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STATEMENT OF BASIS

GROUND WATER DISCHARGE PERMIT UGW210005

Mango II-Milford, LLC – Blue Mountain Complex Farms Iron County
Milford, Utah

February 2026

Introduction

The Division of Water Quality ("Division") under the authority of the Utah Ground Water Quality Protection Rules[1] (Ground Water Rules) issues ground water discharge permits to facilities that have the potential to discharge contaminants to ground water[2]. As defined by the Ground Water Rules, such facilities include agricultural operations.[3] The Ground Water Rules are based on an anti-degradation strategy for ground water protection as opposed to non-degradation; therefore, discharge of contaminants to ground water may be allowed provided that current and future beneficial uses of the ground water are not impaired and the other requirements of Utah Administrative Code (Utah Admin. Code) R317-6-6(6.4)(A) are met.[4] Following this strategy, ground water is divided into classes based on its quality[5], and higher-quality ground water is given greater protection[6] due to the greater potential for beneficial uses.

Mango II-Milford, LLC ("Mango II") ("Permittee") has requested a renewal of Ground Water Discharge Permit UGW210005 ("Permit") for the Blue Mountain Complex Farms Iron County. The Division has developed permit conditions consistent with Utah Admin. Code R317-6 and appropriate to the nature of the operations, maintenance, best available technology[7] (BAT), and the hydrogeologic and climatic conditions of the site, to ensure that the operation will not contaminate ground water.

Basis for Permit Renewal

This Permit is being renewed in accordance with Utah Admin. Code R317-6-6(6.7). However, a permit may be terminated or a renewal denied if any one of the four items in Utah Admin. Code R317-6-6(6.8) applies:

1) Noncompliance by the Permittee with any condition of the Permit where the Permittee has failed to take appropriate action in a timely manner to remedy the Permit violation;

2) The Permittee's failure in the application or during the Permit approval process to disclose fully all significant relevant facts at any time;

3) A determination that the permitted facility endangers human health or the environment and can only be regulated to acceptable levels by plan modification or termination; or

4) The Permittee requests termination of the Permit.

[1] Utah Admin. Code R317-6
[2] https://lf-public.deq.utah.gov/WebLink/ElectronicFile.aspx?docid=618204%20&eqdocs=DWQ-2006-004002
[3] Utah Admin. Code R317-6-6(6.1)(A)
[4] Preamble to the Ground Water Quality Protection Regulations of the State of Utah, sec. 2.1, August 1989
[5] Utah Admin. Code R317-6-6(3)
[6] Utah Admin. Code R317-6-6(4)
[7] Utah Admin. Code R317-6-6(1.3)

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Purpose

The ground water discharge Permit for the Mango II Blue Mountain Complex Farms Iron County is being renewed for a five-year term. The Permittee operates swine production facilities in Beaver and Iron Counties southwest of Milford, Utah. Manure from each of the swine production facilities is drained into an associated anaerobic lagoon system for treatment and storage. The lagoon systems at each farm site consist of one primary lagoon and one containment basin for evaporation. The primary lagoons and the containment basins are each compacted to at least 90 percent of maximum dry density and lined with at least a 40-mil high-density polyethylene (HDPE) flexible membrane liner (FML). Table 1 below provides a summary of the permitted facilities for the Blue Mountain Complex Farms Iron County.

Table 1: Summary of Mango II Ground Water Discharge Permit

Permit No.	Complex/County	Facility Type	Farm Nos.	Total Farm Sites
UGW210005	Blue Mountain/Iron	Sow Farms Nursery Farms	42100- 42108 42200- 42203	13

Hydrogeology

The Milford basin is located in southwestern Utah and encompasses a 3,004 km^2 area in the Basin and Range physiographic province. The mountain ranges adjacent to the basin, bounded by normal faults, have large coalescing alluvial fans extending into the valley. The principal water-yielding aquifer is a basin-fill aquifer. Sediments that make up the basin-fill aquifer are of late Tertiary to Quaternary age and consist of multiple discontinuous layers of silt, sand, and gravel separated by less permeable layers of clay and silt. The basin-fill deposits are at least 270 meters thick in the basin center and thin toward the margins (Van der Hoven, 2001).

