Technical Package Cover Page

This file contains the following documents:

1. Summary of application (in plain language)
   - English
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2. First notice (NORI-Notice of Receipt of Application and Intent to Obtain a Permit)
   - English
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3. Second notice (NAPD-Notice of Preliminary Decision)
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4. Application materials *
5. Draft permit *
6. Technical summary or fact sheet *

Portada de Paquete Técnico

Este archivo contiene los siguientes documentos:

1. Resumen de la solicitud (en lenguaje sencillo)
   - Inglés
   - Idioma alternativo (español)
2. Primer aviso (NORI, Aviso de Recepción de Solicitud e Intención de Obtener un Permiso)
   - Inglés
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3. Segundo aviso (NAPD, Aviso de Decisión Preliminar)
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ENGLISH LANGUAGE TEMPLATE FOR CAFO PERMIT APPLICATIONS

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by the TCEQ Public Participation Plan and Language Access Plan. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

1) Applicant's Name: 3T Martins Farm Hico, LLC and TMC Dairies, LLC
2) Enter Customer Number: CN not yet issued; CN605985894
3) Name of facility: TMC Dairies Hico
4) Enter Regulated Entity Number: RN101523090
5) Provide your permit Number: WQ0003190000
6) Facility Business: The facility confines 9,150 head of cattle in which 5,500 are milking. The facility has nineteen (19) land management units (LMUs) with the following acreages: LMU #TD1 - 144, LMU #TD2 - 56, LMU #TD3 - 40, LMU #TD4 - 86, LMU #TD6 -131, LMU #TD7 - 14, LMU #TH1 - 39, LMU #TH2 - 45, LMU #TH3 - 45, LMU #TH4E - 22, LMU #TH4W - 14, LMU #TH5 - 80, LMU #TH6 - 81, LMU#TH7 - 13, LMU #TH8 - 58, LMU #TS1 - 28, LMU #TS2 - 92, LMU #TS4 - 62 and LMU #TS5 - 44 acres. Six (6) retention control structures (RCSs), four concrete settling basins, one earthen slurry pit, one slurry pit with concrete bottom and earthen side and four settling basins. The required capacities are: RCS #TS1 - 24.78 ac-ft, RCS #TS2 - 22.07 ac-ft, RCS #TH2 - 40.27 ac-ft, RCS #TD1 - 58.10 ac-ft, RCS #TH1 - 0.00 ac-ft and RCS #TD Treatment Pond - 10.96 ac-ft. There are thirty-five (35) onsite wells of which seven (7) are plugged. The facility is located in the North Bosque River in Segment No. 1226 of the Brazos River Basin.
7) Facility Location: The facility is located on the East side of CR 209 at the intersection of CR 540 and CR 209, approximately 4 miles South of the intersection of CR 209 and US Hwy 67 approximately 7 miles Southeast of Stephenville in Erath County, Texas.
8) Application Type: Individual Permit Major Amendment
9) Description of your request: 3T Martins Farm Hico, LLC is submitting a major amendment application in two phases in order to maintain compliance throughout the transition. Phase 1 will see the headcount rise to 10,000 total with 8,000 milking, addition of the Jersey breed of dairy cattle along with the Holstein breed, addition of an anerobic digester and associated equipment, change in property boundary, reconfigure LMUs (see attached LMU cross-reference table), remove LMU #TH8 & #TD7, remove wells # TD9, #TF1 & TF2, well #TS5 is to be plugged and reconfigure drainage area on Figure 1.4A (addition of manure compost area, addition of cross-vent barn, plug well #TS5, expansion of RCS #TS1). Phase 2 will see the headcount rise to 13,500 total with 10,000 milking, reconfigure drainage area on Figure 1.4D (addition of cross-vent barn, addition of a parlor, remove pens, freestall barns, settling basins and plug well #TD11) and reconfigure parlor #2.Click or tap here to enter text.

10) Potential pollutant sources at the facility include (list the pollutant sources): Manure, manure stockpiles, wastewater, sludge, slurry, compost, feed & bedding, silage stockpiles, dead animals, dust, lubricants, parlor chemicals, pesticides and fuel storage tanks.

11) The following best management practices will be implemented at the site to manage pollutants from the listed pollutant sources (describe the best management practices that are used): stormwater is stored in the lagoon (RCS) until land applied through irrigation and manure and sludge are stockpiled in the drainage area of the RCS until land applied or hauled offsite for beneficial use. Manure and sludge generated by the CAFO will be retained and used in an appropriate and beneficial manner in accordance with a certified site-specific nutrient management plan. Wastewater will be contained in the RCS properly designed ((25-year frequency 10-day duration (25 year/10 day), constructed, operated and maintained according to the provision of the permit. Maintain 100-foot buffer for all irrigation wells or 150-foot for all supply wells. Dust - control speed and regular pen maintenance. Fertilizers - store under roof and handle according to specified label directions. Fuel Tanks - provide secondary containment and prevent overfills/spills. Dead animals - dispose by a third-party rendering service or compost on-site. Collected within 24 hours of death and disposed within three days.

12) Unless otherwise limited, manure, sludge, or wastewater will not be discharged from a land management unit (LMU) or a retention control structure (RCS) into or adjacent to water in the state from a CAFO except resulting from any of the following conditions:

1) a discharge of manure, sludge, or wastewater that the permittee cannot reasonably prevent or control resulting from a catastrophic condition other than a rainfall event;

2) overflow of manure, sludge, or wastewater from a RCS resulting from a chronic/catastrophic rainfall event; or

3) a chronic/catastrophic rainfall discharge from a LMU that occurs because the permittee takes measures to de-water the RCS if the RCS is in danger of imminent overflow.

SPANISH

El siguiente resumen se proporciona para esta solicitud pendiente de permiso de calidad del agua que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo exige el Plan de Participación Pública y el Plan de Acceso Lingüístico de la TCEQ. La información provista en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación federal exigible de la solicitud del permiso.

1) Nombre del solicitante: 3T Martins Farm Hico, LLC y TMC Dairies, LLC

2) Ingrese el número de cliente: CN aún no emitido; CN605985894

3) Nombre de la instalación: TMC Dairies Hico

4) Ingresar Número de Entidad Regulada: RN101523090

5) Proporcione su número de permiso: WQ0003190000

6) Instalación Comercial: La instalación encierra 9,150 cabezas de ganado vacuno de las cuales 5,500 son lecheras. La instalación cuenta con diecinueve (19) unidades de administración de tierras (LMU) con las siguientes superficies: LMU #TD1 - 144, LMU #TD2 - 56, LMU #TD3 - 40, LMU #TD4 - 86, LMU #TD6 -131, LMU # TD7 - 14, LMU #TH1 - 39, LMU #TH2 - 45, LMU #TH3 - 45, LMU #TH4E - 22, LMU #TH4W - 14, LMU #TH5 - 80, LMU #TH6 - 81, LMU#TH7 - 13, LMU #TH8 - 58, LMU #TS1 - 28, LMU #TS2 - 92, LMU #TS4 - 62 y LMU #TS5 - 44 acres. Seis (6) estructuras de control de retención (RCS), cuatro estanques de decantación de concreto, un pozo de lodos de tierra, un pozo de lodos con fondo de concreto y costado de tierra y cuatro estanques de sedimentación. Las capacidades requeridas son: RCS #TS1 - 24.78 ac-ft, RCS #TS2 - 22.07 ac-ft, RCS #TH2 - 40.27 ac-ft, RCS #TD1 - 58.10 ac-ft, RCS #TH1 - 0.00 ac-ft y Estanque de tratamiento RCS #TD - 10.96 ac-ft. Hay treinta y cinco (35) pozos en el sitio, de los cuales siete (7) están taponados. La instalación está ubicada en el Río Bosque Norte en el Segmento No. 1226 de la Cuenca del Río Brazos.

7) Ubicación de la instalación: La instalación está ubicada en el lado este de CR 209 en la intersección de CR 540 y CR 209, aproximadamente a 4 millas al sur de la intersección de CR 209 y US Hwy 67, aproximadamente a 7 millas al sureste de Stephenville en el condado de Erath, Texas.

8) Tipo de Solicitud: Enmienda Importante al Permiso Individual

9) Descripción de su solicitud: 3T Martins Farm Hico, LLC presenta una solicitud de enmienda importante en dos fases para mantener el cumplimiento durante la transición. En la fase 1, la plantilla aumentará a 10,000 en total con 8,000 lecheras, se agregará la raza Jersey de ganado lechero junto con la raza Holstein, se agregará un digestor anaeróbico y el equipo asociado, se cambiarán los límites de la propiedad y se reconfigurarán las LMU (consulte la tabla de referencias cruzadas de LMU adjunta), remover LMU #TH8 y #TD7, remover los pozos # TD9, #TF1 y TF2, el pozo #TS5 se

tapará y reconfigurará el área de drenaje en la Figura 1.4A (adición de área de abono de estiércol, adición de granero con ventilación cruzada, tapar pozo #TS5, ampliación del RCS #TS1). En la Fase 2, el número de empleados aumentará a 13,500 en total con 10,000 lecheras, se reconfigurará el área de drenaje en la Figura 1.4D (agregación de un granero con ventilación cruzada, adición de una sala de estar, eliminación de corrales, graneros de establos libres, estanques de sedimentación y tapar del pozo #TD11) y se reconfigurará de la sala de estar #2.

10) Las posibles fuentes de contaminantes en la instalación incluyen (enumere las fuentes de contaminantes): Estiércol, reservas de estiércol, aguas residuales, lodos, estiércol líquido, compost, piensos y camas, reservas de ensilaje, animales muertos, polvo, lubricantes, pesticidas y tanques de almacenamiento de combustible.

11) Las siguientes mejores prácticas de manejo se implementarán en el sitio para manejar los contaminantes de las fuentes de contaminantes enumeradas (describa las mejores prácticas de manejo que se utilizan): las aguas pluviales se almacenan en la laguna (RCS) hasta que se aplican a la tierra mediante riego y estiércol y lodo se almacenan en el área de drenaje del RCS hasta que se aplican a la tierra o se transportan fuera del sitio para un uso beneficioso. El estiércol y los lodos generados por CAFO se conservarán y utilizarán de manera apropiada y beneficiosa de acuerdo con un plan certificado de manejo de nutrientes específico del sitio. Las aguas residuales estarán contenidas en el RCS debidamente diseñado (frecuencia de 25 años, duración de 10 días (25 años/10 días), construido, operado y mantenido de acuerdo con la disposición del permiso. Mantener una zona de amortiguamiento de 100 pies para todos los pozos de riego o 150 pies para todos los pozos de suministro. Polvo: velocidad de control y mantenimiento regular del corral. Fertilizantes: almacénelos bajo techo y manipúlelos de acuerdo con las instrucciones especificadas en la etiqueta. Tanques de combustible: proporcionan contención secundaria y evitan sobrellenados/derrames. Animales muertos: elimínelos a través de un servicio de procesamiento de terceros o entierre en el sitio. Recolectado dentro de las 24 horas posteriores a la muerte y eliminado dentro de los tres días.

12) A menos que se limite de otro modo, el estiércol, los lodos o las aguas residuales no se descargarán desde una unidad de administración de tierra (LMU) o una estructura de control de retención (RCS) hacia el agua en el estado o junto a ella desde una CAFO, excepto que resulte de cualquiera de las siguientes condiciones:

1) una descarga de estiércol, lodo o aguas residuales que el tenedor del permiso no puede prevenir o controlar razonablemente como resultado de una condición catastrófica que no sea un evento de lluvia;

2) desbordamiento de estiércol, lodo o aguas residuales de un RCS como resultado de un evento de lluvia crónica/catastrófica; o

3) una descarga de lluvia crónica/catastrófica de una LMU que ocurre porque el tenedor del permiso toma medidas para vaciar el RCS si el RCS está en peligro de desbordamiento inminente.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF RECEIPT OF APPLICATION AND INTENT TO OBTAIN WATER QUALITY PERMIT AMENDMENT

PERMIT NO. WQ0003190000

APPLICATION. 3T Martins Farm Hico, LLC and TMC Dairies LLC, P.O. Box 599, Hico, Texas 76457, which own and operate a dairy cattle facility, have applied to the Texas Commission on Environmental Quality (TCEQ) to amend Wastewater Permit No. WQ0003190000 (EPA I.D. No. TX0123030) for a Concentrated Animal Feeding Operation (CAFO) to authorize proposed changes in two phases. Phase one will include an increase to the headcount of dairy cattle to 10,000 total with 8,000 milking, addition of the Jersey breed of dairy cattle along with the Holstein breed, addition of an anerobic digester and associated equipment, change in property boundary, reconfiguration of the LMUs, removal of LMUs #TH8 & #TD7, removal of wells #TD9, #TF1 & TF2, and reconfiguration of the drainage area on Figure 1.4A (addition of manure compost area, addition of cross-vent barn, addition of a parlor, plug well #TSS, expansion of RCS #TS1). Phase two will include an increase to the headcount of dairy cattle to 13,500 total with 10,000 milking, reconfiguration of drainage area on Figure 1.4D (addition of cross-vent barn, remove pens, freestall barns, settling basins and plug well #TD11) and reconfigure parlor. The facility is located at 3618 County Road 540, near the city of Hico, in Erath County, Texas 76457. TCEQ received this application on August 28, 2024. The permit application will be available for viewing and copying at Erath County Extension Office, Erath County Courthouse, Room 206, 100 West Washington Street, Stephenville, in Erath County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application.
https://gisweb.tceq.texas.gov/LocationMapper/?marker=-98.047777,32.116944&level=18

ALTERNATIVE LANGUAGE NOTICE. Alternative language notice in Spanish is available at: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications.
El aviso de idioma alternativo en español está disponible en https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications.

ADDITIONAL NOTICE. TCEQ's Executive Director has determined the application is administratively complete and will conduct a technical review of the application. After technical review of the application is complete, the Executive Director may prepare a draft permit and will issue a preliminary decision on the application. **Notice of the Application and Preliminary Decision will be published and mailed to those who are on the county-**

wide mailing list and to those who are on the mailing list for this application. That notice will contain the deadline for submitting public comments.

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting on this application. The purpose of a public meeting is to provide the opportunity to submit comments or to ask questions about the application. TCEQ will hold a public meeting if the Executive Director determines that there is a significant degree of public interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for submitting public comments, the Executive Director will consider all timely comments and prepare a response to all relevant and material, or significant public comments. **Unless the application is directly referred for a contested case hearing, the response to comments, and the Executive Director's decision on the application, will be mailed to everyone who submitted public comments and to those persons who are on the mailing list for this application. If comments are received, the mailing will also provide instructions for requesting reconsideration of the Executive Director's decision and for requesting a contested case hearing.** A contested case hearing is a legal proceeding similar to a civil trial in state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period and, the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period.**

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be placed on: (1) the permanent mailing list for a specific applicant name and permit number; and/or (2) the mailing list for a specific county.

If you wish to be placed on the permanent and/or the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at www.tceq.texas.gov/goto/cid. Search the database using the permit number for this application, which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. All public comments and requests must be submitted either electronically at **https://www14.tceq.texas.gov/epic/eComment/**, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Please be aware that any contact information you provide, including your name, phone number, email address and physical address will become part of the agency's public record. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from 3T Martins Farm Hico, LLC and TMC Dairies LLC at the address stated above or by calling Mr. Tony Martins, Managing Member, 3T Martins Farm Hico, LLC, at 208-320-2134.

Issuance Date: September 25, 2024

Comisión de Calidad Ambiental del Estado de Texas

AVISO DE RECEPCIÓN DE LA SOLICITUD Y
LA INTENCIÓN DE OBTENER CALIDAD DEL AGUA PERMISO
MODIFICACION

PERMISO NO. WQ0003190000

SOLICITUD. 3T Martins Farm Hico, LLC and TMC Dairies LLC, P.O. Box 599, Hico, Texas 76457, que posee y opera una instalación de ganado lechero, ha solicitado a la Comisión de Calidad Ambiental de Texas (TCEQ) modificar el Permiso de Aguas Residuales No. WQ0003190000 (EPA I.D. No. TX0123030) para una Operación de Alimentación Concentrada para Animales (CAFO) para autorizar los cambios propuestos en dos fases. La primera fase incluirá un aumento del conteo de cabezas a 10,000 en total con 8,000 lecheras, la adición de la raza Jersey de ganado lechero junto con la raza Holstein, la adición de un digestor anaeróbico y equipo asociado, cambio en los límites de la propiedad, reconfiguración de las LMU, eliminación de LMU #TH8 y #TD7, remoción de los pozos #TD9, #TF1 y TF2 y reconfiguración del área de drenaje en la Figura 1.4A (adición de área de abono de estiércol, adición de granero con ventilación cruzada, adición de sala de estar, pozo de tapón #TSS, ampliación de RCS #TS1). La segunda fase incluirá un aumento del conteo de cabezas a 13,500 en total con 10,000 lecheras, la reconfiguración del área de drenaje en la Figura 1.4D (adición de un granero con ventilación cruzada, corrales de eliminación, graneros de establos libres, estanques de sedimentación y tapón del pozo #TD11) y reconfiguración de la sala. La instalación está ubicada en 3618 County Road 540, cerca de la ciudad de Hico, en el Condado de Erath, Texas 76457. La TCEQ recibió esta solicitud el 28 de agosto de 2024. La solicitud de permiso estará disponible para ver y copiar en la Oficina de Extensión del Condado de Erath, Palacio de Justicia del Condado de Erath, 100 Washington Street, Cuarto 206, Stephenville, en el Condado de Erath, Texas, antes de la fecha de publicación de este aviso en el periódico. La solicitud, incluidas las actualizaciones y los avisos asociados, están disponibles electrónicamente en la siguiente página web: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications. Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-98.047777,32.116944&level=18

AVISO DE IDIOMA ALTERNATIVO. El aviso de idioma alternativo en español está disponible en https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications.

