitoring well system at each existing farm site to establish the ground water gradient underlying each containment basin system and to monitor ground water quality in both the upgradient and downgradient wells. The permittee will be required to drill additional wells if the ground water flow directions are different than expected as revealed when the wells are drilled. The locations of any new wells installed for the farm sites covered under this permit shall be submitted in this format: latitude and longitude relative to NAD83.

- b) Damage to Monitoring Wells - If a monitoring well is damaged or is otherwise rendered inadequate for its intended purpose or if a previous hydraulic gradient between two monitor wells is reversed, the Director shall be notified in writing within five days of the permittee becoming aware of the condition.
- c) Future Modification of Monitoring Well Network - If at any time the Director determines the monitoring well network to be inadequate due to a change in gradient or for any other reason, the permittee shall submit within 30 days of receipt of notification a plan and compliance schedule to modify the monitoring well network.

2. Monitoring Details

- a) Semi-annual Ground Water Quality Compliance Monitoring - Semi-annual ground water compliance monitoring shall be conducted by the permittee under the provisions of this permit. The monitoring requirements listed below apply to all upgradient and downgradient wells. The protection levels for indicator parameters are calculated using the Ground Water Quality Protection Regulations (UAC R317-6-4), background water quality data, and historical well data.

Sample collection, handling and analysis shall be conducted in accordance with the most recently revised and approved version of the Smithfield Sampling and Analysis Plan.

Unless revised by the Smithfield Sampling and Analysis Plan, the field parameters to be measured during the semi-annual monitoring shall be: temperature, specific conductance, pH, and ground water elevation. Ground water elevations shall be determined according to Part II.F.2.e.

Unless revised by the Smithfield Sampling and Analysis Plan, the laboratory parameters to be measured during the semi-annual monitoring shall be: Nitrate plus Nitrite as Nitrogen, Bicarbonate, Chloride, and Total Dissolved Solids (TDS).

The results of the compliance monitoring shall be submitted to the Division of Water Quality along with supporting field data in the Semi-annual Ground Water Quality Monitoring Report.

- b) Annual Monitoring - Annual compliance monitoring shall be conducted by the permittee under the provisions of this permit according to the most recently revised and approved version of the Circle Four Sampling and Analysis Plan, the Circle Four Anaerobic Lagoon Systems Operation and Maintenance Manual, and the Circle Four Sludge Disposal and Farm Closure Plan as indicated below.

The waste water from a representative operating primary manure digestive basin shall be analyzed annually for the following parameters: temperature, specific conductance, pH, nitrate plus nitrite as nitrogen, ammonia, total Kjeldahl nitrogen (TKN), sulfate, bromide, chloride, total dissolved solids, sodium, potassium, calcium, magnesium, bicarbonate, carbonate, phosphorus, arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc.

Sample collection, handling, and analysis shall be conducted in accordance with the most recently revised and approved version of the Smithfield Sampling and Analysis Plan. Samples shall be taken in the late summer when parameter concentrations should be at their yearly maximum. Analyses for nitrogen species shall be conducted at the same laboratory. Results of the wastewater monitoring accompanied by any supporting raw data shall be submitted to the Division of Water Quality with the next Semi-annual Ground Water Quality Monitoring Report.

Lagoon performance monitoring shall be conducted according to the most recently revised and approved version of the Anaerobic Lagoon Systems Operation and Maintenance Manual. Results of the lagoon performance monitoring accompanied by any supporting raw data shall be submitted to the Division of Water Quality.

Sludge profiling of all primary lagoons shall be conducted according to the most recently revised and approved version of the Sludge Disposal and Farm Closure Plan. The results of this profiling accompanied by any supporting raw data shall be submitted to the Division of Water Quality.

