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STATE OF UTAH
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY
UTAH WATER QUALITY BOARD
SALT LAKE CITY, UTAH 84114-4870

Ground Water Discharge Permit
Permit No. UGW230002

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

Deep Creek Dairy
HC 13 Box 300572
Fayette, UT 84630

hereafter referred to as the permittee, is granted a Ground Water Discharge Permit for the operation of dairy facilities in Juab Valley approximately 4 miles South of the town of Levan, Utah on the west side of highway 128. The dairy is located in the Northwest 1/4 of the Southwest 1/4 of Section 7, Township 15 South, Range 1 East, Salt Lake Base and Meridian. The irrigation and wastewater lagoons are located in the West 1/2 of the Northeast 1/4 of Section 12, Township 15 South, Range 1 West, Salt Lake Base and Meridian.

This Ground Water Discharge Permit amends and supersedes all other Ground Water Discharge Permits previously issued for this facility.

This permit is based on representations 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 facilities described herein shall be 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, **JAN 12 2016**

This permit and authorization to operate shall expire at midnight **JAN 12 2021**



Walter L. Baker, P.E.
Director

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PART I. SPECIFIC CONDITIONS

A. BACKGROUND GROUND WATER QUALITY

Ground water data from wells at the dairy site and other nearby wells indicates that background water quality in the area is Class II, Drinking water Quality ground water with TDS greater than 500 mg/L and less than 3,000 mg/L. This determination may be changed if regular compliance monitoring indicates background ground water quality has changed at the dairy site.

B. GROUND WATER PROTECTION LEVELS

Protection levels have been established utilizing the standards outlined in UAC R317-6-4.5 for the following parameters:

- Nitrate +Nitrite as N,
- Ammonia as N, and
- Total Dissolved Solids (TDS).

The permittee shall operate the facility such that the ground water standards (UAC R317-6.2) and protection levels developed for this permit are not exceeded at the designated compliance monitoring points. The 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, which could impair beneficial uses of the ground water, even though the permit does not require monitoring for them.

C. BEST AVAILABLE TECHNOLOGY AND PERFORMANCE STANDARD

1. Best Available Technology

The administration of this permit is founded on the use of Best Available Technology, in accordance with the requirements of UAC R317-6-1.3. The construction permit, which was previously issued with the original permit, covers construction standards for permitted facilities at the dairy site.

Only wastes from the dairy operations may be disposed of in the ponds. Liquids and sludges from the ponds may only be land-applied according to comprehensive nutrient management plan (CNMP)

2. Performance Standard for Best Available Technology

Compliance with the requirements for use of Best Available Technology will be demonstrated by construction, operation and maintenance of the manure handling system according to the construction permit. The performing seepage rate for clay lined lagoons and containment basins may not exceed 1/8 inch per day (ipd). The engineering seepage rate estimates for the lagoons are all less than 1/8 ipd. The seepage rate estimate is based on a liner hydraulic permeability coefficient no greater

than 1×10^{-7} cm/sec and a maximum head of 6 feet. The in situ hydraulic conductivity of the lagoon liner will be verified with the construction quality assurance/quality control (QA/QC) plans approved for construction of the lagoon. Performance of the Best Available Technology will be evaluated for compliance by the monitoring required in Part I.D.

Land application of wastewater is planned as a routine method of wastewater disposal. The area of land application is currently limited to the acreage owned by the Permittee. Land application of lagoon effluent must be done at the agronomic uptake rate, using the CNMP. The Permittee must keep records of analyses of applied wastes and soils at application sites, type of crop grown, application rate calculations, and dates, times and rates of each application for all application sites, in order to demonstrate compliance with agronomic rate requirements. Wastes shall not be land applied to frozen or saturated ground or in situations, which could result in surface runoff.

3. Closure Plan

At least 180 days prior to closure of any lagoon or lagoon system, the Permittee shall submit to the Director a site-specific closure plan for disposition of the liquids, solids and liner material of the lagoon(s) to be closed. The 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.

D. COMPLIANCE MONITORING

The permittee is required to monitor ground water quality periodically according to the provisions below which is based on compounds which may be discharged to ground water from the permitted facilities.

1. Compliance Monitoring Wells

The Permittee monitors one upgradient and two downgradient monitoring wells at the dairy site. These monitoring wells are designed to provide the ability to detect contamination in the uppermost ground water from this permitted facility. Under the provisions of this permit, ground water contamination in the shallow aquifer would be a reason for the Permittee to take remedial action to address source abatement and control and prevent further contamination from impairing beneficial use of ground water.