AVISO ADICIONAL. El Director Ejecutivo de la TCEQ ha determinado que la solicitud es administrativamente completa y conducirá una revisión técnica de la solicitud. Después de completar la revisión técnica, el Director Ejecutivo puede preparar un borrador del permiso y emitirá una Decisión Preliminar sobre la solicitud. **El aviso de la solicitud y la decisión preliminar serán publicados y enviado a los que están en la lista de correo de las personas a lo largo del condado que desean recibir los avisos y los que están en la lista de correo que desean recibir avisos de esta solicitud. El aviso dará la fecha límite para someter comentarios públicos.**

COMENTARIO PUBLICO / REUNION PUBLICA. Usted puede presentar comentarios públicos o pedir una reunión pública sobre esta solicitud. El propósito de una reunión pública es dar la oportunidad de presentar comentarios o hacer preguntas acerca de la solicitud. La TCEQ realiza una reunión pública si el Director Ejecutivo determina que hay un grado de interés público suficiente en la solicitud o si un legislador local lo pide. Una reunión pública no es una audiencia administrativa de lo contencioso.

OPORTUNIDAD DE UNA AUDIENCIA ADMINISTRATIVA DE LO CONTENCIOSO. Después del plazo para presentar comentarios públicos, el Director Ejecutivo considerará todos los comentarios apropiados y preparará una respuesta a todo los comentarios públicos esenciales, pertinentes, o significativos. **A menos que la solicitud haya sido referida directamente a una audiencia administrativa de lo contencioso, la respuesta a los comentarios y la decisión del Director Ejecutivo sobre la solicitud serán enviados por correo a todos los que presentaron un comentario público y a las personas que están en la lista para recibir avisos sobre esta solicitud. Si se reciben comentarios, el aviso también proveerá instrucciones para pedir una reconsideración de la decisión del Director Ejecutivo y para pedir una audiencia administrativa de lo contencioso.** Una audiencia administrativa de lo contencioso es un procedimiento legal similar a un procedimiento legal civil en un tribunal de distrito del estado.

PARA SOLICITAR UNA AUDIENCIA DE CASO IMPUGNADO, USTED DEBE INCLUIR EN SU SOLICITUD LOS SIGUIENTES DATOS: su nombre, dirección, y número de teléfono; el nombre del solicitante y número del permiso; la ubicación y distancia de su propiedad/actividad con respecto a la instalación; una descripción específica de la forma cómo usted sería afectado adversamente por el sitio de una manera no común al público en general; una lista de todas las cuestiones de hecho en disputa que usted presente durante el período de comentarios; y la declaración "[Yo/nosotros] solicito/solicitamos una audiencia de caso impugnado". Si presenta la petición para una audiencia de caso impugnado de parte de un grupo o asociación, debe identificar una persona que representa al grupo para recibir correspondencia en el futuro; identificar el nombre y la dirección de un miembro del grupo que sería afectado adversamente por la planta o la actividad propuesta; proveer la información indicada anteriormente con respecto a la ubicación del miembro afectado y su distancia de la planta o actividad propuesta; explicar cómo y porqué el miembro sería afectado; y explicar cómo los intereses que el grupo desea proteger son pertinentes al propósito del grupo.

Después del cierre de todos los períodos de comentarios y de petición que aplican, el Director Ejecutivo enviará la solicitud y cualquier petición para reconsideración o para una audiencia de caso impugnado a los Comisionados de la TCEQ para su consideración durante una reunión programada de la Comisión. La Comisión sólo puede conceder una solicitud de una audiencia de caso impugnado sobre los temas que el solicitante haya presentado en sus comentarios oportunos que no fueron retirados posteriormente. Si se concede una audiencia, el tema de la audiencia estará limitado a cuestiones de hecho en

disputa o cuestiones mixtas de hecho y de derecho relacionadas a intereses pertinentes y materiales de calidad del agua que se hayan presentado durante el período de comentarios.

LISTA DE CORREO. Si somete comentarios públicos, un pedido para una audiencia administrativa de lo contencioso o una reconsideración de la decisión del Director Ejecutivo, la Oficina del Secretario Principal enviará por correo los avisos públicos en relación con la solicitud. Además, puede pedir que la TCEQ ponga su nombre en una o mas de las listas correos siguientes (1) la lista de correo permanente para recibir los avisos de el solicitante indicado por nombre y número del permiso específico y/o (2) la lista de correo de todas las solicitudes en un condado especifico. Si desea que se agrega su nombre en una de las listas designe cual lista(s) y envía por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

INFORMACIÓN DISPONIBLE EN LÍNEA. Para detalles sobre el estado de la solicitud, favor de visitar la Base de Datos Integrada de los Comisionados en www.tceq.texas.gov/goto/cid. Para buscar en la base de datos, utilizar el número de permiso para esta solicitud que aparece en la parte superior de este aviso.

CONTACTOS E INFORMACIÓN A LA AGENCIA. Todos los comentarios públicos y solicitudes deben ser presentadas electrónicamente vía http://www14.tceq.texas.gov/epic/eComment/ o por escrito dirigidos a la Comisión de Texas de Calidad Ambiental, Oficial de la Secretaría (Office of Chief Clerk), MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Tenga en cuenta que cualquier información personal que usted proporcione, incluyendo su nombre, número de teléfono, dirección de correo electrónico y dirección física pasarán a formar parte del registro público de la Agencia. Para obtener más información acerca de esta solicitud de permiso o el proceso de permisos, llame al programa de educación pública de la TCEQ, gratis, al 1-800-687-4040. Si desea información en Español, puede llamar al 1-800-687-4040.

También se puede obtener información adicional de 3T Martins Farm Hico, LLC and TMC Dairies LLC a la dirección indicada arriba o llamando al Sr. Tony Martins, Miembro Gerente, 3T Martins Farm Hico, LLC, al 208-320-2134.

Fecha de emisión 25 de septiembre de 2024

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF APPLICATION AND PRELIMINARY DECISION
FOR CAFO WATER QUALITY PERMIT

MAJOR AMENDMENT

PERMIT NO. WQ0003190000

APPLICATION AND PRELIMINARY DECISION. 3T Martins Farm Hico, LLC and TMC Dairies, LLC, (**formerly Klaas Talsma, Anastasia Thiele, Two Sisters Dairy, LLC, O and B Farms, Inc., and TMC Dairies, LLC**) PO Box 599, Hico, Texas 76457 have applied to the Texas Commission on Environmental Quality (TCEQ) for a major amendment of Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0003190000, for a Concentrated Animal Feeding Operation (CAFO), to authorize the applicant to make changes to the operation that will include an ultimate increase in the number of total dairy cattle from 9,150 to 13,500 head, of which 10,000 head will be milking cows. The proposed changes to headcounts will be 5,500 Jersey with the remainder being Holstein cattle.

The proposed changes will be implemented in two phases. Phase 1 will involve a headcount increase from 9,150 to 10,000 head, of which 8,000 head will be milking. Other changes include the addition of an anaerobic digester and associated equipment, a manure compost area, a cross-ventilated barn, and a milking parlor, which will result in the reconfiguration of the drainage areas of retention control structures (RCSs) TS1 and TS2; and the removal of Wells TD9, TF1, and TF2 and plugging of Well TS5. Moreover, several changes to existing land management units (LMUs) will be made in this phase including reconfiguring and renaming the following LMUs with changes to the acreage: LMU TD2 into LMU #7 – 16 acres and LMU #7A – 33 acres, LMU TD4 into LMU #12 – 24 acres and LMU #12A – 63 acres, LMU TD6 into LMU #1A - 93 acres and LMU #2 – 39 acres, LMU TH4E and LMU TH4W into LMU #3 – 39 acres, LMU TH5 and LMU TH6 into LMU #4 – 97 acres and LMU #4A – 76 acres, LMU TS2 into LMU #11 – 42 acres and LMU #10A – 46 acres, LMU TS4 into LMU #9 – 34 acres and LMU #9A – 28 acres, and LMU TS5 into LMU #8 – 26 acres and LMU #8A – 18 acres; renaming the following LMUs without change to the acreage: LMU TD1 to LMU #1 – 144 acres, LMU TD3 to LMU #13 – 44 acres, LMU TH1 To LMU #5 – 39 acres, LMU TH2 to LMU #5A – 35 acres, LMU TH3 to LMU #6 – 51 acres, LMU TH7 to LMU #14 – 12 acres, and LMU TS1 to LMU #10 – 29 acres; and removing LMU TH8 – 58 acres and LMU TD7 – 14 acres. The removal of part of LMU TD6 and all of LMUs TD7 and TH8 will change a portion of the property boundary of the facility. The total land application area will decrease from 1,094 to 1,028 acres.

Phase 2 will involve a headcount increase from 10,000 to 13,500 head, of which 10,000 head will be milking; the addition of a cross-ventilated barn to the drainage area of RCSs TD1 and TD Treatment Pond; the reconfiguration of a milking parlor; the removal of pens, freestall barns, and two settling basins; and the plugging of Well TD11. TCEQ received this application on August 27, 2024.

The facility is located at 3618 County Road 540 Hico, Erath County, Texas 76457. The facility is located in the drainage area of the North Bosque River in Segment No. 1226 of the Brazos River Basin. This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application.
https://gisweb.tceq.texas.gov/LocationMapper/?marker=-98.047777,32.116944&level=18

The TCEQ Executive Director has completed the technical review of the application and prepared a draft permit. The draft permit, if approved, would establish the conditions under which the facility must operate. This permit is consistent with the requirements of the antidegradation implementation procedures in 30 Texas Administrative Code §307.5 (c)(2)(G) of the Texas Surface Water Quality Standards and no lowering of water quality is anticipated. The TCEQ Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's Preliminary Decision, and draft permit are available for viewing and copying at the **Texas A&M AgriLife Extension Service / Erath County Courthouse, 100 W Washington St, Second Floor, Stephenville, Texas 76401**.

The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications.

ALTERNATIVE LANGUAGE NOTICE. Alternative language notice in Spanish is available at https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications.

CHANGE IN LAW. The Texas Legislature enacted Senate Bill 709, effective September 1, 2015, amending the requirements for comments and contested case hearings. This application is subject to those changes in law.

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting about this application. The purpose of a public meeting is to provide the opportunity to submit comments or to ask questions about the application. TCEQ holds a public meeting if the Executive Director determines that there is a significant degree of public interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for submitting public comments, the Executive Director will consider all timely comments and prepare a response to all relevant and material, or significant public comments**. Unless the application is directly referred for a contested case hearing, the response to comments will be mailed to everyone who submitted public comments and to those persons who are on the mailing list for this application. If comments are received, the mailing will also provide instructions for requesting a contested case hearing or reconsideration of the Executive Director's decision**. A contested case hearing is a legal proceeding similar to a civil trial in a state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number, applicant's name and permit number, the location and distance of your property/activities relative to the facility, a specific description of how you would be adversely affected by the facility in a way not common to the general public, a list of all disputed issues of fact that you submit during the comment period and the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence, identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity, provide the information discussed above regarding the affected member's location and distance from the facility or activity, explain how and why the member would be affected, and explain how the interests the group seeks to protect are germane to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission will only grant a contested case hearing on disputed issues of fact that are relevant and material to the Commission's decision on the application. Further, the Commission will only grant a hearing on issues that were raised in timely filed comments that were not subsequently withdrawn. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period**.

EXECUTIVE DIRECTOR ACTION. The Executive Director may issue final approval of the application unless a timely contested case hearing request or request for reconsideration is filed. If a timely hearing request or request for reconsideration is filed, the Executive Director will not issue final approval of the permit and will forward the application and request to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be placed on: (1) the permanent mailing list for a specific applicant name and permit number; and/or (2) the mailing list for a specific county. If you wish to be placed on the permanent and/or the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 or electronically at https://www14.tceq.texas.gov/epic/eComment/ within 30 days from the date of newspaper publication of this notice.

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at www.tceq.texas.gov/goto/cid. Search the database using the permit number for this application, which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. Public comments and requests must be submitted either electronically at https://www14.tceq.texas.gov/epic/eComment/, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Any personal information you submit to the TCEQ will become part of the agency's record; this includes email addresses. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from Mr. Tony Martins, 3T Martins Farm Hico, LLC at the address stated above or by calling Mr. Corey Mullin, Enviro-Ag Engineering, Inc. at (254) 965-3500.

Issuance Date: April 16, 2025

COMISIÓN DE CALIDAD AMBIENTAL DE TEXAS

ANUNCIO DE SOLICITUD Y DECISIÓN PRELIMINAR
PARA CAFO PERMISO DE CALIDAD DEL AGUA Enmienda importante

PERMISO Nº WQ0003190000

SOLICITUD Y DECISIÓN PRELIMINAR. 3T Martins Farm Hico, LLC y TMC Dairies, LLC (**anteriormente Klaas Talsma, Anastasia Thiele, Two Sisters Dairy, LLC, O and B Farms, Inc. y TMC Dairies, LLC**), PO Box 599, Hico, Texas 76457, han solicitado a la Comisión de Calidad Ambiental de Texas (TCEQ, por sus siglas en inglés) una modificación importante del permiso n.º WQ0003190000 del Sistema de eliminación de descargas contaminantes de Texas (TPDES, por sus siglas en inglés), para una operación concentrada de alimentación animal (CAFO, por sus siglas en inglés), para autorizar al solicitante a realizar cambios en la operación que incluirán un aumento final en la cantidad total de ganado lechero de 9150 a 13 500 cabezas, de las cuales 10 000 cabezas serán vacas lecheras. Los cambios propuestos en el número de cabezas serán 5.500 cabezas de ganado Jersey y el resto serán cabezas de ganado Holstein.

Los cambios propuestos se implementarán en dos fases. La Fase 1 implicará un aumento de la cantidad de vacas de 9.150 a 10.000, de las cuales 8.000 se dedicarán al ordeño. Otros cambios incluyen la incorporación de un digestor anaeróbico y equipo asociado, un área de compostaje de estiércol, un establo con ventilación cruzada y una sala de ordeño, lo que dará como resultado la reconfiguración de las áreas de drenaje de las estructuras de control de retención (RCS, por sus siglas en inglés) TS1 y TS2; y la eliminación de los pozos TD9, TF1 y TF2 y el taponamiento del pozo TS5. Además, en esta fase se realizarán varios cambios en las unidades de gestión de tierras (LMU, por sus siglas en inglés) existentes, incluida la reconfiguración y el cambio de nombre de las siguientes LMU con cambios en la superficie: LMU TD2 en LMU #7 - 16 acres y LMU #7A - 33 acres, LMU TD4 en LMU #12 - 24 acres y LMU #12A - 63 acres, LMU TD6 en LMU #1A - 93 acres y LMU #2 - 39 acres, LMU TH4E y LMU TH4W en LMU #3 - 39 acres, LMU TH5 y LMU TH6 en LMU #4 - 97 acres y LMU #4A - 76 acres, LMU TS2 en LMU #11 - 42 acres y LMU #10A - 46 acres, LMU TS4 en LMU #9 - 34 acres y LMU #9A - 28 acres, y LMU TS5 en LMU #8 – 26 acres y LMU #8A – 18 acres; renombrando las siguientes LMU sin cambiar la superficie: LMU TD1 a LMU #1 – 144 acres, LMU TD3 a LMU #13 – 44 acres, LMU TH1 a LMU #5 – 39 acres, LMU TH2 a LMU #5A – 35 acres, LMU TH3 a LMU #6 – 51 acres, LMU TH7 a LMU #14 – 12 acres, y LMU TS1 a LMU #10 – 29 acres; y eliminando LMU TH8 – 58 acres y LMU TD7 – 14 acres. La eliminación de parte de LMU TD6 y todas las LMU TD7 y TH8 cambiará una parte del límite de la propiedad de la instalación. El área total de la aplicación de la tierra disminuirá de 1,094 a 1,028 acres.

La Fase 2 implicará un aumento de la cantidad de cabezas de 10,000 a 13,500, de las cuales 10,000 serán de ordeño; la adición de un establo con ventilación cruzada al área de drenaje de los RCS TD1 y el estanque de tratamiento TD; la reconfiguración de una sala de ordeño; la eliminación de corrales, establos de establos libres y dos cuencas de sedimentación; y el taponamiento del pozo TD11. TCEQ recibió esta solicitud el 27 de agosto de 2024.