- c) Background Ground Water Quality Monitoring - Background ground water quality will be established in the upgradient monitoring wells for all the farm sites covered by this permit for the purpose of establishing protection levels. The samples will be analyzed for the following parameters: temperature, specific conductance, pH, nitrate plus nitrite as nitrogen, ammonia, bicarbonate, chloride, total dissolved solids (TDS), sodium, potassium, magnesium, calcium, carbonate, and sulfate. At least one sample from each downgradient monitor well was also analyzed for all these parameters. If any additional upgradient or downgradient wells are installed, the permittee shall collect quarterly samples at equal time intervals over a two-year period from each upgradient well and each downgradient well. The samples shall be analyzed for the parameters listed above. Sample collection, handling, and analysis shall be conducted in accordance with the most recently revised and approved version of the Smithfield Sampling and Analysis Plan. The results accompanied by any supporting data shall be submitted to the Division of Water Quality with the next Semi-annual Ground Water Quality Monitoring Report.
- d) Depth to Ground Water and Ground Water Elevation - Depth to ground water shall be measured to the nearest 0.01 foot, below the reference point at the top of the well casing. For each monitoring well, the permittee shall submit a report to the Division of Water Quality accompanied by a surveyors report indicating the elevation, in feet above mean sea level to the nearest 0.01 foot, of the reference point at the top of the well casing from which all ground water depths are measured.

Ground water elevations shall be measured semi-annually at all active monitoring wells at the farm sites covered by this permit. Ground water elevations shall be calculated by subtracting the depth to ground water measurement from the elevation of the reference point at the top of the well casing and reported in feet above mean sea level to the nearest 0.01 foot. Ground water elevation

calculations for each semi-annual ground water sampling event shall be submitted with the Semi-annual Ground Water Quality Monitoring Report.

Ground water potentiometric contour maps shall be constructed from these data once annually and submitted to the Division of Water Quality with the next Semi-annual Ground Water Quality Monitoring Report.

- e) Laboratory Approval - All water analyses shall be performed by a laboratory certified by the State of Utah in accordance with the most recently revised and approved version of the Smithfield Sampling and Analysis Plan and the provisions of UAC R317-6-6.3.
- f) Future Modification of Monitoring Plan - If the Director or permittee determine that hydrogeologic conditions at any farm site do not allow a direct comparison of upgradient and downgradient ground water quality, protection levels and compliance limits shall be established based on ground water quality in the down gradient well. In this event, the Director shall direct the permittee to begin collection of background water quality data in the down gradient well according to Part II.F.2.c. Alternatively, the permittee may propose another method of compliance monitoring within 90 days of the determination that upgradient-downgradient comparison is not possible.

3. BAT Performance Monitoring Program

Permittee shall conduct a containment basin inspection and maintenance program. Documentation of compliance with this program shall be maintained on site for review by representatives of the Division.

G. NON-COMPLIANCE STATUS

- 1. Probable Out-of-Compliance Status - The permittee shall evaluate results of each ground water sampling event to determine any exceedence of the Ground Water Protection Levels found in Table 2. Upon determination that a Ground Water Protection Level has been exceeded in the ground water, the permittee shall:
  - a. Immediately re-sample the monitoring well found to be in probable out-of-compliance status for laboratory analysis of the exceeded protection level parameter(s). Submit the analytical results thereof, and notify the Director of the probable out-of-compliance status within 30 days of the initial detection.
  - b. Upon exceedence of any one parameter listed in Table 2 for two consecutive sampling events, immediately implement an accelerated schedule of quarterly sampling analysis, consistent with the requirements of this permit. This quarterly sampling will continue for at least two quarters or until the compliance status can be determined by the Director. Reports of the results of this sampling will be submitted to the Director as soon as they are available, but not later than 30 days from each date of sampling.

- c. Exceedance in Upgradient Well - If the protection levels referenced in Table 2 are exceeded in any upgradient well, the permittee shall note the exceedance in the next semi-annual monitoring report. If ground water elevations indicate that the well is no longer upgradient of the lagoon, or if ground water mounding has developed, the exceedance shall be treated as a non-compliance event according to the provisions of Part II.G. As part of the resolution of the non-compliance situation, the permittee may be required to propose changes to the monitoring plan for the site sufficient to demonstrate that ground water is not being polluted in violation of UAC R317-6.
2. Out-of-Compliance Status Based on Confirmed Exceedance of Permit Ground Water Protection Levels
    - a. Out of Compliance Status shall be defined as follows:

For parameters that have been defined as detectable in the background and for which protection levels have been established, out-of-compliance shall be defined as two consecutive samples exceeding the protection level. Out of compliance status for exceedance of bicarbonate occurs only when the respective compliance limit is exceeded and the compliance limit for total dissolved solids is also exceeded.
    - b. Notification and Accelerated Monitoring - upon determination by the permittee or the Director, in accordance with UAC R317-6-6.17, that an out-of-compliance status exists, the permittee shall:
      - 1) Verbally notify the Director of the out-of-compliance within 24 hours, and provide written notice within 5 days of the detection, and  

A written submission shall also be provided to the Director within five days of the time that the permittee becomes aware of the noncompliance. The written submission shall contain:

        - i) A description of the noncompliance and its cause;
        - ii) The period of noncompliance, including exact dates and times;
        - iii) The estimated time noncompliance is expected to continue if it has not been corrected; and,
        - iv) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
      - 2) The permittee shall verbally report any noncompliance, which may endanger public health or the environment as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances. The report shall be made to the Division of Water Quality, Ground Water Protection Section at (801) 536-4300, during normal business hours (8:00 am - 5:00 pm Mountain Time Monday through Friday).

- 3) Continue an accelerated schedule of quarterly ground water monitoring for at least two quarters and continue quarterly monitoring until the facility is brought into compliance as determined by the Director.
- c. Source and Contamination Assessment Study Plan - within 30 days after the written notice to the Director required in Part II.G.2.b.1 above, the permittee shall submit an assessment study plan and compliance schedule for:
  - i) Assessment of the source or cause of the contamination, and determination of steps necessary to correct the source.
  - ii) Assessment of the extent of the ground water contamination and any potential dispersion.
  - iii) Evaluation of potential remedial actions to restore and maintain ground water quality, and ensure that the ground water standards will not be exceeded at the compliance monitoring locations.
3. Out-of-Compliance Status Based Upon Failure To Maintain Best Available Technology - In the event that BAT monitoring indicates a violation of any of the technology or performance management standards outlined in Part II .D and E of this permit, the permittee shall submit to the Director a notification and description of the violation in accordance with Part II.G of this permit.
4. Failure to Maintain Best Available Technology Required by Permit

A facility will be determined to be in an out-of-compliance status if best available technology has failed or cannot be maintained according to the provisions required by this permit, unless:

  - a. The Permittee has notified according to Part II.G.2, and
  - b. The failure was not intentional or was not caused by the Permittee's negligence, either in action or failure to act, and
  - c. The Permittee has taken adequate remedial measures in a timely manner or has developed an approvable remedial action plan and implementation schedule for restoration of best available control technology, an equivalent control technology, or closure of the facility (implementation of an equivalent technology will require permit modification and re-issuance), and
  - d. The Permittee has demonstrated that any discharge of a pollutant from the facility is not in violation of the provisions of UCA 19-5-107.
5. Additional Notification - In the event of out-of-compliance status due to either an exceedance of ground water compliance limits, a spill, or a failure of Best Available Technology, the permittee shall notify the Millard or Beaver County Commission and the Southwest Utah District Health Department within 24 hours or the first working day following a spill. The report shall also be made to the

Utah Department of Environmental Quality 24 hour number, (801) 536-4123, or to the Division of Water Quality, Ground Water Protection Section at (801) 536-4300, during normal business hours (Monday through Friday 8:00 am - 5:00 pm Mountain Time).

6. Contingency Plan - If, after review of ground water monitoring data and other relevant information, the Director determines that use of any lagoon has caused an exceedance of ground water compliance limits at any compliance monitoring point, the permittee shall conduct a Contamination Investigation to determine the extent and severity of contamination caused by the lagoon and submit it for review by the Division of Water Quality within 45 days of determination of out-of-compliance status. After review of this report the Director may require the permittee to develop a Corrective Action Plan to remediate the contamination. Actions taken under the plan may include emptying liquids and sludge from the leaking lagoon into one of the other lagoons in the permittees farm complex, repairing or reconstructing the lagoon liner as needed, constructing temporary holding ponds lined with flexible membrane liners, and developing wells for the purpose of extracting the contaminated ground water. Contaminated ground water may be stored in the lagoons or land applied according to the most recently revised and approved Nutrient Management Plan for Land Application, if necessary and feasible.

Significant hog waste spills from the waste handling system must be addressed in compliance with the most recently revised and approved version of the Spill Prevention and Response Manual that has been prepared by the permittee. Minor spill events shall be reported with the next Semi-annual Ground Water Quality Monitoring Report.

