**STATEMENT OF BASIS**

**GROUND WATER DISCHARGE PERMIT UGW270011**

Christensen Finisher Farm

7.6 miles Northwest of Fillmore

Millard County, Utah

February2018

**Introduction**

The Division of Water Quality (DWQ) under the authority of the Utah Ground Water Quality Protection Rules[[1]](#footnote-1) (Ground Water Rules) issues ground water discharge permits to facilities which have a potential to discharge contaminants to ground water[[2]](#footnote-2). As defined by the Ground Water Rules, such facilities include mining operations.[[3]](#footnote-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 Rule 317-6-6.4.A are met.[[4]](#footnote-4) Following this strategy, ground water is divided into classes based on its quality[[5]](#footnote-5); and higher-quality ground water is given greater protection[[6]](#footnote-6) due to the greater potential for beneficial uses.

Under Rule 317-6, Christensen Finishing Farm has requested a ground water discharge permit (Permit). DWQ has developed permit conditions consistent with R317-6 and appropriate to the nature of the operations, maintenance, best available technology[[7]](#footnote-7) (BAT) and the hydrogeologic and climatic conditions of the site, to insure that the operation would not contaminate ground water.

**Basis for Permit Issuance**

Under Rule 317-6-6.4A, DWQ may issue a ground water discharge permit if:

1. The applicant demonstrates that the applicable class TDS limits, ground water quality standards protection levels and permit limits established under R317-6-6.4E will be met;
2. The monitoring plan, sampling and reporting requirements are adequate to determine compliance with applicable requirements;
3. The applicant is using best available technology to minimize the discharge of any pollutant; and
4. There is no impairment of present and future beneficial uses of ground water.

**Purpose**

Christensen Finisher Farm will construct and operate one farm site comprised of 4 barns with 8800 total hogs and a single, 3.7 million gallon containment basin for the barns Northwest of Fillmore in Millard County, UT. The containment basin will receive waste water from swine production operations and is sized to hold accumulated discharge from barn operations temporarily. Manure will be removed annually from the containment basins and used for land application and fertilization of nearby agricultural acreage.

The Christensen Finisher Farm has been granted a construction permit and a ground water discharge permit for operation of the containment basin. This Ground Water Discharge Permit will require ground water and process water compliance monitoring. The water must be land applied in accordance with a comprehensive nutrient management plan (CNMP)

**Potential Impacts to Ground Water**

The containment basin will be constructed with an HDPE liner to minimize discharge to the subsurface. Ground water quality monitoring of the shallow aquifer downgradient of the basin will be conducted to determine if ground water quality has been impacted by basin discharges.

**Hydrogeology**

The site is located in the Pahvant Valley with the Pahvant Range forming the eastern boundary of the valley. The Pahvant Range is generally considered to be part of the eastern edge of the Basin and Range physiographic province, and consists of consolidated rocks of Paleozoic to Cenozoic age. The stratigraphy of the Canyon Mountains, forming the northeastern part of the valley, are similar to that of the Pahvant Range but includes rocks of Precambrian age. In the local vicinity of the proposed farm site the geologic conditions consist of alluvium or colluvium (Quaternary) overlying basalt flows. The basalt flow is underlain valley fill which could be up to thousands of feet thick. Alluvial fans which developed along the mountain fronts, predominantly during Quaternary time, were deposited synchronously with sediments laid down by intermittent lakes. The fans extended into the basin where they interfingered with lakebed deposits consisting of gravel, sand, silt, and clay. These deposits are unconsolidated and form one of the principal aquifers in the Pahvant Valley.

**Ground Water Quality**

The site is likely situated over Class IA Pristine Ground Water. Class I Pristine Ground Water has the following characteristics: 1) total dissolved solids concentrations less than 500 mg/L; and 2) No contaminants that exceed Utah ground water quality standards.

Class I ground water will be protected to the maximum extent feasible from degradation due to facilities that discharge or would probably discharge to ground water. Up-gradient and down-gradient monitoring wells will be installed and sampled prior to operation and for a final determination of site specific ground water quality and classification.

**Compliance Monitoring Program**

A compliance groundwater monitoring program will commence when the containment basin is constructed. Upgradient and downgradient monitoring wells will be installed prior to operation of the basin. Background conditions will be determined from the up-gradient well in accordance with R317-6-6.10 and compliance limits for the downgradient wells will be set according to R317-6-4.

The following key parameters were selected for compliance ground water monitoring based on their concentrations in the containment basin compared to concentrations in shallow ground water:

* TDS
* Chloride
* Nitrate + Nitrite
* Ammonia as N
* Bicarbonate

Following collection, evaluation, and statistical analysis of eight quarterly ground water samples, the interim compliance limits in Table 1 of permit UGW270011 will be modified.

**Best Available Technology**

The containment basin will be lined with a single, 60 mil HDPE flexible membrane installed and constructed in accordance with the concurrently issued ground water permit.

1. Utah Admin. Code Rule 317-6 [↑](#footnote-ref-1)
2. <https://deq.utah.gov/ProgramsServices/programs/water/groundwater/docs/2008/08Aug/GWQP_PermitInfo.pdf> [↑](#footnote-ref-2)
3. Utah Admin Code Rule 317-6-6.1A [↑](#footnote-ref-3)
4. Preamble to the Ground Water Quality Protection Regulations of the State of Utah, sec. 2.1, August, 1989 [↑](#footnote-ref-4)
5. Utah Admin. Code Rule 317-6-3 [↑](#footnote-ref-5)
6. Utah Admin. Code Rule 317-6-4 [↑](#footnote-ref-6)
7. Utah Admin. Code Rule 317-6-1(1.3) [↑](#footnote-ref-7)