La instalación está ubicada en 3618 County Road 540 Hico, Erath County, Texas 76457. La instalación está ubicada en el área de drenaje del río North Bosque en el segmento n.º 1226 de la cuenca del río Brazos. Este enlace a un mapa electrónico de la ubicación general del sitio o la instalación se proporciona como cortesía pública y no es parte de la solicitud o el aviso. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-98.047777,32.116944&level=18. Para conocer la ubicación exacta, consulte la aplicación.El Director Ejecutivo de la TCEQ ha concluido el examen técnico de la solicitud y ha preparado un bosquejo de permiso. El bosquejo de permiso, de ser aprobado, establecería las condiciones bajo las cuales la instalación debe operar. Este permiso es consistente con los requisitos de los procedimientos de implementación antidegradación en 30 Código Administrativo de Texas §307.5 (c) (2) (G) de los Estándares de Calidad de Aguas Superficiales de Texas y no se anticipa una disminución de la calidad del agua. El Director Ejecutivo de la TCEQ ha tomado una decisión preliminar de que este permiso, si se emite, cumple con todos los requisitos legales y reglamentarios. La solicitud de permiso, la Decisión Preliminar del Director Ejecutivo y el bosquejo del permiso están disponibles para su visualización y copia en la **Texas A&M AgriLIfe Extension Service / Erath County Courthouse, 100 W Washington St, Second Floor, Stephenville, Texas 76401**.

La solicitud, incluidas las actualizaciones, y los avisos asociados están disponibles electrónicamente en la siguiente página web: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications.

CAMBIO EN LA LEY. La Legislatura de Texas promulgó el Proyecto de Ley del Senado 709, efectivo el 1 de septiembre de 2015, que modifica los requisitos para comentarios y audiencias de casos impugnados. Esta solicitud está sujeta a esos cambios en la ley.

AVISO DE IDIOMA ALTERNATIVO. El aviso de idioma alternativo en español está disponible en https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications.

COMENTARIO PÚBLICO / REUNIÓN PÚBLICA. Puede enviar comentarios públicos o solicitar una reunión pública sobre esta solicitud. El propósito de una reunión pública es para brindar la oportunidad de enviar comentarios o hacer preguntas sobre la solicitud. La TCEQ celebra una reunión pública si el Director Ejecutivo determina que existe un grado significativo de interés público en la solicitud o si lo solicita un legislador local. Una reunión pública no es una audiencia de caso impugnado.

OPORTUNIDAD PARA UNA AUDIENCIA DE CASO IMPUGNADO. Después de la fecha límite para presentar comentarios públicos, el Director Ejecutivo considerará todos los comentarios oportunos y preparará una respuesta a todos los comentarios públicos relevantes y materiales o significativos. **A menos que la solicitud sea remitida directamente para una audiencia de caso impugnado, la respuesta a los comentarios se enviará por correo a todos los que enviaron comentarios públicos y a aquellas personas que estén en la lista de correo para esta solicitud. Si se reciben comentarios, el correo también proporcionará instrucciones para solicitar una audiencia de caso impugnado o reconsiderar la decisión del Director Ejecutivo.** Una audiencia de caso impugnado es un procedimiento legal similar a un juicio civil en un tribunal de distrito estatal.

PARA SOLICITAR UNA AUDIENCIA DE CASO IMPUGNADO, DEBE INCLUIR LOS SIGUIENTES ELEMENTOS EN SU SOLICITUD: su nombre; dirección, teléfono; nombre y número de permiso del solicitante; la ubicación y distancia de su propiedad / actividades en relación con la instalación; una descripción específica de cómo se vería afectado negativamente por la instalación de una manera que no es común para el público en general; una lista de todas las cuestiones de hecho controvertidas que usted planteó durante el periodo de comentarios y la declaración "[Yo/nosotros] solicito/amos una audiencia de caso impugnado". Si la solicitud de audiencia de caso impugnado se presenta en nombre de un grupo o asociación, la solicitud debe designar al representante del grupo para recibir correspondencia futura; identificar por nombre y dirección física a un miembro individual del grupo que se vería afectado negativamente por la instalación o actividad; proporcionar la información discutida anteriormente con respecto a la ubicación y distancia del miembro afectado de la instalación o actividad; explicar cómo y por qué se vería afectado el miembro; y explicar cómo los intereses que el grupo busca proteger son relevantes para el propósito del grupo.

Tras el cierre de todos los periodos de comentarios y solicitudes aplicables, el Director Ejecutivo remitirá la solicitud y cualquier solicitud de reconsideración o de una audiencia de caso impugnado a los Comisionados de la TCEQ para su consideración en una reunión programada de la Comisión.

La Comisión sólo concederá una audiencia de caso impugando sobre cuestiones de hecho controvertidas que sean relevantes y materiales para la decisión de la Comisión sobre la solicitud. Además, la Comisión sólo concederá una audiencia sobre cuestiones que se plantearon en comentarios presentados oportunamente que no fueron retirados posteriormente. **Si se concede una audiencia, el tema de una audiencia se limitará a cuestiones de hecho en disputa o cuestiones mixtas de hecho y de derecho relacionadas con preocupaciones relevantes y materiales sobre la calidad del agua presentadas durante el periodo de comentarios**.

ACCIÓN DEL DIRECTOR EJECUTIVO. El Director Ejecutivo puede emitir la aprobación final de la solicitud a menos que se presente una solicitud de audiencia de caso impugnado oportunamente o una solicitud de reconsideración. Si se presenta una solicitud de audiencia oportuna o una solicitud de reconsideración, el Director Ejecutivo no emitirá la aprobación final del permiso y enviará la solicitud y la petición a los Comisionados de la TCEQ para su consideración en una reunión programada de la Comisión.

LISTA DE CORREO. Si envía comentarios públicos, una solicitud de una audiencia de caso impugnado o una reconsideración de la decisión del Director Ejecutivo, se le agregará a la lista de correo para que esta solicitud reciba avisos públicos futuros enviadas por correo por la Oficina del Secretario Oficial. Además, puede solicitar ser colocado en: (1) la lista de correo permanente para un nombre de solicitante específico y número de permiso; y/o (2) la lista de correo para un condado específico. Para ser colocado en la lista de correo permanente y / o del condado, especifique claramente qué lista(s) y envíe su solicitud a la Oficina del Secretario Oficial de la TCEQ a la dirección a continuación.

Todos los comentarios públicos escritos y las solicitudes de reunión pública deben enviarse a la Office of the Chief Clerk, MC 105, TCEQ, P.O. Box 13087, Austin, TX 787113087 -o electrónicamente a https://www14.tceq.texas.gov/epic/eComment/ dentro de los 30 días a partir de la fecha de publicación de este aviso en el periódico.

INFORMACIÓN DISPONIBLE EN LÍNEA. Para obtener detalles sobre el estado de la solicitud, visite la Base de Datos Integrada de los Comisionados en www.tceq.texas.gov/goto/cid. Busque en la base de datos utilizando el número de permiso para esta solicitud, que se proporciona en la parte superior de este aviso.

CONTACTOS E INFORMACIÓN DE LA AGENCIA. Los comentarios y solicitudes públicas deben enviarse electrónicamente a https://www14.tceq.texas.gov/epic/eComment/, o por escrito a Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Cualquier información personal que envíe a al TCEQ pasará a formar parte del registro de la agencia; esto incluye las direcciones de correo electrónico. Para obtener más información sobre esta solicitud de permiso o el proceso de permisos, llame al Programa de Educación Pública de la TCEQ, sin cargo, al 1-800-687-4040 o visite su sitio web en www.tceq.texas.gov/goto/pep. Si desea información en español, puede llamar al 1-800-687-4040.

También se puede obtener más información de Sr. Tony Martins, 3T Martins Farm Hico, LLC en la dirección indicada anteriormente o llamando a Sr. Corey Mullin, Enviro-Ag Engineering Inc. a (254) 965-3500.

Fecha de Emisión: 16 de abril de 2025

TPDES Permit No. WQ0003190000
This Permit supersedes and replaces
Permit No. WQ0003190000 issued on January 4, 2024
[For TCEQ use only EPA ID No. TX0123030]

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Austin, Texas 78711-3087

TPDES PERMIT FOR CONCENTRATED ANIMAL FEEDING OPERATIONS
under provisions of Section 402 of the Clean Water Act
Chapter 26 of the Texas Water Code and
Section 382.051 of the Texas Clean Air Act

I. Permittee:

A. Owner: 3T Martins Farm Hico, LLC
B. Operator: TMC Dairies, LLC
C. Business Name: TMC Dairies Hico
D. Owner Address: PO Box 599, Hico, Texas 76457

II. Type of Permit: Major Amendment / Air & Water Quality

III. Nature of Business Producing Waste: Concentrated Animal Feeding Operation (CAFO): Dairy Cattle; SIC No. 0241

IV. General Description and Location of Waste Disposal System:

Maximum Capacity: 13,500 total head, of which 10,000 head are milking, split as follows: **Phase 1**: increase from 9,150 to 10,000 head, of which 8,000 head are milking. **Phase 2**: increase from 10,000 to 13,500 head, of which 10,000 head are milking

Site Plan: See Attachment A

Retention Control Structures (RCSs) total required capacities without freeboard (Acre-Feet): **Phase 1 Digester**: – RCS TS1 – 103.3, RCS TS2 - 16.55, TD Treatment – 2.5, TD1 – 66.71, TH2 – 40.27, TH1 – 0. **Phase 2 Digester**: – TS1 – 148.14, TS2 – 16.55, TD Treatment – 7.51, TD1 – 63.30, TH2 – 40.27, TH1 – 0. Digester on Bypass: **Phases 1 & 2** – TS1 – 39.71; RCSs TD1 & TD Treatment and TH2 & TH1 act in series. Other components of the waste management system are anaerobic digester, screw press separator, and a methane generating system

Land Management Units (LMUs) (Acres): LMU #1 - 144, LMU #1A - 93, LMU #2 - 39, LMU #3 – 39, LMU #4 – 97 , LMU #4A – 76, LMU #5 – 39, LMU #5A – 35, LMU #6 – 51, LMU #7 – 16, LMU #7A – 33, LMU #8 – 26, LMU #8A – 18, LMU #9 – 34, LMU #9A – 28, LMU #10 – 29, LMU #10A – 46, LMU #11 – 42, LMU #12 – 24, LMU #12A – 63, LMU #13 – 44, LMU #14 – 12; See Attachment B for locations

Terms of the Nutrient Management Plan (NMP): See Attachments E and F

Location: The facility is located at 3618 County Road 540 Hico, Erath County, Texas 76457. Latitude: 32.119444° N and Longitude: 98.049444° W. See Attachment C

Drainage Basin: The facility is located in the drainage area of the North Bosque River in Segment No. 1226 of the Brazos River Basin

This permit contained herein shall expire at midnight, five years after the date of Commission approval.

ISSUED DATE:

____
For the Commission

V. Rule and Statute Applicability

A. Definitions. All definitions in Chapter 26 of the Texas Water Code, 30 Texas Administrative Code (TAC) Chapters 305 and 321, Subchapter B shall apply to this permit and are incorporated by reference.

B. Amendments, renewals, transfers, corrections, revocation, and suspension of permit. The requirements in 30 TAC Chapter 305, Subchapter D apply to this permit.

VI. Permit Applicability and Coverage

A. Discharge Authorization. No discharge is authorized by this permit except as allowed by the provisions in this permit and 40 Code of Federal Regulations Chapter 412, which is adopted by reference in 30 TAC Chapter 305.541.

B. Application Applicability. The application pursuant to which the permit has been issued is incorporated herein; provided, however, that in the event of a conflict between the provisions of this permit and the application, the provisions of the permit shall control.

C. Air Quality Authorization. The permittee shall comply with the requirements listed in Section VII.D. of this permit and shall:

1. maintain a minimum treatment capacity of 39.41 acre-feet in RCS TS1, and 2.15 acre-feet in RCS TD Treatment (Phase 1 Digester Operational); , 64.36 acre-feet in TS1, 6.44 acre-feet in TD Treatment (Phase 2 Digester - Operational); and 5.66 acre-feet in TS1 on Digester bypass (Phases 1 & 2);
2. identify the maximum sludge volume and the minimum treatment volume on the permanent pond marker in RCS #TS1;
3. maintain a copy of the odor control plan in the Pollution Prevention Plan; and
4. include a stage storage table for the treatment pond in the RCS Management Plan.

VII. Pollution Prevention Plan (PPP) Requirements

A. Technical Requirements

1. PPP General Requirements.
   - (a) The permittee shall update and implement a PPP for this facility upon issuance of this permit. The PPP shall:
     - (1) be prepared in accordance with good engineering practices;
     - (2) include measures necessary to limit the discharge of pollutants to surface water in the state;
     - (3) describe and ensure the implementation of practices which are to be used to assure compliance with the limitations and conditions of this permit;
     - (4) include all information listed in Section VII.A.;
     - (5) identify specific individual(s) who is/are responsible for development, implementation, operation, maintenance, inspections, recordkeeping, and revision of the PPP. The activities and responsibilities of the pollution prevention personnel shall address all aspects of the facility's PPP;
     - (6) be signed by the permittee or other signatory authority in accordance with 30 TAC §305.44 (relating to Signatories to Applications); and
     - (7) be retained on-site.
   - (b) The permittee shall amend the PPP:
     - (1) before any change in the number or configuration of LMUs;

(2) before any increase in the maximum number of animals and/or the maximum number of milking cows;
(3) before operation of any new control facilities;
(4) before any change that has a significant effect on the potential for the discharge of pollutants to water in the state;
(5) if the PPP is not effective in achieving the general objectives of controlling discharges of pollutants from the production area or LMUs; or
(6) within 90 days following written notification from the Executive Director that the plan does not meet one or more of the minimum requirements of this permit.

(c) Maps. The permittee shall maintain the following maps as part of the PPP.
(1) Site Map. The permittee shall update the site map as needed, by permit amendment, to reflect the layout of the facility. The map shall include, at a minimum, the following information: facility boundaries; pens; barns; berms; open lots; manure storage areas; areas used for composting; dead animal burial sites; RCSs or other control facilities; LMUs; water wells, abandoned and in use, which are on-site or within 500 feet of the facility boundary; and all springs, lakes, or ponds located on-site or within one mile of the facility boundary.
(2) Land Application Map. Natural Resource Conservation Service (NRCS) soil survey maps of all LMUs shall depict:
(i) the boundary of each LMU and acreage;
(ii) all buffer zones required by this permit; and
(iii) the unit name and symbol of all soils in the LMU(s).

(d) Potential Pollutant Sources/Site Evaluation.
(1) Potential Pollutant Sources. The PPP shall include a description of potential pollutant sources and indicate all measures that will be used to prevent contamination from the pollutant sources. Potential pollutant sources include any activity or material that may reasonably be expected to add pollutants to surface water in the state from the facility.
(2) Soil Erosion. The PPP shall identify areas that, due to topography, activities, or other factors, have a high potential for significant soil erosion. If these areas have the potential to contribute pollutants to surface water in the state, the PPP shall identify measures used to limit erosion and pollutant runoff.
(3) Control Facilities. The PPP shall include the location and a description of control facilities. The control facilities shall be appropriate for the identified sources of pollutants at the CAFO.
(4) Recharge Feature Certification. The recharge feature certification submitted in the permit application shall be implemented, updated by the permittee as often as necessary, and maintained in the PPP.
(5) 100-year Floodplain. All control facilities, including holding pens and RCSs, shall be located outside of the 100-year floodplain or protected from inundation and damage that may occur during the flood.

(e) Spill Prevention and Recovery. The permittee shall take appropriate measures necessary to prevent spills and to clean up spills of any toxic pollutant. Where potential spills can occur, materials, handling procedures and storage shall be specified. The permittee shall identify the procedures for cleaning up spills and shall make available the necessary equipment to personnel to implement a clean up. The permittee shall store, use, and dispose of all pesticides in accordance with label instructions. There shall be no disposal of pesticides, solvents or heavy metals, or of spills or residues from storage or application equipment or containers, into RCSs. Incidental amounts of such substances entering a RCS as a result of stormwater transport of properly applied chemicals is not a violation of this permit.

2. Discharge Restrictions and Monitoring Requirements.
   (a) Discharge Restrictions. Wastewater may be discharged to water in the state from a properly designed (25-year frequency 10-day duration (25 year/10 day)), constructed, operated and maintained RCS whenever chronic or catastrophic rainfall, or catastrophic conditions cause an overflow. There shall be no effluent limitations on discharges from RCSs which meet the above criteria.
   (b) Monitoring Requirements. The permittee shall sample all discharges from the RCS(s) and LMU(s). The effluent shall be analyzed by a National Environmental Laboratory Accreditation Conference (NELAC) accredited lab for the parameters shown in Table 1.