H. REPORTING REQUIREMENTS

1. Water Monitoring - monitoring required in Part II.F above shall be reported according to the schedule in Table 3 below, unless modified by the Director:

**Table 3: Compliance Monitoring Report Schedule**

<u>Monitoring Period</u>	<u>Report Due Date</u>
January through June	August 1
July thru December	February 1

2. Ground Water Quality Sampling - reporting will include:
  - a. Field Data Sheets - or copies thereof including the field measurements, required in Part II.F.a above, or as listed in the most recently revised and approved Smithfield Sampling and Analysis Plan; well name/number, date and time, names of sampling crew, type of sampling pump or bail, volume of water purged before sampling, and any pertinent comments relating to sampling conditions.
  - b. Water Level Measurements - water level measurements from ground water monitoring wells will be reported as measured depth to ground water from the surveyed casing measuring point, and ground water elevations as converted by casing measuring point elevations.

- c. Laboratory Analytical Results - including date sampled, date received; and the results of analysis for each parameter, including: value or concentration, units of measurement, reporting limit (minimum detection limit for the examination), analytical method, and the date of the analysis. The analytical methods and the method detection limits for every parameter must conform to those specified in the most recently revised and approved version of the Smithfield Sampling and Analysis Plan.
4. Annual Sludge Profile Monitoring Report - The report of the annual sludge profile monitoring shall be submitted within 30 days of completion of all sampling, monitoring, and analysis.
5. Annual Lagoon Performance Monitoring Report - The report of the annual lagoon performance monitoring shall be submitted within 30 days of completion of all sampling, monitoring, and analysis.
6. Noncompliance or Probable Noncompliance - Reporting requirements for noncompliance or probable noncompliance status shall be according to the provisions of Part I.F.
7. Electronic Filing Requirements - The permittee will submit the required ground water monitoring data in the electronic format specified by the Director. The data may be submitted by electronic transfer, e-mail, PDF, compact disc, or other approved transmittal mechanism. In addition, a submittal of the hard copy data may be made if the Permittee prefers.
8. Monitoring Well As-Built Report - For each new well constructed the permittee shall submit diagrams and descriptions of the final completion of the monitoring wells. The report is due following the completion of drilling activities. The report shall include:
  - a. Casing: depth, diameter, and type of material.
  - b. Screen: length, depth interval, diameter, material type, slot size.
  - c. Sand Pack: depth interval, material type and grain size.
  - d. Annular Seals: depth interval, material type.
  - e. Surface Casing and Cap: depth, diameter, material type, protection measures constructed.
  - f. Elevation and Location: ground surface elevation, elevation of water level measuring point, latitude and longitude in degrees, minutes and seconds.
  - g. Well construction description, well completion description, results of well pump tests or slug tests.

I. COMPLIANCE SCHEDULE

1. Permit Compliance Schedule Item #1 The Permittee shall install ground water monitoring wells completed in the shallow aquifer at each containment basin site. One upgradient and two downgradient wells will serve as one compliance

mechanism for monitoring any containment basin discharge. The wells shall be sampled at least once prior to placing the containment basins into service. Following well installation, each well shall be sampled quarterly until 8 samples have been collected to determine background ground water quality. Compliance sampling will then change to semi-annual frequency.

2. Permit Compliance Schedule Item #3 Final Closure Plan. In the event that the permittee decides to discontinue its operations at the facility the permittee shall notify the Director of such a decision and submit a Final Closure Plan. The Final Closure Plan shall be submitted no later than 180 days prior to the closure of the facility. The permittee shall resubmit Final Closure Plans within 60 days of receipt of written notice of deficiencies therein. Any material changes made to this plan shall require final approval of the Director.

**PART III MONITORING, RECORDING AND REPORTING REQUIREMENTS**

A. REPRESENTATIVE SAMPLING

Samples taken in compliance with the monitoring requirements established under Part II shall be representative of the monitored activity.

B. ANALYTICAL PROCEDURES

Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3.L, unless other test procedures have been specified in this permit.