2. Monitoring Period

The permittee shall monitor each of the ground water wells for parameters as specified below in Part I.D.4 lasting the term of the permit.

3. Protection Levels

Protection levels have been calculated using background ground water quality data for downgradient monitoring wells MW-1 and MW-2 in accordance with the Utah Administrative Rules for Ground Water Quality Protection (UAC R317-6-4.5). These protection levels are provided in Table 1 below.

TABLE 1 – Ground Water Protection Levels (mg/L)

Parameter	MW-1	MW-2
Total Dissolved Solids	967	906
Ammonia as N	7.5	7.5
Nitrate + Nitrate as N	8.82	8.52

4. Monitoring Procedures

a. Frequency

The monitoring requirements listed in this section of the permit apply to all up-gradient and down-gradient wells. Water quality sampling and analysis shall be conducted by the permittee semi-annually.

b. Depth to Ground Water

Depth to ground water must be measured to the nearest 0.01 foot, below the top of the well casing. A report must be on file with the Division of Water Quality stating the elevation of the measuring point at the top of the well casing in feet above mean sea level to the nearest 0.01 foot, for each monitoring well.

c. Ground Water Elevation

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

d. Laboratory Approval

All water analyses shall be performed by a laboratory certified by the State of Utah in accordance with the approved monitoring plan and the provisions of UAC R317-6-6.3L.

e. Damage to Monitoring Wells

If a monitoring well is damaged or is otherwise rendered inadequate for its intended purpose or if a previously established hydraulic gradient changes significantly, the Director shall be notified in writing within five days of the permittee becoming aware of the condition.

f. Compliance Monitoring

Items one and two below are to be monitored semi-annually for the term of this permit in all monitoring wells at the dairy covered under this permit.

- 1) Field Parameters: temperature, specific conductance, pH, and ground water elevation.
- 2) Laboratory Parameters: Nitrate + Nitrite as N, Ammonia as N, Bicarbonate, Chloride, Total Dissolved Solids.

5. 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.

E. NON-COMPLIANCE STATUS

1. Probable Noncompliance Status

A facility will be determined to be in probable out of compliance status if the results of the ground water quality monitoring indicate that the protection levels for this permit (Part I.D.3) are exceeded in any down-gradient well. In this case the permittee shall resample all monitoring wells at the site where the probable noncompliance has occurred, submit the analytical results thereof, and notify the Director of the probable noncompliance status within 30 days of the initial detection.

2. Out-of-Compliance Status:

Exists when the value for any one ground water pollutant exceeds the protection level in two consecutive sampling events from a compliance monitoring point.

a. Notification and Accelerated Monitoring

Upon determination by the permittee, in accordance with UAC R317-6-6.17 that an out-of-compliance 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
- 2) Immediately implement an accelerated schedule of quarterly ground water monitoring for all wells at the dairy where the exceedance occurred, which shall continue for at least two quarters or until the facility is brought into compliance.

b. Source and Contamination Assessment Study Plan

Within 30 days of the verbal notice to the Director (Part I. E.2.a.1), the permittee shall submit an assessment study plan and compliance schedule for:

- 1) Assessment of the source or cause of the contamination, and determination of steps necessary to correct the source, if the contamination is caused by facilities or activities for which the permittee is responsible.
- 2) Assessment of the extent of the ground water contamination and any potential dispersion.
- 3) 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 down-gradient compliance monitoring wells.

3. 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:

- 1) The permittee has notified according to Part I.E.2, and
- 2) The failure was not intentional or was not caused by the permittee's negligence, either in action or failure to act, and
- 3) 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

- 4) 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.

4. Additional Notification

In the event of out-of-compliance status due to either an exceedance of ground water protection levels or a failure of Best Available Technology, the permittee shall notify the Central Utah District Health Department within 24 hours or the first working day following a spill.

5. Contingency Plan for Exceedance of Protection Levels

If, after review of ground water monitoring data and other relevant information, the Director determines that use of any lagoon or waste handling system has caused an exceedance of ground water protection levels at any compliance monitoring point, the permittee shall conduct a Contamination Investigation. The investigation will determine the extent and severity of contamination caused by the lagoon or any waste handling system. The report from the investigation must be submitted 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 any of the permittee's other permitted and functioning lagoons, repairing or reconstructing the lagoon liner as needed, constructing temporary holding ponds lined with flexible membrane liners and containing liquid waste release and developing wells for the purpose of extracting the contaminated ground water. Contaminated ground water may be stored in the lagoons or land applied if possible.