Ground Water Quality

Ground Water Class and Protection Levels Based on ground water quality data from historical site-specific monitoring wells, the ground water quality beneath farm 42203 is Class 1A Pristine Ground Water. The ground water quality beneath farm sites 42100, 42101, 42102, 42103, 42104, 42105, 42106, 42107, 42108, 42200, 42201, and 42202 is Class II Drinking Water Quality Ground Water. Ground water protection levels for each farm site are summarized in Appendix A of Permit UGW210005.

As required in Part I.E.5.c of the Permit, a background monitoring program has been completed by the Permittee to collect data for calculating well-specific background ground water quality statistics. This includes background ground water concentrations for total dissolved solids (TDS), chloride, bicarbonate, nitrate + nitrite as nitrogen, and pH, all of which have been defined to determine the applicable protection levels and compliance limits. Most wells have more than a 10-year monitoring history. Protection levels for all farms were evaluated for this Permit issuance.

Class I Protection Levels. In accordance with Utah Admin. Code R317-6-6(4.2), Class I ground water will be protected to the extent feasible from degradation due to facilities that discharge or would probably discharge to ground water. Class I protection levels are established in accordance with the criteria in Utah Admin. Code R317-6-6(4.2)(B).

Class II Protection Levels. In accordance with Utah Admin. Code R317-6-6(4.5), Class II ground water will be protected for use as drinking water or other similar beneficial use with conventional treatment prior to use. Class II protection levels are established in accordance with the criteria in Utah Admin. Code R317-6-6(4.5)(B).

Class III Protection Levels. In accordance with Utah Admin. Code R317-6-6(4.6), Class III ground water will be protected as a potential source of drinking water after substantial treatment, and as a source of water for industry and agriculture. Class III protection levels are established in accordance with the criteria in Utah Admin. Code R317-6-6(4.6)(B).

Class IV Protection Levels. In accordance with Utah Admin. Code R317-6-6(4.7), protection levels for Class IV ground water will be established to protect human health and the environment.

Long-term ground water elevation monitoring indicates that drought has been causing a steady decline in the water table elevation over the last several years. Some monitoring wells with a small water column purge to dry conditions, which can affect the quality of the water sample.

Compliance Monitoring Program

A ground water monitoring well system has been installed at each of the lagoon systems to establish the ground water gradient at each farm site and to monitor the ground water quality both upgradient and downgradient in the uppermost water-bearing zone under the lagoons. Ground water is sampled and analyzed semi-annually for the term of the Permit. The following key leakage parameters were selected for compliance monitoring based on their high concentrations in the process water compared to concentrations in shallow ground water:

- Bicarbonate
- Nitrate + nitrite as N
- Chloride
- Total Dissolved Solids

Field parameters collected for each ground water sampling event include pH, specific conductance, and temperature. This list of ground water monitoring parameters may be updated in the most recently revised and approved version of the Mango II *Sampling and Analysis Plan*.

Regulatory decisions made as a result of ground water monitoring must consider the background variability of ground water quality at the sites. The Permittee will not be required to take corrective action if it can be verified that changes in ground water quality are a result of other factors not related to their operations.

Best Available Technology (BAT)

The administration of this Permit is founded on the use of best available treatment technology, in accordance with the requirements of Utah Admin. Code R317-6-6(1.3).

Each farm site has at least one primary lagoon and a containment basin for evaporation. Primary lagoons and containment basins are compacted to a minimum of 90 percent maximum dry density (ASTM D698) and lined with at least a 40-mil synthetic HDPE flexible membrane liner. The coefficient of permeability for 40-mil HDPE is 2.7×10^{-13} cm/sec (Haxo and Lahey, 1988). The constructed depth and maximum operating depth of the primary and containment basins at each farm site are included in the construction permits and construction permit applications.