Table 1: Monitoring Requirements

Parameter	Sample Type	Sample Frequency
5 Day Biochemical Oxygen Demand (BOD_5)	Grab	1/day[1]
Escherichia coli	Grab	1/day[1]
Total Dissolved Solids (TDS)	Grab	1/day[1]
Total Suspended Solids (TSS)	Grab	1/day[1]
Nitrate (N)	Grab	1/day[1]
Total Phosphorus	Grab	1/day[1]
Ammonia Nitrogen	Grab	1/day[1]
Pesticides[2]	Grab	1/day[1]

[1]Sample shall be taken within the first thirty (30) minutes following the initial discharge and then once per day while discharging.
[2]Any pesticide which the permittee has reason to believe could be present in the wastewater.

   (c) If the permittee is unable to collect samples due to climatic conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.), the permittee shall document why discharge samples could not be collected. Once dangerous conditions have passed, the permittee shall conduct the required sampling.

3. RCS Design and Construction.
   (a) RCS Certifications
      (1) The permittee shall ensure that the design and completed construction of the RCS(s) and the anaerobic digester system (See Special Provision X.A.) is certified by a licensed Texas Professional Engineer prior to use. The certification shall be signed and sealed in accordance with the Texas Board of Professional Engineers requirements.
      (2) Documentation of liner and capacity certifications must be completed for each RCS prior to use and kept on-site in the PPP. Once construction is complete, new capacity and liner certifications for RCS TS1 will be

provided. Table 2 below shows the current RCS liner and capacity certifications.

Table 2: Current Liner and Capacity Certifications

RCS Name	Liner Certification Date	Capacity Certification Date	Certified Capacity (Acre-Feet)
TD1	09/12/2008 & 12/21/2010	04/30/2010	74.95
TD Treatment Pond	09/12/2008	04/30/2010	12.22
TS1	08/16/2010	08/16/2010	49.97
*TS2	06/07/2016	08/16/2010	24.69
TH1	05/09/1990	12/01/2010	15.83
TH2	12/01/2010	12/01/2010	65.13
TH Settling Basin	02/02/1990	Not Applicable	
TD Settling Pond #1	09/12/2008		
TD Settling Pond #2	09/12/2008		
*TS Settling Basin	01/02/1997		
Slurry Pit (Slurry Pond)	09/12/2008		

*The spillway that was removed between former RCSs #2 and #3 under TPDES Permit # WQ0004866000 to combine the capacity into one RCS 2 (now RCS TS2) has been restored to form TS Settling Basin and RCS TS2.

(b) Design and Construction Standards. The permittee shall ensure that each RCS is designed and constructed in accordance with the technical standards developed by the NRCS, American Society of Agricultural and Biological Engineers, American Society of Civil Engineers, or American Society of Testing Materials that are in effect at the time of construction. Where site-specific variations are warranted, a licensed Texas Professional Engineer must document these variations and their appropriateness to the design.

(c) RCS Drainage Area.

(1) The permittee shall describe in the PPP and implement measures that will be used to minimize entry of uncontaminated stormwater into the RCS(s).

(2) Stormwater must be diverted, as indicated in Attachment A - Site Map from contact with feedlots and holding pens, and manure and/or process wastewater storage systems. In cases where it is not feasible to divert stormwater from the production area, the retention structures shall include adequate storage capacity for the additional stormwater. Stormwater includes rain falling on the roofs of facilities, runoff from adjacent land, or other sources.

(3) The permittee shall maintain the drainage area to minimize ponding or puddling of water outside the RCS(s).

(d) RCS Sizing.

(1) The design plan must include documentation describing the sources of information, assumptions and calculations used in determining the appropriate volume capacity and structural features of each RCS, including embankment and liners.

(2) Design Rainfall Event. Each RCS authorized under this permit shall be designed and constructed to meet or exceed the margin of safety, equivalent to the volume of runoff and direct precipitation from the 25 year/10 day rainfall event. The design rainfall event for this CAFO is 12.2 inches.

(3) Any RCS capacity that is greater than the minimum capacity required by this permit may be allocated to additional sludge storage volume, which will increase the design sludge cleanout interval for the RCS. The new sludge cleanout interval will be identified in the RCS management plan maintained in the PPP, the stage storage tables will accurately reflect the new volumes, and the pond markers will visually identify the new volume levels.

(e) Irrigation Equipment Design. The permittee shall ensure that the irrigation system design is capable of removing wastewater from the RCS(s) on a regular schedule. Equipment capable of dewatering the RCS(s) shall be available and operational whenever needed to restore the operating capacity required by the RCS management plan.

(f) Embankment Design and Construction. The RCS(s) have a depth of water impounded against the embankment at the spillway elevation of three feet or more, therefore the RCS(s) are considered to be designed with an embankment. The PPP shall include a description of the design specifications for the RCS embankments. The following design specifications are required for all new construction and/or the modified portions of existing RCSs.

(1) Soil Requirements. Soils used in the embankment shall be free of foreign material such as rocks larger than four (4) inches, trash, brush, and fallen trees.

(2) Embankment Lifts. The embankment shall be constructed in lifts or layers no more than eight (8) inches compacted to six (6) inches thick at a minimum compaction effort of 95 per cent (%) Standard Proctor Density (ASTM D698) at -1% to +3% of optimum moisture content.

(3) Stabilize Embankment Walls. All embankment walls shall be stabilized to prevent erosion or deterioration.

(4) Compaction Testing. Embankment construction must be accompanied by certified compaction tests including in place density and moisture in accordance with the American Society of Testing Materials (ASTM) D1556, D2167 or D2937 for density and D2216, D4643, D4944 or D4959 for moisture, or D6938 for moisture and density or equivalent testing standards. Compaction tests will provide support for the liner certification performed by a licensed Texas Professional Engineer as meeting a permeability no greater than 1×10^{-7} centimeters per second (cm/sec) over a thickness of 18 inches or its equivalency in other materials, and not to exceed a specific discharge through the liner of 1.1×10^{-6} cm/sec with a water level at spillway depth.

(5) Spillway or Equivalent Protection. The new or modified RCS(s), which are constructed with embankments, shall be constructed with a spillway or other outflow device properly sized according to NRCS design and specifications to protect the integrity of the embankment.

(6) Embankment Protection. The new or modified RCS(s) must have a minimum of two (2) vertical feet of materials equivalent to those used at the time of design and construction between the top of the embankment and the structure's spillway. RCS(s) without spillways must have a minimum of two (2) vertical feet between the top of the embankment and the required storage capacity.

(g) RCS Liner Requirements. For all new construction and for all structural modifications of existing RCS(s), the RCS must have a liner consistent with one of the following:

(1) In-situ Material. In-situ material is undisturbed, in-place, native soil material. In-situ materials must at least meet the minimum criteria for hydraulic conductivity and thickness and specific discharge as described in Section VII.A.3(g)(2) of this permit. Samples shall be collected and analyzed in accordance with Section VII.A.3(g)(3) of this permit. This documentation must be certified by a licensed Texas Professional Engineer or licensed Texas Professional Geoscientist.

(2) Constructed or Installed Liner.

(i) Constructed or installed liners must be designed by a licensed Texas Professional Engineer. The liner must be constructed in accordance with the design and certified as such by a licensed Texas Professional Engineer. Compaction tests and post construction sampling and analyses, conducted in accordance with Sections VII.A.3(f)(4) and VII.A.3(g)(3) of this permit, will provide support for the liner certification.

(ii) Liners shall be designed and constructed to have hydraulic conductivities no greater than 1×10^{-7} centimeters per second (cm/sec), with a thickness of 18 inches or its equivalency in other materials, and not to exceed a specific discharge through the liner of 1.1×10^{-6} cm/sec with a water level at spillway depth.

(iii) Constructed or installed liners must be designed and constructed to meet the soil requirements, lift requirements, and compaction testing requirements as listed in Section VII.A.3(f)(1), (2) and (4) of this permit.

(3) Liner Sampling and Analyses

(i) The licensed Texas Professional Engineer or licensed Texas Professional Geoscientist shall use best professional practices to ensure that corings or other liner samples will be appropriately plugged with material that also meets liner requirements of this subsection.

(ii) Samples shall be collected in accordance with ASTM D1587 or other method approved by the Executive Director. For each RCS, a minimum of two core samples collected from the bottom of the RCS and a minimum of at least one core sample from each sidewall shall be collected. Additional samples may be necessary based on the best professional judgment of the licensed Professional Engineer. Distribution of the samples shall be representative of liner characteristics, and proportional to the surface area of the sidewalls and floor. Documentation shall be provided identifying the sample locations with respect to the RCS liner.

(iii) Undisturbed samples shall be analyzed for hydraulic conductivity in accordance with ASTM D5084 or other method approved by the Executive Director.

(4) Leak Detection System. If notified by the Executive Director that significant potential exists for the adverse impact of water in the state or drinking water from leakage of a RCS, the permittee shall install a leak detection system or monitoring well(s) in accordance with that notice. Documentation of compliance with the notification must be kept with the PPP, as well as copies of all sampling data.

4. Special Considerations for Existing RCS(s). An existing RCS that has been properly maintained without any modifications and has no apparent structural problems or leakage is considered to be properly designed with respect to the embankment design and construction and liner requirements of this permit, provided that any required documentation was completed in accordance with the requirements at the time of construction. If no documentation exists, the RCS must be certified by a licensed Texas Professional Engineer as providing protection equivalent to the requirements of this permit.

5. Operation and Maintenance of RCSs.

(a) The permittee must operate and maintain a margin of safety in the RCS(s) to contain the volume of runoff and direct precipitation from the 25 year/10 day rainfall event.

(b) The permittee shall implement a RCS management plan incorporating the margin of safety developed by a licensed Texas Professional Engineer. The management plan shall become a component of the PPP, shall be developed for each RCS, and must describe or include:

(1) RCS management controls appropriate for the CAFO and the methods and procedures for implementing such controls;

(2) the methods and procedures for proper operation and maintenance of each RCS consistent with the system design;

(3) the appropriateness and priorities of any controls reflecting the identified sources of pollutants at the facility;

(4) a stage/storage table for each RCS with minimum depth increments of one-foot, including the storage volume provided at each depth;

(5) a second table or sketch that includes increments of water level ranges for volumes of total design storage, including the storage volume provided at each specified depth (or water level) and the type of storage designated by that depth; and

(6) the planned end of month storage volume anticipated for each RCS for each month of the year and the corresponding operating depth expected at the end of each month of the year, based on the design assumptions.

(c) The wastewater level in the RCS shall be maintained at or below the maximum operating level expected during that month, according to the design of the RCS. When rainfall volumes exceed average rainfall data used in design calculations planned end of month storage volumes may encroach into the design storm event storage provided that documentation is available to support that the design parameters have been exceeded and that the RCS is otherwise being managed according to the RCS management plan criteria. In circumstances where the RCS has a water level exceeding the expected end of the month depth, the permittee shall document in the PPP why the level of water in the structure is not at or below the expected depth. Also, if the water level in the RCS encroaches into the storage volume reserved for the design rainfall event, the permittee must document, in the PPP, the conditions that resulted in this occurrence. As soon as irrigation is feasible and not prohibited by Section VII.A.8(f) and (g), the permittee shall irrigate until the RCS water level is at or below the maximum operating level expected during that month.

(d) Imminent Overflow. If a RCS is in danger of imminent overflow from chronic or catastrophic rainfall or catastrophic conditions, the permittee shall take reasonable steps to irrigate wastewater to the LMU(s) only to the extent necessary to prevent overflow from the RCS. If irrigation results in a discharge from a LMU, the permittee shall collect samples from the drainage pathway at the point of the discharge from the edge of the LMU where the discharge occurs, analyze the samples for the parameters listed in Section VII.A.2.(b), and provide the appropriate notifications as required by Section VIII.B of this permit and 30 TAC §321.44.

(e) Permanent Pond Marker. The permittee shall install and maintain a permanent pond marker (measuring device) in the RCS(s), visible from the top of the levee to show the following:

(1) the volume for the design rainfall event;

(2) one-foot increments beginning from the predetermined minimum treatment volume of the RCS, or the bottom of the RCS for those without treatment volume, to the top of the embankment or spillway; and

(3) design volume levels for maximum sludge accumulation and operating volume (calculated process generated wastewater plus rainfall runoff minus evaporation) must be identifiable on the marker.

(f) Rain Gauge. A rain gauge capable of measuring the design rainfall event shall be kept on-site and properly maintained.

(g) Sludge Removal. The permittee shall monitor sludge accumulation and depth, based upon the design sludge storage volume in the RCS. (See Special Provision X.E for additional requirements related to sludge monitoring.) Sludge shall be removed from the RCS(s) in accordance with the design schedule for cleanout in the RCS Management Plan to prevent the accumulation of sludge from exceeding the designed sludge volume of the structure. Removal of sludge shall be conducted during favorable wind conditions that carry odors away from nearby receptors. Sludge may only be beneficially utilized by land application to a LMU if in accordance with a nutrient management plan or disposed of in accordance with Section VII.A.8(e) of this permit. A sludge sample must be collected and analyzed in accordance with Section VII.A.9(a) prior to each clean out.

(h) Liner Protection and Maintenance. The permittee shall maintain the liner to inhibit infiltration of wastewater. Liners must be protected from animals by fences or other protective devices. No tree shall be allowed to grow such that the root zone would intrude or compromise the structure of the liner or embankment. Any mechanical or structural damage to the liner shall be evaluated by a licensed Texas Professional Engineer within thirty (30) days of the damage.

(i) Closure Requirements. A closure plan must be developed when a RCS will no longer be used and/or when the CAFO ceases or plans to cease operation. The closure plan shall be submitted to the appropriate regional office and the CAFO Permits Team of the Water Quality Division in Austin (MC-150) within ninety (90) days of when operation of the CAFO or the RCS terminates. The closure plan for the RCS must, at a minimum, be developed using standards contained in the NRCS Practice Standard Code 360 (Closures of Waste Impoundments), as amended, and using the guidelines contained in the Texas AgriLife Extension/ NRCS publication #B-6122 (Closure of Lagoons and Earthen Manure Storage Structures), as amended. The permittee shall maintain or renew its existing authorization and maintain compliance with the requirements of this permit until the facility has been closed.

6. General Operating Requirements.

(a) Flush/Scrape Systems. Flush/scrape systems shall be flushed/scraped in accordance with design criteria in the application.

(b) Pen Maintenance. The permittee shall maintain earthen pens to ensure good drainage, minimize ponding, and minimize the entrance of uncontaminated storm water to the RCSs.

(c) Carcass Disposal. Carcasses shall be collected within twenty four (24) hours of death and properly disposed of within three days of death in accordance with Texas Water Code, Chapter 26; Texas Health and Safety Code, Chapter 361; and 30 TAC Chapter 335 (relating to Industrial Solid Waste and Municipal Hazardous Waste) unless otherwise provided for by the commission. Animals must not be disposed of in any liquid manure or process wastewater system. Disposal of diseased animals shall also be conducted in a manner that prevents a public health hazard in accordance with Texas Agriculture Code, §161.004, and 4 TAC §31.3, §58.31(b), and §59.12. The collection area for carcasses shall be addressed in the potential pollutant sources section of the PPP with the management practices to prevent contamination of surface or groundwater, control access, and minimize odor.

(d) Manure and Sludge Storage

(1) Manure and sludge storage capacity requirements shall be based on manure and sludge production, land availability, and the NRCS Field Office Technical Guide (Part 651, Chapter 10) or equivalent standards. (See Special Provision X.I for the storage requirements applicable to slurry collected from freestall and cross ventilated barns.)

(2) When manure is stockpiled, it shall be stored in a well-drained area, and the top and sides of stockpiles shall be adequately sloped to ensure proper drainage and prevent ponding of water. Runoff from manure or sludge storage piles must be retained on-site. If the manure or sludge areas are not roofed or covered with impermeable material, protected from external rainfall, or bermed to protect from runoff during the design rainfall event, the manure or sludge areas must be located within the drainage area of a RCS and accounted for in the design calculations of the RCS.

(3) Manure or sludge stored for more than thirty (30) days must be stored within the drainage area of a RCS or stored in a manner (i.e. storage shed,

bermed area, tarp covered area, etc.) that otherwise prevents contaminated storm water runoff from leaving the storage area. All storage sites and structures located outside the drainage area shall be designated on the site map. Storage for more than thirty (30) days is prohibited in the 100–year floodplain.

(4) Temporary storage of manure or sludge shall not exceed thirty (30) days and is allowed only in a LMU or a RCS drainage area. Temporary storage of manure and sludge in the 100-year floodplain, near water courses or near recharge features may be allowed if protected by berms or other structures to prevent inundation or damage that may occur.

(e) Composting. Composting on-site shall be performed in accordance with 30 TAC Chapter 332 (relating to Composting). The permittee may compost waste generated on-site, including manure, sludge, bedding, feed and dead animals. The permittee may add agricultural products to provide an additional carbon source or bulking agent to aid in the composting process. If the compost areas are not roofed or covered with impermeable material, protected from external rainfall, or bermed to protect from runoff in the case of the design rainfall event, the compost areas must be located within the drainage of an RCS and must be shown on the site plan and accounted for in the design calculations of the RCS.