6. Contingency Plan for Failure of Best Available Technology

In the event of Best Available Technology failure for either the retention or settling pond the contents of the ponds will be drawn down by application to cropland via an irrigation pump and system. The system would then be operated by isolating the faulty structure from the system and incorporating extreme water conservation techniques to allow time for regaining integrity.

- F. REPORTING REQUIREMENTS

1. Ground Water Monitoring Schedule

Monitoring required in Part I.D.4 above shall be reported according to the Semi-Annual Compliance Monitoring Reporting Schedule in Table 2 below, unless modified by the Director.

**TABLE 2
Compliance Monitoring Reporting Schedule**

Semi-Annual Period	Report Due Date
November thru April	June 1st
May thru October	December 1st

2. Ground Water Quality Sampling Report

Monitoring reports shall include the following information:

- a) Field data sheets, or copies thereof, including the field parameters required in Part I.D.4.f above, and other pertinent field data, such as well name/number, date and time, names of sampling crew, depth to ground water, type of sampling pump or bailer, measured casing volume, volume of water purged before sampling and any information required to be reported under the approved land application plan.
- b) Ground water elevations in all monitoring wells, and potentiometric contours derived from them, plotted on a map of the sites.
- c) Results of ground water analysis, including date sampled, date received and the results of analysis for each parameter, including: value or concentration, units of measurement, method detection limit for the examination, analytical method and the date of analysis. The analytical methods and the method detection limits for every parameter specified in this permit in Part I.D.4 must conform to those in the previously approved Water Quality Sampling, Handling and Analysis Plan.

3. Noncompliance or Probable Noncompliance

Reporting requirements for noncompliance or probable noncompliance status shall be according to the provisions of Part I.E.

4. Electronic Filing Requirements - In addition to submittal of the hard copy data, above, the permittee will electronically submit the required ground water monitoring data in the electronic format specified by the Director.

PART II. REPORTING REQUIREMENTS

- A. REPRESENTATIVE SAMPLING. Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.
- B. ANALYTICAL PROCEDURES. Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3L, 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 quarterly 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:

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

- 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 at a compliance monitoring point 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.
 - 1. Records of monitoring information shall include:
 - a) The date, exact place, and time of sampling or measurements;
 - b) The individual(s) who performed the sampling or measurements;
 - c) The date(s) and time(s) analyses were performed;
 - d) The name of the certified laboratory which performed the analyses;
 - e) The analytical techniques or methods used; and,
 - f) 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 five 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. 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 thru Thursday 7:00 am - 6:00 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 II.D, Reporting of Monitoring Results.
- J. OTHER NONCOMPLIANCE REPORTING. Instances of noncompliance not required to be reported within 5 days, shall be reported at the time that monitoring reports for Part II.D 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 at any location.

PART III. 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 the Water Quality Board 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 IV. 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 which 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 is anticipated 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 new permit. 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 IV.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 IV.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 PROVISIONS. 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 R317-6-6.4D.
 2. Changes have been determined in background ground water quality.

BH

DWQ-2015-014639

STATEMENT OF BASIS
For the
DEEP CREEK DAIRY FARM
Permit No. UGW230002

January 2016

INTRODUCTION

The Deep Creek Dairy Farm operates a dairy with associated manure waste handling facilities. This statement of basis covers the third renewal of the original permit that was issued in 1999 under the former name/ownership of Bateman Dairy Farm.

A. DESCRIPTION OF FACILITY

Deep Creek Dairy is located in the Juab Valley approximately two miles south of the town of Levan. The dairy currently consists of approximately 7000 milking head and 670 heifers and dry cows.

Manure from the dairy operations is flushed from the barns using "borrowed" irrigation water. The slurry is then separated into liquid/solid fractions. The liquid fraction is stored in a waste retention pond. Both the liquid and solid fraction is applied to fields at the appropriate agronomic rate. Solid and liquid wastes from the lagoon system must be disposed of in a manner that does not cause surface or ground water contamination.