The lagoon system is sized to accept up to 1.8 cubic feet of volume per live animal weight in the primary lagoon for sow farms (2.3 cubic feet for nursery farms) and provides enough surface area for evaporation of water in the containment basin. The primary lagoons at each farm site are designed to operate as anaerobic waste treatment lagoons in which liquid and solid swine waste flushed from the pits under the

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animal containment barns is digested primarily by anaerobic bacteria in the treatment volume of the lagoon, and sludge accumulates in the underlying sludge volume. These design specifications require the establishment and maintenance of a properly balanced bacterial population, which is realized through the proper operation and management of the anaerobic lagoons. Proper operation and management of anaerobic lagoons will also optimize volatile solids digestion and prevent excessive sludge buildup, extending the effective life of the lagoon before sludge removal is required. Only wastes from the hog-raising operations may be treated in the lagoons. The design, operational, and contingency requirements detailed above represent BAT since the implementation of these requirements is expected to be protective of ground water resources in the area surrounding the facility.

Currently, the Permittee has 13 farm sites in operation for this Permit, and each site has a primary lagoon where manure solids are collected. It may be necessary to remove accumulated solids from the bottom of each primary lagoon at the farm sites so that treatment zones are maintained. Sludge storage volume is engineered for approximately 20 years of accumulation. Sludge accumulation is measured and reported as part of the Permit.

Potential Impacts to Ground Water

Leakage from liners can cause degradation of the ground water at the permitted sites. Potential impacts to ground water can be minimized by employing BAT and discharge minimization technology for the lagoons. BAT performance monitoring, treatment technology, and compliance monitoring wells are used to ensure that the facility is operated in accordance with design specifications and will also ensure that any early indications of facility problems will be detected.

Leak detection surveys, repairs, and liner replacements in the lagoons have been made at farms 42102 and 42202. Based on hydrogeological tests to determine the rate of ground water velocity in the Blue Mountain Iron County area, it will be several years following repairs for improvements in ground water quality to be measured at the downgradient monitoring wells. Statistical trend analysis is used for an appropriate period of time that allows for a natural decrease in elevated target parameters. If no decrease is observed, further Corrective Action may be warranted.

Source Assessment investigations have also been completed at farms 42101, 42103, 42104, and 42201. Monitoring parameter trends are observed at these farms during the Permit term. If further degradation of ground water from probable failure of BAT is observed, additional source assessment or Corrective Action may be required.

Compliance Issues

Elevated concentrations of TDS, chloride, nitrate + nitrite were found in monitoring well 42103-42104MU in 2009, leading to a Source and Contamination Assessment Study. The results from a 2012 study identified leaks in the lagoon's liner system, which were subsequently repaired in 2013. Temporary increases in groundwater protection levels were approved in 2013 for nitrate + nitrite and chloride while long-term monitoring continued at Farm System 42104 to determine if repairing the liner tears would remediate (via natural attenuation) the increased concentrations of contaminants observed. Follow-up reports in 2014 and 2018 indicated that contaminant concentrations remained above original permit limits despite the repairs; however, contaminant concentrations had decreased in monitoring well 42103-42104MU by 2018. The Permittee is continuing to monitor Farm System 42104, and the Division has added follow-up trend analyses as a requirement to the Compliance Schedule of this Permit.

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Major Permit Changes

1. Major ion sampling was included in previous permit cycles to better characterize the concentrations of sulfate, sodium, potassium, magnesium, and calcium at the Blue Mountain Farm Complex. This additional sampling requirement has been removed from the current Permit, as sufficient background data has now been collected.

2. The Permittee is now required to calculate and report the hydraulic gradient and direction of ground water flow for each farm system that has a confirmed out-of-compliance upgradient monitoring well covered under this Permit to better understand the local ground water conditions underlying each farm system. Hydraulic gradients and flow directions will be provided in each semi-annual monitoring report as necessary.

Compliance Schedule

1. Evaluations – The Permittee shall conduct the following evaluations and provide the following information to evaluate the performance of the discharge minimization design of the facility and to provide an updated understanding of ground water conditions underlying the permitted facilities:

    a. *Ground Water Flow Direction Evaluation* - Within 60 days of Permit issuance, the Permittee will conduct an investigation of the ground water flow direction for all farm systems where the Permittee reported consecutive exceedances of ground water protection levels for any upgradient monitoring well. Results of the *Ground Water Flow Direction Evaluation* shall be included in the next semiannual ground water monitoring report. This investigation shall apply to the following farm systems, as identified in the Semi-Annual Second Half 2024 Monitoring Report: 42101, 42102, 42201/42202MU, and 42105-6. A summary of the compliance status for each system is provided below:

        1) Farm System 42101: The upgradient monitoring well (42101MU) exceeded ground water protection levels for nitrate and chloride in consecutive monitoring periods.