7. Site Specific Conservation Practice.

(a) Well Protection Requirements

(1) The permittee shall not locate or operate a new RCS, holding pen, or LMU within the following buffer zones:

(i) public water supply wells 500 feet;

(ii) wells used exclusively for private water supply 150 feet; or

(iii) wells used exclusively for agriculture irrigation 100 feet.

(2) Irrigation of wastewater directly over a well head will require a structure protective of the wellhead that will prevent contact from irrigated wastewater.

(3) Construction of any new water wells must be done by a licensed water well driller.

(4) All abandoned and unuseable wells shall be plugged according to 16 TAC §76.104.

(5) The permittee may continue the operation and use of any existing holding pens and RCSs located within the required well buffer zones provided they are in accordance with the facility's approved recharge feature evaluation and certification. Buffer zone variance documentation must be kept on-site and made available to TCEQ personnel upon request. A Well Buffer Exception request for Wells TD1, TD2, TD3, TD4, TD11, TH1, TH3, TH4, TS1, TS2, TS9 and TS10 was submitted to and approved by the TCEQ Water Quality Assessment Team. Permittee shall implement the requirements of the Well Buffer Exception approval by TCEQ. Table 3 below shows the status of all wells on the facility and the best management practices (BMPs) used to protect them.

Table 3: Well Status and Best Management Practices

Well Number*	Status	BMPs
TD1	Producing	Situated away from the drainage area of the confinement pens and a concrete surface slab
TD2	Producing	Situated away from the drainage area of the confinement pens, a concrete surface slab, and steel sleeve
TD3	Producing	Situated away from the drainage area of the confinement pens and a concrete surface slab
TD4	Producing	Situated away from the drainage area of the confinement pens and a concrete surface slab
TD5	Producing	Maintain 150-foot buffer
TD6	Non-producing	Plugged
TD7	Producing	Maintain 150-foot buffer
TD8	Producing	Maintain 150-foot buffer
TD10	Producing	Maintain 150-foot buffer
**TD11	Producing	Situated away from the drainage area of the confinement pens, a concrete surface slab, and surface sleeve cemented to ground level
TD12	Producing	Maintain 150-foot buffer
TD13	Producing	Maintain 150-foot buffer
TH1	Producing	No contact of waste with wellhead, concrete slab sealed to steel sleeve
TH2	Producing	Maintain 150-foot buffer
TH3	Producing	No contact of waste from the pen area with the wellhead, and concrete surface slab sealed to steel sleeve Maintain a 150-foot buffer between well and LMUs
TH4	Non-producing	No contact of waste from the pen area with the wellhead, and concrete surface slab sealed to steel sleeve, and capped. Maintain a 150-foot buffer between well and LMUs
TH5	Producing	Maintain 150-foot buffer
TH6	Non-producing	Plugged
TH7	Producing	Maintain 150-foot buffer
TH8	Non-producing	No evidence of well: due diligence on well status maintained in the PPP
TH9	Producing	Maintain 150-foot buffer
TH10	Non-producing	Plugged
TS1	Producing	Concrete surface slab around the wellhead and located up-gradient from the pollution source
TS2	Producing	Concrete surface slab around the wellhead and located up-gradient from the pollution source
TS3	Non-producing	Plugged
TS4	Producing	Maintain 150-foot buffer
**TS5	Producing	Maintain 150-foot buffer
TS6	Producing	Maintain 150-foot buffer
TS7	Non-producing	Plugged

Well Number*	Status	BMPs
TS8	Non-producing	Plugged
TS9	Producing	Concrete surface slab around the wellhead, well is isolated from runoff by concrete retaining wall
TS10	Producing	Concrete surface slab around the wellhead, well is isolated from runoff by concrete retaining wall and an existing facility road diverts storm water from the wellhead

*Well Numbers correspond with Attachment D
**TS5 and TD11 will be plugged in Phases 1 and 2, respectively.

(b) Soil Limitations. The permittee shall implement the BMPs on Table 4 for the specified soil series.

Table 4: Soil Limitations and Best Management Practices

Soil Series and Map ID	Potential Limitations	BMPs*
Maloterre: Ma	Depth to Bedrock; Droughty	Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that Land Management Unit. No land application to inundated soils.
Purves-Dugout: Pd	Droughty; Depth to Bedrock; Slow water movement; Large surface stones	
Purves: PcC	Droughty; Depth to Bedrock; Slow Water Movement	
Nimrod: NdC	Filtering capacity; Seepage	Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). No land application to inundated soils.
Windthorst: WnC	Filtering capacity	
Frio: FriA; Bunyan: Bu	Flooding	
Hassee: WaB & WkA Clairette-Hassee: CtB; Slidell: HoB; Selden: SdC	Slow water movement; Depth to Saturated Zone	
Bolar Denton: BdC	Slow Water Movement Depth to Hard Bedrock	
Fairy-Hico: FhC2 & HfD2	Slow Water Movement Seepage	
Hico-Windthorst: HwD3	Depth to Soft Bedrock	

*or an equivalent protective measure identified in an NRCS Practice Standard.

(c) Pollutant Sources and Management. The permittee shall implement the BMPs on Table 5 for handling dead animals and pesticides.

Table 5: Pollutant Sources and Best Management Practices

Potential Pollutant Source	BMPs*
Dead Animals	Collect within 24 hours of death and remove within three days of death by a third-party rendering service, or compost in accordance with Section VII.A.6(e) of this permit
Pesticides/Parlor Chemicals	Store under roof Handle and dispose according to label directions

*or an alternative BMP as allowed by 30 TAC 321 Subchapter B or an equivalent protective measure identified in an NRCS Practice Standard.

8. Land Application.
   (a) Nutrient Management Plan (NMP) Required. The certified NMP submitted in the permit application shall be implemented upon issuance of this permit. The plan shall be updated as appropriate or at a minimum of annually according to NRCS Practice Standard Code 590. The permittee shall make available to the Executive Director, upon request, a copy of the site specific NMP and documentation of the implementation.
      (1) For Terms of the NMP see Attachments E and F.
      (2) The following changes to the terms of the NMP are substantial:
         (i) Increase in animal headcount;
         (ii) Increase in LMU acreage or a change in LMU location;
         (iii) Change in crop and yield goal (not listed in Attachment F);
      (3) Substantial and Non-Substantial Change to the terms of the NMP.
         (i) Any changes (substantial or non- substantial) to the NMP, other than the Annual Recalculation of Application Rates outlined in Attachment E, must be submitted to the Executive Director for review, and may be subject to public comment;
         (ii) If the Executive Director determines that the changes to the NMP are not substantial, the revised NMP will be made publicly available and included in the permit record; and
         (iii) If the Executive Director determines that the changes to the NMP are substantial, the information provided by the permittee will be subject to a major amendment process as set in 30 TAC §§305.61-305.72.
   (b) Comprehensive Nutrient Management Plan (CNMP) required. The permittee must continue to operate under a CNMP certified by the Texas State Soil and Water Conservation Board.
   (c) Critical Phosphorus Level
      (1) When results of the annual soil analysis show a phosphorus level in the soil of more than 200 ppm but not more than 500 ppm in Zone 1 depth (0-6 inch incorporated; 0-2 or 2-6 inch if not incorporated) for a particular LMU or if ordered by the commission to do so in order to protect the quality of water in the state, then the permittee shall:
         (i) file with the Executive Director a new or amended nutrient utilization plan (NUP) with a phosphorus reduction component based on crop removal that is certified as acceptable by a person described in (3) below; or

(ii) show that the level is supported by a NUP that is certified as acceptable by a person described in (3) below.

(2) The permittee shall cease land application of compost, manure, sludge, slurry and wastewater to the affected area until the NUP has been approved by the TCEQ. After a NUP is approved, the permittee shall land apply in accordance with the NUP until soil phosphorus is reduced below the critical phosphorus level of 200 ppm extractable phosphorus. Thereafter, the permittee shall implement the requirements of the nutrient management plan.

(3) NUP. A NUP is a NMP, based on NRCS Practice Standard Code 590, which utilizes a crop removal application rate. The NUP, based on crop removal, must be developed and certified by one of the following individuals or entities:

(i) an employee of the NRCS;

(ii) a nutrient management specialist certified by the NRCS;

(iii) the Texas State Soil and Water Conservation Board;

(iv) the Texas AgriLife Extension;

(v) an agronomist or soil scientist on full-time staff at an accredited university located in the State of Texas; or

(vi) a Certified Professional Agronomist certified by the American Society of Agronomy, a Certified Professional Soil Scientist certified by the Soil Science Society of America, or a licensed Texas Professional Geoscientist-soil scientist after approval by the Executive Director based on a determination by the Executive Director that another person or entity identified in this paragraph cannot develop the plan in a timely manner.

(4) When results of the annual soil analysis for extractable phosphorus indicate a level greater than 500 ppm in Zone 1 depth (0-6 inch incorporated; 0-2 or 2-6 inch if not incorporated), the permittee shall file with the Executive Director a new or amended NUP with a phosphorus reduction component, based on crop removal, that is certified as acceptable by a person described in (3) above. After the new or amended NUP is approved, the permittee shall land apply in accordance with the NUP until soil phosphorus is reduced below 500 ppm extractable phosphorus.

(5) If the permittee is required to have a NUP with a phosphorus reduction component based on crop removal, and if the results of tests performed on composite soil samples collected 12 months or more after the plan is filed do not show a reduction in phosphorus concentration in Zone 1 depth (0-6 inch incorporated; 0-2 or 2-6 inch if not incorporated), then the permittee is subject to enforcement action at the discretion of the Executive Director.

(d) Buffer Requirements. The permittee shall meet the following buffer requirements for each LMU:

(1) Water in the State. The permittee shall not apply compost, manure, sludge, slurry and wastewater within the buffer distances as noted on Attachment B and Special Provision X.D. Vegetative buffers shall be maintained in accordance with NRCS Field Office Technical Guidance.

The permittee shall maintain the filter strip (according to NRCS Code 393) between the vegetative buffer and the land application area. If the land application area is cropland, the permittee shall install and maintain contour buffer strips (according to NRCS Code 332) within the land application area in addition to the buffer distances required by this permit.

(2) Water Wells. The permittee shall comply with the well protection requirements listed in Section VII.A.7.(a).

(e) Exported wastewater, sludge, and/or manure. Wastewater, sludge, and/or manure removed from the operation shall be disposed of by:

(1) delivery to a composting facility authorized by the Executive Director;
(2) delivery to a permitted landfill located outside of the major sole source impairment zone;
(3) beneficial use by land application to land located outside of the major sole source impairment zone;
(4) put to another beneficial use approved by the Executive Director; or
(5) providing wastewater, sludge, and/or manure to operators of third-party fields, i.e. areas of land in the major sole source impairment zone not owned, operated, controlled, rented, or leased by the CAFO owner or operator, that have been identified in the PPP.
  (i) There must be a written contract between the permittee and the recipient that includes, but is not limited to, the following provisions:
    (A) All transferred wastewater, sludge, and/or manure shall be beneficially applied to third-party fields identified in the PPP in accordance with the applicable requirements in 30 TAC §321.36 and §321.40 at an agronomic rate based on soil test phosphorus. The requirements for development or implementation of a nutrient management plan or nutrient utilization plan, under 30 TAC §321.40, do not apply to third-party fields.
    (B) Manure and sludge must be incorporated on cultivated fields within forty-eight (48) hours after land application.
    (C) Land application rates shall not exceed the crop nitrogen requirement when the soil phosphorus concentration in Zone 1 depth (0-6 inch if incorporated; 0-2 or 2-6 inch if not incorporated) is less than or equal to 50 ppm phosphorus.
    (D) Land application rates shall not exceed two times the phosphorus crop removal rate, and not to exceed the crop nitrogen requirement, when soil phosphorus concentration in Zone 1 depth (0-6 inch if incorporated; 0-2 or 2-6 inch if not incorporated) is greater than 50 ppm phosphorus and less than or equal to 150 ppm phosphorus.
    (E) Land application rates shall not exceed one times the phosphorus crop removal rate, and not to exceed the crop nitrogen requirement, when soil phosphorus concentration in Zone 1 depth (0-6 inch if incorporated; 0-2 or 2-6 inch if not incorporated) is greater than 150 ppm phosphorus and less than 200 ppm phosphorus.

(F) Before commencing manure, wastewater, compost, and/or sludge application to third-party fields, at least one representative soil sample from each third-party field must be collected by a certified nutrient management specialist and analyzed in accordance with 30 TAC §321.36. Third-party fields which have had wastewater, sludge, compost, and/or manure applied during the preceding year must be sampled annually by a certified nutrient management specialist and the samples analyzed in accordance with 30 TAC §321.36. For third-party fields that have not received wastewater, sludge, compost, and/or manure during the preceding year, initial sampling must be completed before re-starting land application to the third-party field.

(G) A copy of the annual soil analyses shall be provided to the permittee within sixty (60) days of the date the samples were taken.

(H) Temporary storage of wastewater, sludge, and/or manure is prohibited on third-party fields.

(ii) The permittee is prohibited from delivering wastewater, sludge, and/or manure to an operator of a third-party field once the soil test phosphorus analysis shows a level equal to or greater than 200 ppm or after becoming aware that the third-party operator is not following appropriate provisions of 30 TAC §321.36, §321.40 and/or the contract.

(iii) The permittee will be subject to enforcement action for violations of the land application requirements on any third-party field under contract.

(iv) The permittee shall submit records to the appropriate regional office quarterly that contain the name, locations, and amounts of wastewater, sludge, and/or manure transferred to operators of third-party fields.

(f) Irrigation Operating Requirements.

(1) Minimize Ponding. Irrigation practices shall be managed so as to minimize ponding or puddling of wastewater on the site, prevent tailwater discharges to water in the state, and prevent the occurrence of nuisance conditions.

(2) Discharge Prohibited

(i) The drainage of compost, manure, sludge, slurry and wastewater is prohibited from the LMU(s), unless authorized under Section VII.A.5(d).

(ii) Where compost, manure, sludge, slurry and wastewater is applied in accordance with the nutrient management plan and/or NUP, precipitation-related runoff from the LMU(s) under the control of the permittee is authorized.

(iii) If a discharge from the irrigation system is documented as a violation, the permittee may be required by the Executive Director to install an automatic emergency shut-down or alarm system to notify the permittee of system problems.

(3) Backflow Prevention. If the permittee introduces wastewater or chemicals to water well heads for the purpose of irrigation, then backflow prevention devices shall be installed according to 16 TAC Chapter 76 (related to Water Well Drillers and Water Well Pump Installers).

(g) Nighttime Application.

(1) Land application at night shall only be allowed if there is no occupied residence(s) within one quarter (0.25) of a mile from the outer boundary of the actual area receiving compost, manure, sludge, slurry and wastewater application. In areas with an occupied residence within one quarter (0.25) of a mile from the outer boundary of the actual area receiving compost, manure, sludge, slurry and wastewater application, application shall only be allowed from one (1) hour after sunrise until one (1) hour before sunset, unless the current occupant of such residences have, in writing, agreed to specified nighttime applications.

(2) Land application of compost, manure, sludge, slurry and wastewater is prohibited between 12 a.m. and 4 a.m. during normal operating conditions.

9. Sampling and Testing.

(a) Manure and Wastewater. The permittee shall collect and analyze at least one representative sample of wastewater and one representative sample of manure each year for total nitrogen, total phosphorus, and total potassium. The results of these analyses shall be used in determining application rates.

(b) Soils

(1) Initial Sampling. Before commencing compost, manure, sludge, slurry and wastewater application to the LMU(s), the permittee shall have at least one representative soil sample from each LMU, collected and analyzed according to the following procedures.

(2) Annual Sampling. The TCEQ or its designee shall have soil samples collected annually for each current and historical LMU.

(3) Sampling Procedures. Sampling procedures shall employ accepted techniques of soil science for obtaining representative samples and analytical results, and be consistent with approved methods described in the Executive Director's guidance entitled "Soil Sampling for Concentrated Animal Feeding Operations (CAFOs) (RG-408)."

(i) Soil samples must be collected by one of the following persons:

(A) the NRCS;

(B) a certified nutrient management specialist;

(C) the Texas State Soil and Water Conservation Board;

(D) the Texas AgriLife Extension; or

(E) an agronomist or soil scientist on full-time staff at an accredited university located in the State of Texas.

(ii) Samples shall be collected and analyzed within the same forty-five (45) day time frame each year, except when crop rotations or inclement weather require a change in the sampling time. The reason for a change in sampling timeframe shall be documented in the PPP.

(iii) Obtain one composite sample for each soil depth zone per uniform soil type (soils with the same characteristics and texture) within each LMU.

(iv) Composite samples shall be comprised of 10 - 15 randomly sampled cores obtained from each of the following soil depth zones:
(A) Zone 1: 0-6 inches (where the manure, sludge, slurry, or compost is physically incorporated or injected directly into the soil) or 0-2 inches (where the manure, sludge or slurry is not incorporated into the soil). Wastewater is considered to be incorporated upon land application if it is less than two percent (2%) solids. Slurry from freestall and cross ventilated barns is treated like manure for this sampling requirement. If a 0-2 inch sample is required, then an additional sample from the 2-6 inch soil depth zone shall be obtained in accordance with the provisions of this section; and
(B) Zone 2: 6-24 inches.

