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STATEMENT OF BASIS

GROUND WATER DISCHARGE PERMIT UGW390005

Norbest Inc.
Moroni Wastewater Treatment Plant
P.O. Box 308
Moroni, Utah 84646

May 2016

Purpose

Moroni Wastewater Treatment Plant (WWTP) will construct and operate a 15 million gallon anaerobic lagoon in Moroni City, Sanpete County, UT.

The WWTP currently receives industrial wastewater from the Norbest turkey processing plant and sanitary wastewater from the City of Moroni. The lagoon will partially treat and equalize wastewater flows from the processing plant, thereby reducing the loading and allow for constant flow into the WWTP.

Moroni Wastewater Treatment Plant has been granted a discharge permit for construction and operation of an anaerobic lagoon for pre- treatment of plant wastewater. This Ground Water Discharge Permit will require ground water and process water compliance monitoring.

Potential Impacts to Ground Water

Discharges of plant or sanitary wastewater onto the ground would be considered a discharge to waters of the state. The lagoon will be constructed with an HDPE liner to minimize discharge to the ground surface. Ground water quality monitoring of the shallow aquifer downgradient of the pits will be conducted to determine if ground water quality has been impacted by pond discharges.

Hydrogeology

Regional. Sanpete Valley is in the Basin and Range-Colorado Plateau transition zone physiographic province. Geologic units exposed in the Sanpete Valley range from Jurassic to Quaternary in age. Unconsolidated valley-fill deposits are at least 500 feet thick in Sanpete Valley along the western margin. Sediments are generally coarser grained in alluvial fans along the mountain fronts and finer grained in the central portions of the valley. The valley fill sediments and aquifers are a recharge zone sourced from precipitation in adjacent mountain ranges, and become a discharge zone to lower elevation valley rivers and streams. The primary discharge area follows the lowlands along Silver Creek.

Local. Site stratigraphy is comprised of an alluvial silty loam soil with a depth of up to 50 feet. Stratified gravel, sand, silt, and clay layers occur to depths of 400 feet and beyond. The clay layers may serve to separate aquifers down to 400 feet.

Ground Water Quality

Ground Water Classification. Sanpete Valley is a rural area where most residential development and agricultural activities are on unconsolidated valley-fill deposits. The valley-fill aquifer is the

principal drinking water aquifer for residents of Sanpete Valley. In 2005, the Sanpete County Commission petitioned the Utah Water Quality Board to classify the Principal Valley-Fill Aquifer in Sanpete Valley, Sanpete County, UT. The site is most likely situated over Class I Drinking Water Quality Ground Water. Nitrate, typically associate with human activities, has been identified in ground water in Sanpete Valley in previous studies.

Class I Protection Levels.
Class I Drinking Water Quality Ground Water has the following characteristics: 1) total dissolved solids less than 500 mg/L; and 2) No contaminants that exceed Utah ground water quality standards.

Class I ground water will be protected for use as drinking water or other similar beneficial use.

Compliance Monitoring Program

Monitoring Wells
A quarterly process water compliance monitoring program will commence when lagoon operations begin. Monitoring technology will include measurement and analyses of lagoon water chemistry and ground water sampling. Three monitoring wells will be installed prior to operation of the lagoon.

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

- TDS
- Bicarbonate
- Chloride
- Nitrate + Nitrite
- Sulfate
- Ammonia

Following collection, evaluation, and statistical analysis of eight quarterly ground water samples, the interim compliance limits in Table 2 of permit UGW390005 will be modified.

Lagoon Leak Detection Program
An electrically-based geophysical method will be periodically employed to determine if the synthetic liner of the anaerobic lagoon is free from defects or leakage.

Compliance Schedule Items

Sampling and Analysis Plan. As required in Part 1.I.1 of the permit, a sampling plan will be developed by the permittee to collect data for evaluating site-specific background ground water quality statistics.

Anaerobic Lagoon Operating manual. As required in Part 1.I.1 of the permit, an operating manual will be developed by the permittee that describes appropriate procedures for operating and maintain the performance of an anaerobic lagoon.

Site Investigation Report. A site investigation to determine the extent of soil and ground water contamination resulting from WWTP equalization basin overflow events that occurred in June 2015 and prior. The overflows were not cleaned up, but allowed to sit in place and decompose via the soil and sun. In accordance with R317-6-6.15D, the characterization of pollution should include the concentration, environmental fate and transport, and other significant characteristics of substances

present, for both ground water contaminants and any contributing surficial contaminants. This report is due within ninety (90) days after issuance of UGW390005.

References

Wallace, Janae, and Mike Lowe. 2005. Petition for Ground-Water Classification, Sanpete Valley, Sanpete County, Utah. Utah Geological Survey, Utah Department of Natural Resources. 557.92-UT1S NO.132.