C. PENALTIES FOR TAMPERING

The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. REPORTING OF MONITORING RESULTS

Monitoring results obtained during each reporting period specified in the permit, shall be submitted to the Director, Utah Division of Water Quality at the following address no later than the 15th day of the month following the completed reporting period:

State of Utah  
Division of Water Quality  
P.O. Box 144870  
Salt Lake City, Utah 84114-4870  
Attention: Ground Water Protection Section

Electronic document submission:

<http://deq.utah.gov/ProgramsServices/services/submissions/>

E. COMPLIANCE SCHEDULES

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. ADDITIONAL MONITORING BY THE PERMITTEE

If the permittee monitors any pollutant more frequently than required by this permit, using approved test procedures as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. RECORDS CONTENTS

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. RETENTION OF RECORDS

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

I. TWENTY-FOUR HOUR NOTICE OF NONCOMPLIANCE REPORTING

1. The permittee shall verbally report any noncompliance which may endanger public health or the environment as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24 hour number, (801) 536-4123, or to the Division of Water Quality, Ground Water Protection Section at (801) 536-4300, during normal business hours (Monday through Friday 8:00 am - 5:00 pm Mountain Time).
2. A written submission shall also be provided to the Director within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
  - a. A description of the noncompliance and its cause;
  - b. The period of noncompliance, including exact dates and times;
  - c. The estimated time noncompliance is expected to continue if it has not been corrected; and,
  - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
3. Reports shall be submitted to the addresses in Part III.D, Reporting of Monitoring Results.

J. OTHER NONCOMPLIANCE REPORTING

Instances of noncompliance not required to be reported within 24 hours, shall be reported at the time that monitoring reports for Part II.H are submitted.

K. INSPECTION AND ENTRY

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters.

**PART IV COMPLIANCE RESPONSIBILITIES**

A. DUTY TO COMPLY

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS

The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine not exceeding \$25,000 per day of violation. Any person convicted under Section 19-5-115(2) of the Act a second time shall be punished by a fine not exceeding \$50,000 per day. Nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

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

D. DUTY TO MITIGATE

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. PROPER OPERATION AND MAINTENANCE

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

**PART V GENERAL REQUIREMENTS**

- A. PLANNED CHANGES  
The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.
- B. ANTICIPATED NONCOMPLIANCE  
The permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- C. PERMIT ACTIONS  
This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- D. DUTY TO REAPPLY  
If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a permit renewal or extension. The application should be submitted at least 180 days before the expiration date of this permit.
- E. DUTY TO PROVIDE INFORMATION  
The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.
- F. OTHER INFORMATION  
When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.
- G. SIGNATORY REQUIREMENTS  
All applications, reports or information submitted to the Director shall be signed and certified.
1. All permit applications shall be signed as follows:
    - a. For a corporation: by a responsible corporate officer;
    - b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
    - c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
  - a. The authorization is made in writing by a person described above and submitted to the Director, and,
  - b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
3. Changes to Authorization. If an authorization under Part V.G.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part V.G.2 must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. PENALTIES FOR FALSIFICATION OF REPORTS

The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. AVAILABILITY OF REPORTS

Except for data determined to be confidential by the permittee, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director. As required by the Act, permit applications, permits, effluent data, and ground water quality data shall not be considered confidential.

J. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

K. 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.

L. TRANSFERS

This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. STATE LAWS

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-117 of the Act.

N. REOPENER PROVISION

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. If new ground water standards are adopted by the Board, the permit may be reopened and modified to extend the terms of the permit or to include pollutants covered by new standards. The permittee may apply for a variance under the conditions outlined in R317-6-6.4.D.
2. If alternative compliance mechanisms are required.
3. If subsequent ground water monitoring data reveals the background water quality values in Part II Table 1 are not accurate.

APPENDIX A  
CONSTRUCTION PERMIT  
PLANS AND SPECIFICATIONS



Jim Webb  
Director of EHS and Public Affairs  
Pinnacle Finisher Sites  
P.O. Box 100  
Milford, UT 84751

Dear Mr. Webb:

**Subject: Construction Permit** for a Truck Washing Facility and 52 Finisher Farm Sites each with two Barns (4 Buildings) and two Waste Containment Basins.

On January 12, 2017, the Division of Water Quality (DWQ) received the Groundwater Discharge Permit Application which also included the engineering plans and specifications for the construction of 33 Finisher Farm Sites.