(4) Laboratory Analysis. Samples shall be analyzed by a soil testing laboratory. Physical and chemical parameters and analytical procedures for laboratory analysis of soil samples shall include the following:
(i) nitrate reported as nitrogen in ppm;
(ii) phosphorus (extractable, ppm) using Mehlich III with Inductively Coupled Plasma (ICP);
(iii) potassium (extractable, ppm);
(iv) sodium (extractable, ppm);
(v) magnesium (extractable, ppm);
(vi) calcium (extractable, ppm);
(vii) soluble salts (ppm) or electrical conductivity (dS/m) – determined from extract of 2:1 (v/v) water/soil mixture; and
(viii) soil water pH (soil:water, 1:2 ratio).

10. Preventative Maintenance Program.
(a) Facility Inspections
(1) General Requirements
(i) Inspections shall include visual inspections and equipment testing to determine conditions that could cause breakdowns or failures resulting in discharge of pollutants to water in the state or the creation of a nuisance condition.
(ii) The permittee shall draft a report, to be maintained in the PPP, to document the date of inspections, observations and actions taken in response to deficiencies identified during the inspection. The permittee shall correct all the deficiencies within thirty (30) days or shall document the factors preventing immediate correction.

(2) Daily Inspections. The permittee shall conduct daily inspections on all water lines, including drinking water and cooling water lines, which are located within the drainage area of a RCS.

(3) Weekly Inspections. The permittee shall conduct weekly inspections on:
(i) all control facilities, including RCSs, storm water diversion devices, runoff diversion structures, control devices for management of potential pollutant sources, and devices channeling contaminated storm water to RCSs; and
(ii) equipment used for land application of compost, manure, sludge, slurry and wastewater.

(4) Monthly Inspections. The permittee shall conduct monthly inspections on:
   (i) mortality management systems, including collection areas; and
   (ii) disposal and storage of toxic pollutants, including pesticide containers.

(5) Annual Site Inspection.
   (i) The permittee shall annually conduct a complete site inspection of the production area and the LMU(s).
   (ii) The inspection shall verify that:
      (A) the description of potential pollutant sources is accurate;
      (B) the site plan/map has been updated or otherwise modified to reflect current conditions; and
      (C) the controls outlined in the PPP to reduce pollutants and avoid nuisance conditions are being implemented and are adequate.

(b) Five Year Evaluation. Once every five years the permittee shall have a licensed Texas Professional Engineer review the existing engineering documentation, complete a site evaluation of the structural controls, review existing liner and RCS capacity documentation, and complete and certify a report of their findings. The report must be kept in the PPP.

11. Management Documentation. The permittee shall maintain the following records in the PPP:
   (a) a copy of the administratively complete and technically complete individual water quality permit application and the written authorization issued by the commission or Executive Director;
   (b) a copy of the approved recharge feature certification and appropriate updates;
   (c) a copy of the comprehensive nutrient management plan, nutrient management plan, nutrient utilization plan and appropriate updates to these plans, if required;
   (d) the RCS liner certification(s);
   (e) any written agreement with a landowner which documents the allowance of nighttime application of compost, manure, sludge, slurry and wastewater;
   (f) documentation of employee and operator training, including verification of the date, time of attendance, and completion of training;
   (g) the RCS management plan;
   (h) the capacity of each RCS as certified by a licensed Texas Professional Engineer; and
   (i) a copy of all third-party field contracts.

B. General Requirements

1. The permittee shall not construct any component of the production area in any stream, river, lake, wetland, or playa (except as defined by and in accordance with the Texas Water Code §26.048).
2. Animals confined on the CAFO shall be restricted from coming into direct contact with surface water in the state through the use of fences or other controls.
3. The permittee shall prevent the discharge of pesticide contaminated waters into water in the state. All wastes from dipping vats, pest and parasite control units, and other facilities used for the application of potentially hazardous or toxic chemicals

shall be handled and disposed of in a manner that prevents any significant pollutants from entering water in the state or creating a nuisance condition.

4. The permittee shall operate the CAFO in such a manner as to prevent nuisance conditions of air pollution as mandated by Texas Health and Safety Code, Chapters 341 and 382.
5. The permittee shall take reasonable steps necessary to prevent adverse effects to human health or safety, or to the environment.
6. The permittee shall maintain control of the RCS(s), required LMU(s), and control facilities identified on the site map submitted in the application. In the event the permittee loses control of any of these areas, the permittee shall notify the Executive Director within five (5) working days.
7. If animals are maintained in pastures, the permittee shall maintain crops, vegetation, forage growth or post harvest residues in those pastures during the normal growing season, excluding the feed and/or water trough areas.

C. **Training**

1. Employee Training
   (a) Employees at the CAFO facility who are responsible for work activities relating to compliance with provisions of this permit must be regularly trained or informed of any information pertinent to the proper operation and maintenance of the facility and land application of manure, sludge, and wastewater.
   (b) Employee training shall address all levels of responsibility of the general components and goals of the PPP. Training shall include appropriate topics, such as land application of manure, sludge, and wastewater, proper operation and maintenance of the facility, good housekeeping, material management practices, recordkeeping requirements, and spill response and clean up.
   (c) The permittee is responsible for determining the appropriate training frequency for different levels of personnel. The PPP shall identify periodic dates for such training.
2. Operator Training. The operator shall attend at least eight (8) hours of continuing education in animal waste management or its equivalent, developed by the Executive Director and the Texas AgriLife Extension, for each two year period.
3. Verification of the date and time(s) of attendance and completion of required training shall be documented in the PPP.

D. **Air Standard Permit Requirements**

1. Air emission limitations.
   (a) Facilities shall be operated in such a manner as to prevent the creation of a nuisance as defined by Texas Health and Safety Code, 30 TAC §§341.011 and 321.32(32), and as prohibited by 30 TAC §101.4. Facilities shall be operated in such a manner as to prevent a condition of air pollution as defined by Texas Health and Safety Code and 30 TAC §382.003(3).
   (b) The permittee shall take necessary action to identify any nuisance condition that occurs. The permittee shall take action to abate any nuisance condition as soon as practicable or as specified by the Executive Director.

2. Wastewater treatment. The permittee shall design and operate RCSs to minimize odors in accordance with accepted engineering practices. Each RCS shall be operated in accordance with the design and an operation and maintenance plan that minimizes odors.
   (a) Accepted engineering practices to minimize odors include anaerobic treatment lagoons, aerobic treatment lagoons, or other equivalent technology.
   (b) Accepted design standards and requirements for each of these methods of treatment are:
      (1) an anaerobic treatment lagoon shall be designed in accordance with American National Standards Institute/American Society of Agricultural Engineers EP403.3 July 1999 (or subsequent updates); NRCS Field Office Technical Guidance, Practice Standard 359, Waste Treatment Lagoon, or the equivalent for the control of odors. The primary lagoon in a multi-stage lagoon system shall be designed with a minimum treatment volume so that the lagoon maintains a constant level at all times unless prohibited by climatic conditions. A multi-stage lagoon system shall be designed to minimize the amount of contaminated storm water runoff entering the primary lagoon by routing the contaminated storm water runoff into a secondary RCS;
      (2) aerobic treatment lagoons shall be designed in accordance with NRCS, Field Office Technical Guidance, Practice Standard 359, Waste Treatment Lagoon; or technical requirements for sizing the aeration portion of the system located in 30 TAC Chapter 317; and
      (3) equivalent technology or design standards shall indicate how the design of the RCS minimizes odors equivalent to an aerobic or anaerobic lagoon. These designs shall be developed and certified by a licensed Texas Professional Engineer. An "as-built" certification in letter form shall be completed by a licensed Texas Professional Engineer before operation of the RCSs.
   (c) This permit authorizes the use of a covered anaerobic digester system.
3. Dust Control. To minimize dust emissions, the CAFO shall be operated and maintained as follows:
   (a) Fugitive emissions from all grain receiving pits, where a pit is used, shall be minimized through the use of "choke feeding" or through an equivalent method of control. If choke feeding is used, operation of conveyors associated with receiving shall not commence until the receiving pits are full.
   (b) As necessary, emissions from all in-plant roads, truck loading and unloading areas, parking areas, and other traffic areas shall be controlled with one or more of the following methods to minimize nuisance conditions and maintain compliance with all applicable commission requirements:
      (1) sprinkled with water;
      (2) treated with effective dust suppressant(s); or
      (3) paved with a cohesive hard surface and cleaned.
   (c) All non-vehicular external conveyors or other external conveying systems associated with the feedmill shall be enclosed.
   (d) On-site feed milling operations with processing equipment using a pneumatic conveying system (which may include, but are not limited to, pellet mill/pellet cooler systems, flaker systems, grinders, and roller-mills) shall vent the exhaust

air through a properly-sized high efficiency cyclone collector or an equivalent control device before releasing the exhaust air to the atmosphere. This requirement does not include cyclones used as product separators.

(e) If the Executive Director determines that the implementation and employment of these practices is not effective in controlling dust, the permittee shall implement any necessary additional abatement measures to control and minimize this contaminant within the time period specified by the Executive Director.

4. Maintenance and Housekeeping. The permittee shall comply with the following to help prevent nuisance conditions.
   (a) The premises shall be maintained to prevent the occurrence of nuisance conditions from odors and dust. Spillage of any raw products or waste products causing a nuisance condition shall be picked up and properly disposed of daily.
   (b) Proper pen drainage shall be maintained at all times. Earthen pen areas shall be maintained by scraping uncompacted manure and shaping pen surfaces as necessary to minimize odors and ponding.

VIII. Recordkeeping, Reporting, and Notification Requirements

A. Recordkeeping

The permittee shall keep records on-site for a minimum of five (5) years from the date the record was created and shall submit them within five (5) days of a written request by the Executive Director.

1. The permittee shall update records daily to include:
   (a) all measurable rainfall events; and
   (b) the wastewater levels in each RCS, as shown on the depth marker. In circumstances where a RCS has a water level exceeding the expected end of the month depth, the permittee shall document in the PPP why the level of water in the structure is not at or below the expected depth.
2. The permittee shall update records weekly to include:
   (a) records of all wastewater, sludge, and/or manure removed from the CAFO that shows the dates, amount, and recipient. The permittee must make the most recent nutrient analysis available to any hauler; and
   (b) inspections of control facilities and land application equipment.
3. The permittee shall update records monthly to include:
   (a) records describing mortality management practices;
   (b) storage and disposal of chemicals, including pesticide containers; and
   (c) records of all compost, manure, sludge, slurry and wastewater applied on the LMU(s). Such records must include the following information:
      (i) date of compost, manure, sludge, slurry and wastewater application to each LMU;
      (ii) location of the specific LMU and the volume applied during each application event;
      (iii) acreage on which compost, manure, sludge, slurry and wastewater is applied;
      (iv) basis for and the total amount of nitrogen and phosphorus applied per acre to each LMU on a dry basis, including sources of nutrients other than compost, manure, sludge, slurry and wastewater; and

(v) weather conditions, such as temperature, precipitation, and cloud cover, during the land application and twenty-four (24) hours before and after the land application.

4. The permittee shall update records annually to include:
   (a) annual nutrient analysis for at least one representative sample of wastewater and one representative sample of manure for total nitrogen, total phosphorus, and total potassium;
   (b) any initial and annual soil analysis reports;
   (c) the annual site inspection report;
   (d) percent moisture content of the manure, sludge, slurry, and wastewater; and
   (e) actual annual yield of each harvested crop for each LMU.
5. The Five Year Evaluation report must be updated every five (5) years.
6. The permittee shall keep the following records on-site:
   (a) a list of any significant spills of potential pollutants at the CAFO that have a significant potential to reach water in the state;
   (b) documentation of liner maintenance by an NRCS engineer, a licensed Texas Professional Engineer or a licensed Texas Professional Geoscientist;
   (c) RCS design calculations and as built capacity certification;
   (d) embankment certification;
   (e) liner certification;
   (f) a copy of current and amended site plans; and
   (g) copies of all notifications to the Executive Director, including any made to a regional office.

B. Reporting and Notifications

1. The permittee shall provide written notice to the appropriate TCEQ regional office as soon as the RCS cleaning is scheduled, but not less than ten (10) days before cleaning. The permittee shall also provide written verification of completion to the same regional office within five (5) days after the cleaning has been completed. This paragraph does not apply to the cleaning of solid separators or settling basins that are functioning as solid separators.
2. The permittee shall notify the appropriate TCEQ regional office in writing or by electronic mail with the date, time, and location at least ten (10) working days before collecting soil samples from current and historical LMUs; and third-party fields.
3. Discharge Notification. If for any reason there is a discharge of manure, sludge or wastewater into water in the state, the permittee shall notify the appropriate TCEQ regional office orally within one (1) hour of discovery; unless it is not reasonably possible to do so in which event the discharge shall be reported as soon as reasonably possible, but in no event later than twenty-four (24) hours from when the discharge occurred. The permittee shall also submit written notice, within fourteen (14) working days of the discharge to the Office of Compliance and Enforcement, Enforcement Division (MC 224). In addition, the permittee shall document the following information, keep the information on-site, and submit the information to the appropriate regional office within fourteen (14) working days of becoming aware of such discharge. The written notification must include:
   (a) a description and cause of the discharge, including a description of the flow path to the receiving water body and an estimation of the volume discharged;

(b) the period of discharge, including exact dates and times, and, if not corrected, the anticipated time the discharge is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the discharge;

(c) if caused by a precipitation event(s), the date(s) of the event(s) and the rainfall amount(s) recorded from an on-site rain gauge; and

(d) discharge monitoring analyses required by this permit.

4. In the event of a discharge of manure, sludge, or wastewater from a RCS or a LMU during a chronic or catastrophic rainfall event or resulting from catastrophic conditions, the permittee shall orally notify the appropriate TCEQ regional office within one (1) hour of the discovery of the discharge. The permittee shall send written notification to the appropriate regional office within fourteen (14) working days.

5. Chronic Rainfall Discharge. In the event of a discharge of manure, sludge or wastewater from a RCS or a LMU due to chronic rainfall, the permittee shall submit a report to the appropriate TCEQ regional office showing the CAFO records that substantiates that the overflow was a result of cumulative rainfall that exceeded the design rainfall event without the opportunity for dewatering, and was beyond the control of the permittee. After review of the report, if required by the Executive Director, the permittee shall have an engineering evaluation by a licensed Texas Professional Engineer developed and submitted to the Executive Director. This requirement is in addition to the discharge notification requirement in this permit.

6. Impacts to Human Health or Safety, or the Environment. The permittee shall provide the following noncompliance notifications:

(a) Any noncompliance which may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Report of such information shall be provided orally, by e-mail, or electronic facsimile transmission (Fax) to the TCEQ regional office within twenty four (24) hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the TCEQ regional office and the Enforcement Division (MC 224) within five (5) days of becoming aware of the noncompliance. The written submission shall contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times. If the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance and to mitigate its adverse effects.

(b) In the event the permittee discharges manure, sludge, or wastewater other than as authorized in the permit, the permittee shall give twenty four (24) hour oral, e-mail, or fax notice and five (5) day written notice to TCEQ as required by paragraph (a) above.

7. The permittee shall submit an annual report to the appropriate regional office and the Enforcement Division (MC 224) by March 31 of each year for the 12-month reporting period of January 1 to December 31 of the previous year. The report shall be submitted on forms prescribed by the Executive Director to include, but not limited to:

(a) number and type of animals, whether in open confinement or housed under roof;

(b) estimated total manure, sludge, and wastewater generated during the reporting period;
(c) total compost, manure, sludge, slurry and wastewater land applied during the last twelve (12) months on-site at the CAFO facility;
(d) total wastewater, sludge, and/or manure transferred to other persons during the reporting period;
(e) total number of acres for land application under the control of the permittee and all third-party acreage;
(f) summary of discharges of manure, sludge, or wastewater from the production area that occurred during the reporting period including dates, times, and approximate volume;
(g) a statement indicating that the NMP/NUP, under which the CAFO is operating, was developed and approved by a certified nutrient management specialist;
(h) a copy of the initial soil analysis for each new LMU, regardless of whether manure, wastewater, or sludge has been applied;
(i) soil monitoring reports of all soil samples collected in accordance with the requirements of this permit;
(j) groundwater monitoring reports (if applicable);
(k) the actual crop(s) planted and yield(s) for each LMU;
(l) the actual nitrogen and phosphorus content of manure, sludge or process wastewater that was land applied;
(m) the results of data used in calculations and the results of calculations conducted in accordance with Attachment E;
(n) the results of any soil testing for nitrogen and phosphorus conducted during the previous 12 months;
(o) the amount of any supplemental fertilizer applied during the previous 12 months; and
(p) any other information requested by the Executive Director.