B. SUBSURFACE CONDITIONS

The Dairy Farm is located in Juab Valley, approximately 4 miles south of the town of Levan in Juab County. In this vicinity, ground water generally moves from the mountainous recharge areas on the east in a west-northwesterly direction. The aquifer beneath the existing grade at the proposed site consists of unconsolidated and semi-consolidated, poorly sorted alluvial materials; primarily clay, sand and gravel, interbedded with silt and clay. The ground water reservoir in the Juab Valley exceeds 500 feet in thickness through the center of the valley and may be several hundred feet thick under the dairy site. Monitoring wells have been completed in the uppermost water table aquifer at the site.

C. BEST AVAILABLE TREATMENT TECHNOLOGY

The waste disposal system for the farm is designed to receive about 125,000 cubic feet (CF) of wastewater per average month. This includes about 60,000 CF of manure, 56,000 CF of flush and flush recharge water, corresponding to 11.6 gallons per cow per day, 15,000 CF of solids removal by a mechanical separator. Approximately 6,000 CF of net loss will occur from the balance of precipitation

on ponds, runoff from facilities into ponds, and evaporation losses from pond surfaces. Water from roofs will flow off the property without manure contact. Approximately 1.2 million CF of wastewater per year is applied to adjacent farmland by the irrigation system on approximately 825 acres. The solids will be sold as compost.

Solids removed by the mechanical separator system are stacked on a concrete slab and allowed to drain into the liquid disposal system. Drained solids are deposited on a 90 X 260 foot graded and bermed area for composting. Runoff from the compost area drains into a settling pond. Operation and maintenance of the composting system must meet the requirements of solid waste rule R315-312. The compost pad is lined with a minimum of six inches of 1×10^{-6} cm/sec or less clay to minimize leachate that may be generated by the compost.

Two settling ponds and the retention pond comprise the lagoons for the dairy. Sizing is based upon Natural Resource Conservation Service (NRCS) pond design software (V2.21) developed by Ohio State University. Wastewater from the separators flows into one of two settling ponds. Each settling pond is of trapezoidal cross section with dimensions of 54-feet wide by 280-feet long by 6-foot normal operating depth with operating volume of 52,632 CF. Each pond has a 5.75-foot high picket fence near the discharge line to help retain and settle solids. The ponds are lined with an 18-inch clay liner of 1×10^{-7} cm/second maximum permeability and are designed to allow less than 1/8 inch per day of seepage with a maximum head of 6 feet. The ponds are also lined in the bottom with a 4-inch concrete slab to protect the clay liner during removal of solids from the ponds. Two settling ponds are operated so that when one is nearly filled with solids, the influent may be transferred to the other basin, allowing the solids in the resting basin to dry and concentrate for removal to the composting area.

An 8-inch pipeline conveys the wastewater effluent from the settling ponds to the retention pond. Inlets to all ponds must have erosion protection for the clay liners. The retention pond is clay lined similarly to the settling ponds. The retention pond is of right triangular shape, estimated to be 2.5 acres in surface area and 21.7 acre-feet in maximum storage volume. The pond is 10-feet deep, including a 1-foot freeboard. The dike is sloped at 3:1 with a 10-foot road at the top, on all sides.

A 4-inch recycling line is used to return treated water to the flush system. A 12-inch pipeline is pumped to withdraw water for irrigation use. Irrigation of wastewater is done at the agronomic rate, in accordance with testing of soils and crop rotation, using an NRCS approved comprehensive nutrient management plan (CNMP). Only wastes from the dairy operations may be treated in the lagoons. Liquids and sludge from the lagoons may only be land-applied according to the approved plan.

Ground water monitoring is required as described below. If the monitoring reveals that ground water contamination has occurred, Deep Creek Dairy will be required to stop the source of contamination, and if necessary, take corrective actions to preserve beneficial uses of the ground water.

Land application of the lagoon liquids and solids must be done at the agronomic uptake rates specified in the NRCS approved CNMP. Application at these rates is determined based on rates of nitrogen uptake by crops and should result in a *de minimis* impact to ground water quality.

The design, operational, and contingency requirements detailed above represent Best Available Technology since the implementation of these requirements will be protective of ground water resources in the area surrounding the facility.

D. GROUND WATER MONITORING

The Dairy has two down gradient monitoring wells located along the direction of ground water flow and completed in the uppermost water-bearing zone under the lagoons. Protection levels for the monitoring wells are located in Part I.D.3 of the permit. The permittee must sample the down gradient wells on a semi-annual basis in order to demonstrate that compliance limits are not being exceeded. Analytes to be sampled are in Part I.D.4.f.

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