Addendum #1 was received by DWQ on February 28, 2017. Addendum #1 requested that the number of farm sites be increased from 33 sites to 52 sites. Each Farm Site will have two Finisher Barns (4 main buildings) and two Waste Containment Basins. Each Finisher Barn has two main buildings that house the animals and a hallway that connects the two buildings (this configuration looks like an H). The Waste Containment basins will have one Deep Primary Containment Basin and one Shallow Evaporation Basin. Each Finisher Barn can hold up to 4,800 hogs (9600 total at each Farm Site). Addendum #1 also requested that there be an option of installing Digester Technology. With the Digester Technology the deeper Primary Containment Basin is eliminated and the Evaporation Basin is much larger. Since the Digester Technology has not yet been determined, a new Addendum to the Construction Permit will need to be submitted and approved by DWQ. At a minimum, all Digesters and Basins will be required to have the same groundwater protection measures; for example 60 mil HDPE liner, compacted soil subliner, monitoring wells, etc.

Addendum #2 was received by DWQ on April 10, 2017. This Addendum requested that each farm site will be built to contain 9200 hogs instead of the 9600 hogs submitted in the original design. The size of the Containment Basins has also been adjusted accordingly.

These documents were prepared by GEM Engineering, Inc. and stamped by Joel A. Myers, P.E. Various sections of the UGDP have been reviewed and copied and are designated to be the Construction Permit. These include construction drawings, plans, and specifications.

The following is a summary of the proposed major construction projects:

Construction of 52 Finisher Farm Sites each with the following:

- 2 Finisher Barns (4 Buildings), each barn can contain up to 4600 hogs (9200 total) sized from 14 lbs to 250 lbs with the average weight being 135 lbs;
- 2 Wastewater Containment Basins – One deeper Primary Containment Basin (17.0 million gallons, 52.2 ac-ft) and one shallow Secondary Evaporation Basin (4.8 million gallons, 14.7 ac-ft). The Digester Technology may replace the deeper Primary Containment Basin and the Secondary Evaporation Basin would then be larger (8.4 million gallons, 25.8 ac-ft);
- One Truck Washing Facility with a Containment Basin (1.3 million gallons, 3.99 ac-ft).

The plans and specifications, as submitted, comply with *the Utah Water Quality Rules, (R317, Utah Administrative Code)*. A **Construction Permit** is hereby issued as constituted by this letter, subject to the following conditions:

1. *Construction activities that disturb one acre or more are required to obtain coverage under the Utah Pollutant Discharge Elimination System (UPDES) Storm Water General Permit for Construction Activities. The permit requires the development of a storm water pollution prevention plan (SWPPP) to be implemented and updated from the commencement of any soil disturbing activities at the site until final stabilization of the project. For more information, or to obtain permit coverage on-line, please go to: <http://www.waterquality.utah.gov/UPDES/stormwater>.*
2. *Any revisions or modifications to the approved plans and specifications must be submitted to DWQ for review and approval, before construction or implementation thereof. Please submit any changes for review and approval directly to Woodrow Campbell, P.E., of the DWQ Ground Water Protection Section.*
3. *A written operations and maintenance manual, containing a description of the functioning of the facilities, an outline of routine maintenance procedures, and all checklists and maintenance logs needed for proper operation of the system, must be submitted and approved before the final inspection and operation of the system.*
4. *The approved facilities must not be placed in service unless DWQ has conducted a final inspection, reviewed and approved the As-Built Construction Certification Report, issued a ground water discharge permit for the facility, and provided written authorization to place the constructed facilities in service.*

The plans and specifications for this project have been stamped and signed by a Professional Engineer currently licensed to practice in the state of Utah. The construction design, inspection supervision, and written construction certification of all work associated with this Construction Permit must be performed by a Professional Engineer licensed to practice in the state of Utah.

This Construction Permit will expire one year from the date of its issuance, as evidenced by the date of this letter, unless substantial progress is made in constructing the approved facilities or the plans and specifications have been resubmitted and the construction permit is reissued. This permit does not relieve you, in any way, of your obligations to comply with other applicable local requirements. You may contact Southwest Public Health Department at 435.986.2582 or Paul Wright, Southwest District Engineer, at 435.986.2590 for further assistance regarding local matters.