8. The permittee shall furnish to the appropriate regional office, and the Enforcement Division (MC 224), soil testing analysis for third-party fields of all soil samples within sixty (60) days of the date the samples were taken in accordance with the requirements of this permit.

IX. Standard Permit Conditions

A. The permittee has a duty to comply with all permit conditions. Failure to comply with any permit conditions is a violation of the permit and statutes under which it was issued and is ground for enforcement action, for permit amendment, revocation or suspension, or for denial of a permit renewal application or an application for a permit for another facility.

B. The permittee must apply for an amendment or renewal before the expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. Authorization to continue such activity terminates upon the effective denial of said permit.

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

D. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal or other permit violation which has a reasonable likelihood of adversely affecting human health or the environment.

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

F. The permittee shall furnish any information, at the request of the Executive Director, which is necessary to determine whether cause exists for revoking, suspending, or terminating authorization under this permit. The requested information must be provided within a reasonable time frame and in no case later than thirty (30) days from the date of the request.

G. The permittee shall give notice to the Executive Director before physical alterations or additions to the permitted facility if such alterations or additions would require a permit amendment or result in a violation of permit requirements.

H. Authorization from the Commission is required before beginning any change in the permitted facility or activity that would result in noncompliance with other permit requirements.

I. Inspection and entry shall be allowed under Texas Water Code, Chapters 26-28, Health and Safety Code, §§361.032-361.033 and §361.037, and 40 Code of Federal Regulations (CFR) §122.41(I). The statement in Texas Water Code, §26.014 that the Commission entry of a facility shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection is not grounds for denial or restriction of entry to any part of the facility, but merely describes the Commission's duty to observe appropriate rules and regulations during inspection.

J. Standard Monitoring Requirements

1. Samples required by this permit shall be collected and measurements shall be taken at times and in a manner so as to be representative of the monitored discharge or activity. Samples shall be delivered to the laboratory immediately upon collection, in accordance with any applicable analytical method and required maximum holding time. Unless otherwise specified in this permit, test procedures for the analysis of pollutants shall comply with procedures specified in 30 TAC §§319.11 – 319.12. Measurements, tests and calculations shall be accurately accomplished in a representative manner.
2. Records of monitoring activities must include:
   (a) the date, time, and place of sample or measurement;
   (b) the identity of any individual who collected the sample or made the measurement;
   (c) the chain-of-custody procedures used to maintain sample integrity from sample collection to laboratory delivery;
   (d) the date and time of laboratory analysis;
   (e) the identity of the individual and laboratory who performed the analysis;
   (f) the technique or method of analysis; and
   (g) the results of the analysis or measurement and quality assurance/quality control records.
3. The permittee shall ensure that properly trained and authorized personnel monitor and sample the soil or wastewater related to any permitted activity.

K. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly shall be reported to the Executive Director as promptly as possible.

L. A permit may be transferred only according to the provisions of 30 TAC §305.64 (relating to Transfer of Permits) and 30 TAC §305.97 (relating to Action on Application for Transfer).

M. PPPs, reports, and other information requested or required by the Executive Director shall be signed in accordance with the requirements of 30 TAC §305.128 (relating to Signatories to Reports).

N. A permit may be amended, suspended and re-issued, or revoked for cause. The filing of a request by the permittee for a permit amendment, suspension and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

O. A permit does not convey any property rights of any sort or any exclusive privilege.

P. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than fourteen (14) days following each schedule date.

Q. If the permittee becomes aware that he/she failed to submit any relevant facts in a permit application, or submitted incorrect information in an application, or in any report to the Executive Director, the permittee shall promptly submit such facts or information.

R. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under Texas Water Code, §§26.136, 26.212, and 26.213, for violations including but not limited to the following:

1. negligently or knowingly violating Clean Water Act (CWA) §§301, 302, 306, 307, 308, 318, or 405 or any condition or limitation implementing any sections in a permit issued under CWA §402, or any requirement imposed in a pretreatment program approved under CWA §402(a)(3) or §402(b)(8);
2. falsifying, tampering with, or knowingly rendering inaccurate any monitoring device or method required to be maintained under a permit; or
3. knowingly making any false statement, representation, or certification in any record or other document submitted or required to be maintained under a permit, including monitoring reports or reports of compliance or noncompliance.

S. The permittee shall comply with all applicable rules and regulations of the commission, including 30 TAC 321, Subchapter B.

T. This permit is granted on the basis of the information supplied and representations made by the permittee during action on an application, and relying upon the accuracy and completeness of that information and those representations. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked, in whole or in part, in accordance with 30 TAC Chapter 305, Subchapter D, during its term for good cause including, but not limited to, the following:

1. Violation of any terms or conditions of this permit;
2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
3. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

U. Acceptance of the permit by the person to whom it is issued constitutes acknowledgement and agreement that such person will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the Commission.

V. In accordance with the Texas Water Code §26.029(b), after a public hearing, notice of which shall be given to the permittee, the Commission may require the permittee, from time to time, for good cause, in accordance with applicable laws, to conform to new or additional conditions.

W. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

X. Notice of Bankruptcy.

1. Each permittee shall notify the Executive Director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:
   (a) the permittee;
   (b) an entity (as that term is defined in 11 USC, §101(14)) controlling the permittee or listing the permit or permittee as property of the estate; or
   (c) an affiliate (as that term is defined in 11 USC, §101(2)) of the permittee.
2. This notification must indicate:
   (a) the name of the permittee;
   (b) the permit number(s);
   (c) the bankruptcy court in which the petition for bankruptcy was filed; and
   (d) the date of filing of the petition.

X. Special Provisions

A. RCS Modifications / Volumes.

1. The permittee shall modify existing RCS TS1 to meet the total required capacity as listed on page 1 of this permit; construct the other components of the waste management system, which includes an anaerobic digester, screw separator, and a methane generating system. Modifications shall comply with Section VII.A.3 of this permit.
2. The permittee shall maintain the wastewater volumes in each RCS in accordance with Table 6.

Table 6: Volume Allocations for RCSs (Acre-Feet) (Digester Phase 1)

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity Without Freeboard	Actual Capacity Without Freeboard
RCS TS1	11.99	18.18	39.41	14.39	19.33	103.30	TBD
*RCS TS1	11.99	9.67	5.66	1.85	10.54	39.71	49.97
RCS TS2	14.29	0.0	0.0	0.10	2.16	16.55	24.69
RCS TD1	52.62	1.38	0.0	0.65	12.07	66.71	74.95
RCS TD Treatment Pond	0.0	0.0	2.15	0.36	0.0	2.50	12.22
RCS TH1	0.0	0.0	0.0	0.0	0.0	0.0	15.83
RCS TH2	33.43	0.0	0.0	0.58	6.27	40.27	65.13

*Volumes when Digester is on Bypass. RCSs TD1 & TD Treatment Pond; TH2 & TH1 are in-series.

Table 6: Volume Allocations for RCSs (Acre-Feet) (Digester Phase 2)

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity Without Freeboard	Actual Capacity Without Freeboard
RCS TS1	11.99	23.50	64.36	23.46	24.83	148.14	TBD
*RCS TS1	11.99	9.67	5.66	1.85	10.54	39.71	49.97
RCS TS2	14.29	0.0	0.0	0.10	2.16	16.55	24.69
RCS TD1	44.56	4.14	0	0.14	14.47	63.31	74.95
RCS TD Treatment Pond	0	0	6.44	1.07	0	7.51	12.22
RCS TH1	0.0	0.0	0.0	0.0	0.0	0.0	15.83
RCS TH2	33.43	0.0	0.0	0.58	6.27	40.27	65.13

*Volumes when Digester is on Bypass. RCSs TD1 & TD Treatment Pond; TH2 & TH1 are in-series.

3. Compliance Schedule.
   (a) All Phase I modifications required by this permit shall be completed within 180 days after the issuance date of this permit and prior to exceeding 9,150 head. Upon written request to the TCEQ Regional Office, the Executive Director may grant an extension to the 180 day requirement.
   (b) Once construction and/or all modifications of RCS(s) are complete, the RCS management plan shall be developed and implemented within thirty (30) days.
   (c) The Permittee shall notify the TCEQ Region 4- Stephenville Office within 7 business days of completion of each phase. This permit prohibits all headcount increase until TCEQ Stephenville Office has verified that the modifications for the phase has been completed, and the facility can function as proposed.
   (d) The Permittee shall operate as shown on Attachment A to the permit issued on January 4, 2024, if the proposed modifications to the production areas are not completed, and shall not exceed the 9,150 head, of which 5,500 head are milking.

B. Future Revisions to Bosque River Total Maximum Daily Load (TMDL). The permittee is hereby placed on notice that this permit may be amended by the TCEQ in order to make the terms and conditions of this permit consistent with any revisions to the Bosque River TMDL, associated Implementation Plan, and any revisions to federal regulations.

C. The permittee shall submit the following record to the appropriate Regional Office and the Enforcement Division (MC 224) by March 31 of each year for the 12-month reporting period of January 1 to December 31 of the previous year.
   1. date of compost, manure, sludge, slurry and wastewater application to each LMU;
   2. location of the specific LMU and the volume applied during each application event;
   3. acreage of each individual crop on which compost, manure, sludge, slurry and wastewater is applied;
   4. basis for and the total amount of nitrogen and phosphorus applied per acre to each LMU, including sources of nutrients other than compost, manure, sludge, slurry and wastewater on a dry basis;
   5. weather conditions, such as temperature, precipitation, and cloud cover, during the land application and twenty-four (24) hours before and after the land application;

6. annual nutrient analysis for at least one (1) representative sample of manure, sludge (if applicable), slurry, and wastewater for total nitrogen, total phosphorus, and total potassium; and
7. any measurements of sludge accumulations as required in each RCS.

D. Table 7 describes the buffers that the permittee is required to install and maintain according to the NRCS practice standards in the referenced code. The map in Attachment B includes the location and distance requirements for all buffers.

Table 7: Buffer Distances

LMU Name	Vegetative Buffer Setback (feet)	Additional Buffer Setback NRCS Code 393 Filter Strip Flow Length (feet)
LMU #1	Not Applicable	
LMU #1A	100	42
LMU #2	100	42
LMU #3	100	33
LMU #4	100	33
LMU #4A	100	33
LMU #5	Not Applicable	
LMU #5A	100	33
LMU #6	100	33
LMU #7	100	42
LMU #7A	100	42
LMU #8	Not Applicable	
LMU #8A	100	42
LMU #9	Not Applicable	
LMU #9A	100	42
LMU #10	100	42
LMU #10A	100	42
LMU #11	Not applicable	
LMU #12	Not applicable	
LMU #12A	100	42
LMU #13	100	42
LMU #14	100	42

E. The sludge volume in each RCS will be measured and recorded in the PPP as necessary, but at least annually.

F. There will be no grazing of livestock on the LMUs for this CAFO unless the NMP reflects grazing and the grazing practices mentioned in the NRCS Conservation Practice Code 393, Filter Strip, are implemented to protect buffers.

G. Settling Basin Solids.
1. For the purpose of this permit, settling basin solids shall be defined as manure.
2. If settling basin solids are land applied, an annual sample must be collected and analyzed in accordance with Section VII.A.9(a), in addition to other manure and wastewater.
3. Settling basin solids shall be cleaned out regularly to maintain the percent settling basin design efficiency.

H. All runoff from silage, commodity, and hay storage outside the RCS drainage area will be contained. Appropriate provisions for that containment will be stated in the PPP upon issuance of the permit. This permit does not authorize any discharge from the silage, commodity, or hay storage areas located outside the drainage area of the RCSs.

I. Slurry from cross ventilated and freestall barns
   1. For the purpose of this permit, slurry from cross ventilated and freestall barns shall be defined as manure.
   2. If slurry from cross ventilated and freestall barns is land applied, an annual sample must be collected and analyzed in accordance with Section VII.A.9(a), in addition to other manure and wastewater.
   3. Slurry removed from cross ventilated and freestall barns must be stored within the drainage area of an RCS, and the storage area must be large enough to prevent overflow into settling basins and/or RCSs. Any overflow of these storage basins shall be recorded in the PPP and notification shall be provided to the Regional Office within thirty (30) days. Based on review of the information this permit may be formally amended to require additional controls or other requirements.

J. During the annual site inspection, the permittee will inspect Wells TD1, TD2, TD3, TD4, TD11 (Phase I only), TH1, TH3, TH4, TS1, TS2, TS9, and TS10. Special attention should be given to ensure that the concrete slabs, well heads, and the best management practices listed in Table 3 are in place and functional. Integrity compromises, such as the concrete slab cracking, sanitary seal deterioration, cracks in the well casing, or well house deterioration will be repaired within 30 days of the discovery. Permittee shall ensure no runoff or wastes encroach upon the wells. Fertilizers and pesticides will not be stored on or in any structure that houses the water wellhead. Maintenance records for the wells shall be maintained onsite.

K. Well TH4 is currently capped. However, the permittee may place the well back in service so long as all other BMPs listed in Section VII.A.7(a)(5) are implemented.

L. Sludge must be analyzed for nutrient content prior to routing offsite for any land application. The analysis for each haul off shall be maintained in the PPP. (See Section VII.A.5(g) for additional requirements relating to sludge cleanout.)

M. Upon issuance of the permit, prior to land application of manure or wastewater, a current NMP must be in place and it shall thereafter be updated annually with the most recent soil, manure, and wastewater analyses. For LMUs that have a phosphorus level in the soil of more than 200 ppm, a NUP must be developed or updated in accordance with Section VII.A.8(c).

N. Flushing of the freestall barns is prohibited. Manure removal may be accomplished by dry scrape or vacuum only.

O. Manure and settled solids accumulations in the settling basin must be removed on a regular and consistent basis so as to assure attainment of the 30% designed removal efficiency; and maintain 42% anaerobic digester efficiency, and 76% Dissolved Air Flotation efficiency.

P. Land management units that are predominately BdC, Ma, PcC and Pd soils may need supplemental watering to maintain soil moisture as stated in the Best Management Practices in the Recharge Feature Certification that is maintained on-site in the PPP.

Q. Buffer areas in LMUs #1A, #2, #7, #7A, , #12A, and #13 must be clearly identifies on the land surface in such a way that it can be easily identified by TCEQ personnel. Regardless of the type of irrigation equipment used, the buffers for the waters in the state must be maintained in accordance with Part VII.A.8(d) of this permit.

R. A LMU map showing historical LMUs shall be maintained in the PPP.

S. The automatic emergency shut-down equipment that is installed on the irrigation system on LMU #1 (formerly LMU TD1) shall be maintained and kept operational; and the maintenance records shall be kept in the PPP.

T. Grassed Waterways

1. The permittee shall design, establish, and maintain the grassed waterways located in LMU #1, as noted on Attachment B, in accordance with the following:
   (a) The design and establishment shall adhere to the capacity, velocity, width, side slopes, depth, drainage, outlets, vegetative establishment, and plans and specifications requirements as described in NRCS Practice Standard Code 412, as amended.
   (b) The grassed waterways shall be planted and maintained in permanent vegetation, such as Bermuda grass. The period for re-establishment of vegetation following maintenance activities is not a violation of this provision; however, irrigation is prohibited until vegetation is established. Vegetation will be considered established when there is greater than 75% ground cover.
2. The permittee shall develop and implement an operation and maintenance plan for the grassed waterways in accordance with NRCS Practice Standard Code 412, as amended. The plan shall be kept in the PPP. The operation and maintenance plan shall include the following:
   (a) The permittee shall inspect the grassed waterways weekly and within twenty four (24) hours after a one inch or greater rainfall event, in accordance with Section VII.A.10(a) of this permit. The inspection report shall document the presence of bare areas, erosion, ponding or puddling of water, and depressions or reduced vegetation density that may lead to erosion, ponding or puddling.
   (b) In the event that bare areas, erosion, ponding or puddling, depressions, or reduced vegetation density are documented in the inspection report, the permittee shall:
      (i) submit the inspection report to the TCEQ Regional Office within 5 days of the date of inspection, and
      (ii) implement corrective actions within 30 days of the inspection. In the event that corrective actions cannot be implemented within 30 days, the permittee shall document the factors delaying implementation of corrective actions and implement corrective actions as soon as possible. No irrigation is permitted during maintenance and reestablishment during the permit term.
      (iii) Irrigation of wastewater from the LMU #1 center pivot sprinkler is prohibited over the grassed waterways until water ways are established and vegetated. The irrigation system must be capable of restricting flow to the required number of drop nozzles (and end gun if present) to protect the grassed water ways during establishment and maintenance. Cut-off points for center pivot in LMU #1 must be clearly identified on the surface of the LMU.
3. In conjunction with the five year evaluation required by Section VII.A.10(b) of this permit, a licensed Texas Professional Engineer must review NRCS Practice Standard Code 412, complete a site evaluation of the grassed waterway, and include their findings in the certified report.
4. Channelized flow leaving the grassed waterways is prohibited by this permit.