        2) Farm System 42102: The upgradient well 42102MU exceeded protection levels for nitrate, chloride, and TDS in consecutive monitoring periods.

        3) Farm System 42201/42202MU: Monitoring wells exceeded protection levels for nitrate, chloride, and TDS in consecutive monitoring periods.

        4) Farm System 42105-6: The upgradient monitoring well (42105-6MU) exceeded the protection level for nitrate in consecutive monitoring periods.

    b. *Source and Contamination Assessment Study Plan* - If a change in the ground water flow direction is confirmed for any of the farm systems listed in Permit Part I.H.1.a., the Permittee shall submit a *Source and Contamination Assessment Study Plan* to the Division for review and approval within 90 days of the submittal of the next semiannual groundwater monitoring report foreach upgradient well with a confirmed flow reversal. Upon approval, the Permittee shall implement and complete the study within 180 days. The findings of the approved *Source and Contamination Assessment Study* shall be included in the subsequent biannual monitoring report.

    c. *Potentiometric Surface Evaluation* - Due to the protection level exceedances identified in

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Permit Part I.H.1.a., the Permittee shall submit an updated potentiometric surface map for all farm systems covered under this permit within 60 days. The potentiometric surface map shall identify ground water flow direction and any mounding that may be present. In addition to providing an updated potentiometric surface map the Permittee shall provide the hydraulic gradient and flow direction for each farm system covered under this permit and provide the results in the next semiannual ground water monitoring report.

d. *Source and Contamination Assessment Study Plan Update* - The Permittee shall provide an update to the *Source and Contamination Assessment Study* plan completed in 2018 for farm system 42103-42104MU within 180 days of permit issuance. The Permittee shall provide a technical memorandum that details the ground water flow direction around 42103-42104MU and constituent trend analyses for TDS, Chloride, and Nitrate + Nitrite since 2004.

Public Notice Addendum

The Division placed the draft Permit, the Statement of Basis, and the associated appendices on public notice from August 28 through September 28, 2025. During the 30-day comment period, the Division received three substantive comments from Mango II.

Mango II requested revisions to the draft probable out-of-compliance and out-of-compliance sampling frequency requirements (Permit Part I.F.2). The original draft required monthly accelerated sampling for both probable and out-of-compliance monitoring wells. Based on the slow ground water velocities in the uppermost aquifer underlying the site, the Division revised the sampling frequency for both permit requirements from monthly to quarterly. The Division also revised the Permit to allow Mango II to submit the accelerated quarterly sampling results with the semi-annual ground water monitoring reports rather than as standalone reports.

In addition to changes in sampling frequency, Mango II requested an adjustment to the timeline for submission of *Source Assessment and Contamination Study Plans* (Permit Part I.F.2). The original draft Permit required submission within 30 days of written notice of a confirmed out-of-compliance event. The Division revised this timeline to 90 days after submission of the Semi-Annual Ground Water Monitoring Report.

At the request of the Permittee, the Division made additional changes to the Permit including general language changes for consistency across all of Mango II's Permits and changes to the out-of-compliance notification process. The changes proposed in this modification include:

1. Changes to notification timelines and requirements for out-of-compliance monitoring wells.
2. General language edits throughout the Permit to improve clarity and ensure consistency with Mango II's other Ground Water Discharge Permits.

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Permit Appendix Documents

Applicable Mango II appendix documents for this permit include:

APPENDIX A	Farm and Monitoring Well Protection Level Summary
APPENDIX B	Monitoring Well Locations
APPENDIX C	Construction Details for Primary and Secondary Lagoons
APPENDIX D	Sampling and Analysis Plan
APPENDIX E	Anaerobic Lagoon Systems Operation and Maintenance Manual
APPENDIX F	Spill Prevention and Response Manual
APPENDIX G	Sludge Disposal and Farm Closure Plan
APPENDIX H	Nutrient Management Plan for Land Application

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