Because of the inherent hazard potential at lagoons and ponds, warning signs should be posted at these facilities to state the dangers of drowning and asphyxiation. Safety ropes running down the pond side slopes, and fastened to posts at the top of the dikes should be available to allow anyone trapped in the ponds to escape.

Please contact Mr. Campbell at the beginning of construction to allow periodic inspections to be scheduled. Upon completion of the project, a final inspection and approval of the As-Built Construction Certification Report is required before the approval to operate the completed facilities can be issued. Please remain in contact with Mr. Campbell to schedule the final inspection. The Construction Certification Report with final as-built drawings must include test results for the following construction quality assurance and quality control (CQA/QC) elements:

Soil Subgrade

- Proctor Curves,
- Soil Classification,
- Field Compaction Testing, and
- Subgrade Acceptance Certification.

Concrete

- Concrete Mix Verification;
- Concrete reinforcement;
- Waterstop placement;
- Concrete ASTM Testing Method, Frequency, and Results;
- Concrete Testing Pass/Fail Criteria, and
- Crack Inspection and Repair.
- 

Flexible Membrane Liner

- Panel Placement Log,
- Trial Seam Test Log,
- Seaming Record,
- Seam Test Record,
- Repair Log,
- As-Built Drawing,
- Manufactures Certification including QA/QC Testing of the Rolls, and
- Professional Engineer Certification.

If we can be of further assistance, please contact Mr. Woodrow Campbell at [wwcampbell@utah.gov](mailto:wwcampbell@utah.gov) or (801) 536-4353.

Sincerely,



Kim Shelley  
Acting Director

WLB/WWC/DJH:smm

cc: Paul Wright Southwest District Engineer (via email w/o attachment)  
Southwest Public Health Department (via email w/o attachment)  
Joel A. Myers Gem Engineering, Inc. (via email w/o attachment to  
[joel@gemengineeringinc.com](mailto:joel@gemengineeringinc.com))

DWQ-2017-001105

Attachments:

**DWQ-2017-000351** 177 pages

Ground Water Discharge Permit Application

Application and Construction Diagrams For Pinnacle Finisher Farms and Truck Wash

Water Quality Sampling, Handling, and Analysis Plan for Pinnacle Finisher Sites

APPENDIX A TABLE 4 FARM LOCATION COORDINATES

FARM SITE	LATITUDE			LONGITUDE		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Truck Wash	38	28	26	112	57	11
1	38	28	26	112	58	14
2	38	28	14	112	56	20
3	38	28	52	112	56	21
4	38	29	4	112	57	25
5	38	29	5	112	58	14
6	38	30	0	112	58	30
7	38	30	1	112	57	26
8	38	30	7	112	56	22
9	38	30	43	112	58	32
10	38	30	43	112	57	26
11	38	30	55	112	56	25
12	38	31	37	112	58	14
13	38	31	30	112	57	24
14	38	30	27	112	54	54
15	38	30	28	112	54	4
16	38	31	4	112	54	21
17	38	31	7	112	53	31
18	38	31	31	112	54	22
19	38	31	38	112	53	31
20	38	31	56	112	54	56
21	38	32	9	112	54	8
22	38	32	43	112	54	56
23	38	32	40	112	53	31
24	38	33	26	112	54	57
25	38	33	23	112	54	22
26	38	33	24	112	53	32
27	38	36	53	112	54	52
28	38	35	37	112	54	13
29	38	35	21	112	53	36
30	38	35	22	112	52	56
31	38	35	47	112	51	49
32	38	36	3	112	53	47
33	38	35	57	112	52	55
34	38	36	5	112	51	50
35	38	36	30	112	54	50
36	38	36	44	112	53	52
37	38	36	30	112	52	56
38	38	36	57	112	53	47
39	38	36	54	112	52	54
40	38	29	6	112	53	30

FARM SITE	LATITUDE			LONGITUDE		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
41	38	29	27	112	53	47
42	38	39	51	112	53	49
43	38	29	51	112	53	29
44	38	31	40	112	56	29
45	38	32	15	112	55	49
46	38	32	31	112	56	28
47	38	32	41	112	57	17
48	38	32	58	112	56	28
49	38	33	27	112	57	43
50	38	33	18	112	56	2
51	38	34	2	112	54	22
52	38	34	41	112	54	4