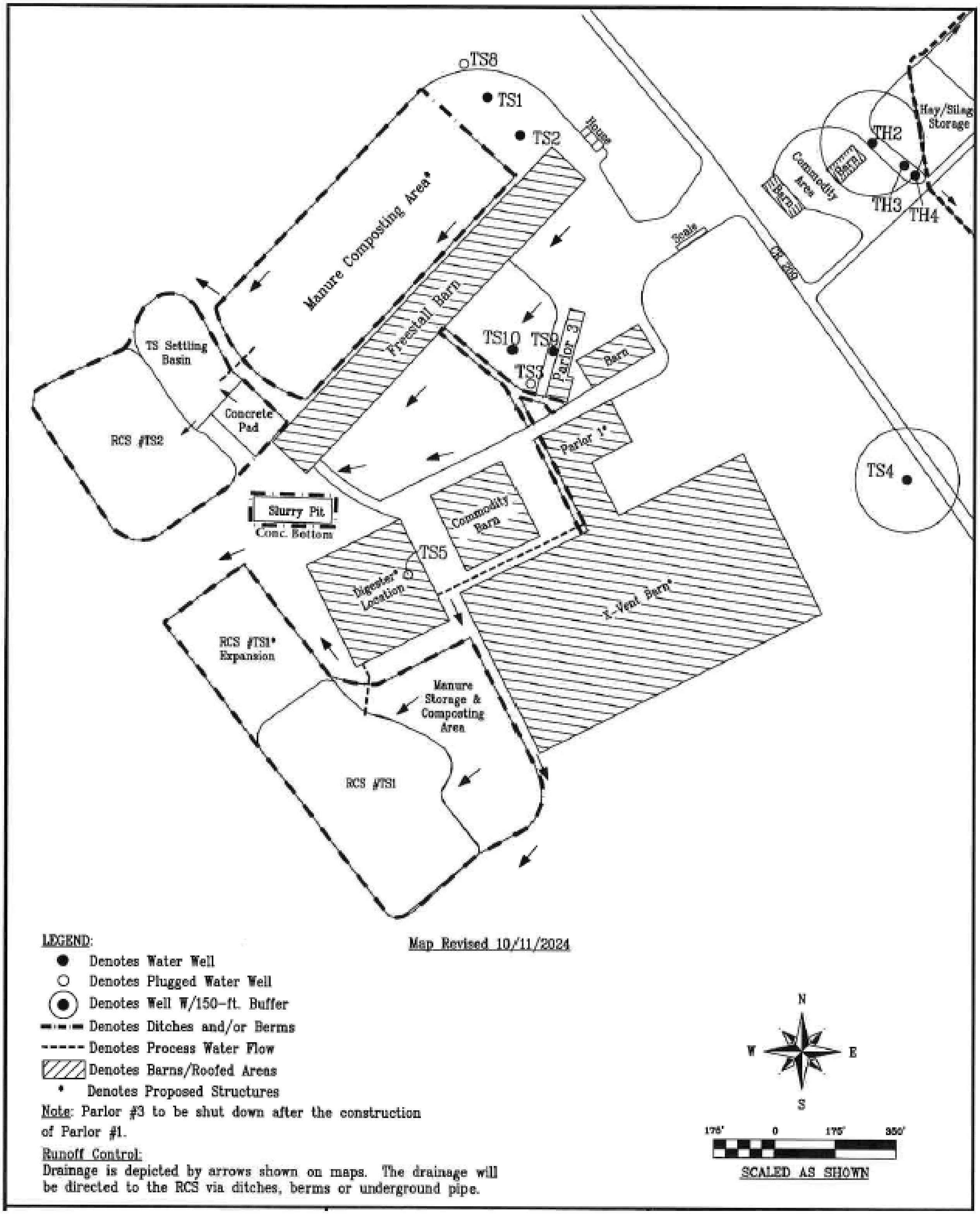
U. Within 180 days of issuance of this permit, the permittee shall ensure site-specific documentation is prepared and certified by a licensed Texas Professional Engineer that shows the concrete settling basins are free from integrity comprises such as cracking, leaking, or deterioration. This documentation shall be placed in the PPP and made available to the Executive Director upon request. During the site inspection, the permittee shall inspect the integrity of the concrete settling basin. Integrity comprises, such as, cracking, leaking, or deterioration shall be repaired within 30 days of the inspection. Inspection and maintenance records for the concrete settling basin shall be maintained in the onsite PPP.

V. Anaerobic Digester.

1. The permittee shall have adequate RCS capacity to maintain minimum treatment volume for odor control at all times, including when the digester is bypassed or during digester maintenance.
2. The facility shall maintain the ability to bypass the digester in the event it is taken offline for maintenance or repair. If the digester is taken offline for a period lasting longer than 90 days, the Permittee shall notify the TCEQ Regional Office. If the digester is to be permanently discontinued, a permit amendment must be obtained.
3. The permittee shall use only cattle manure as feedstock and shall obtain a major amendment prior to use of cattle manure that is generated by another AFO for digester feedstock. The use of additional feedstocks other than cattle manure is prohibited by this permit.
4. The permittee shall ensure that the owner and operator of the digester obtains all necessary authorizations from the TCEQ Air Permits Division for the digester operation. Off-gasses, flares, internal combustion engines, or other emissions associated with the digester are not authorized under the CAFO Air Standard Permit.
5. Digestate shall be defined as manure. The permittee shall land apply the digestate in accordance with the site-specific certified nutrient management plan.
6. The anaerobic digester and any appurtenances such as recirculation basins and mixing pits shall be certified in accordance with 30 TAC §321.38(g)(2).
7. Discharges from the digester or digester appurtenances are not authorized under this permit. Any leaks or spills shall be retained on site and handled in accordance with the requirements of this permit.

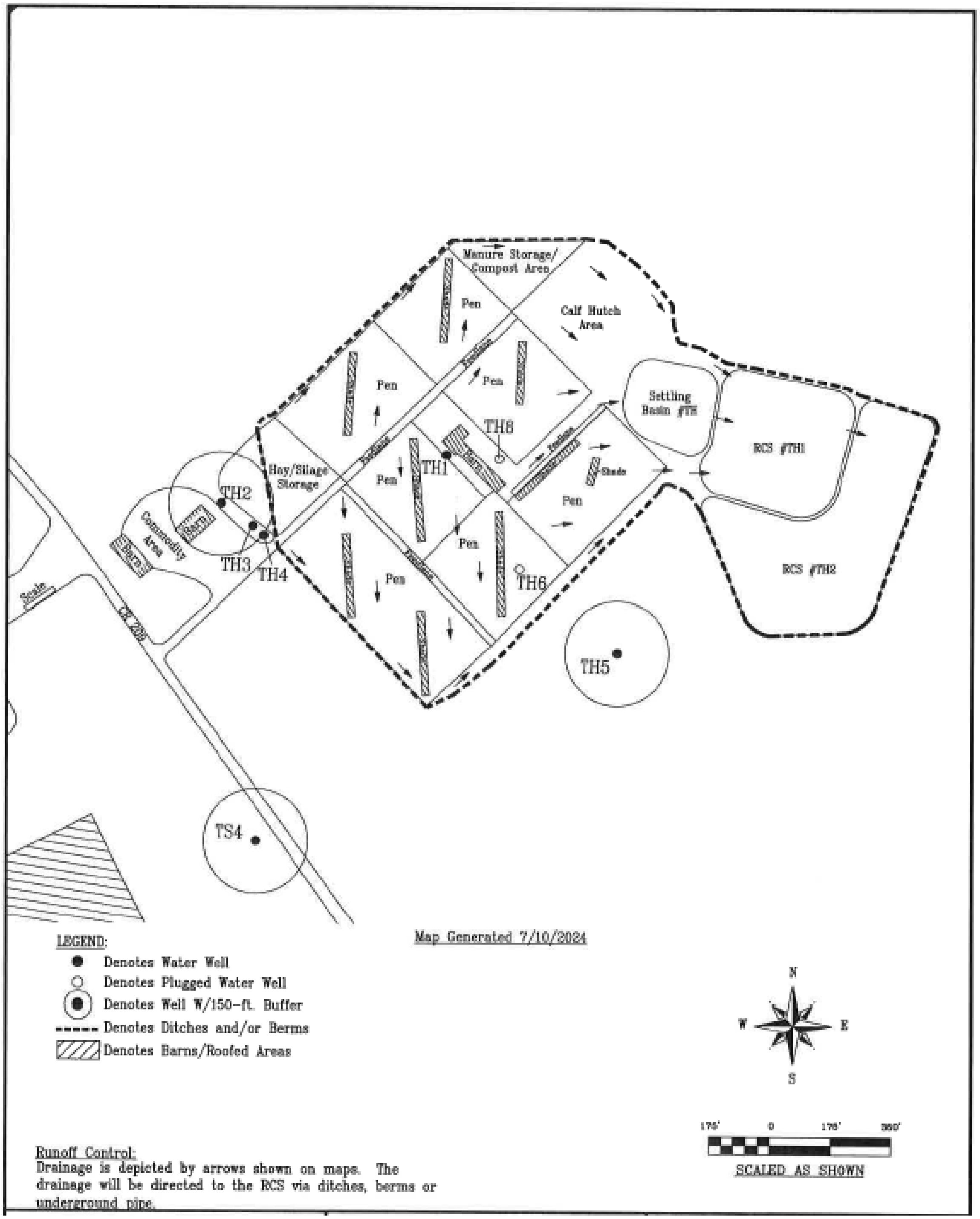
ATTACHMENT A

SITE MAP (PROPOSED PHASE 1) - 1



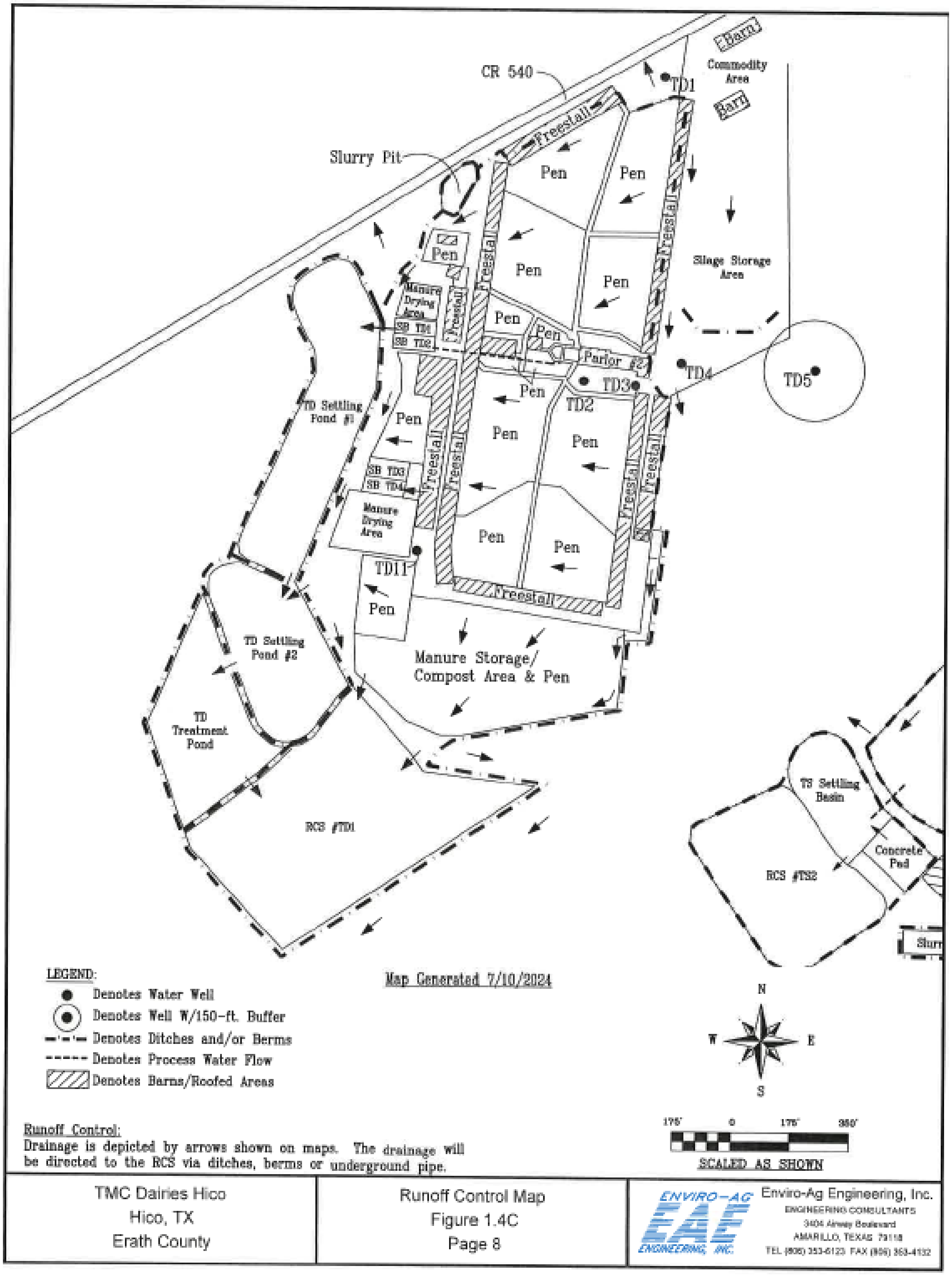
ATTACHMENT A

SITE MAP – 2



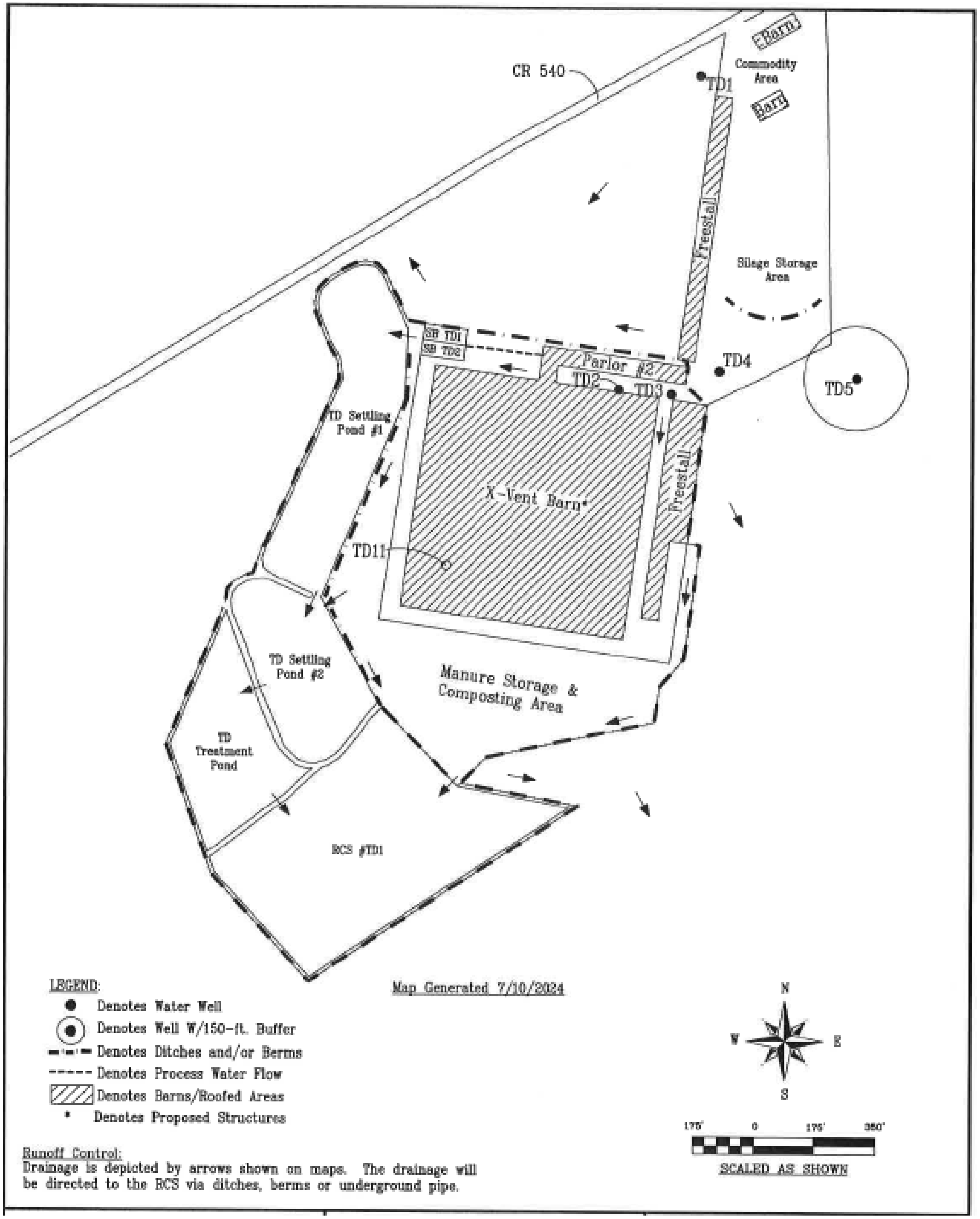
ATTACHMENT A

SITE MAP – 3



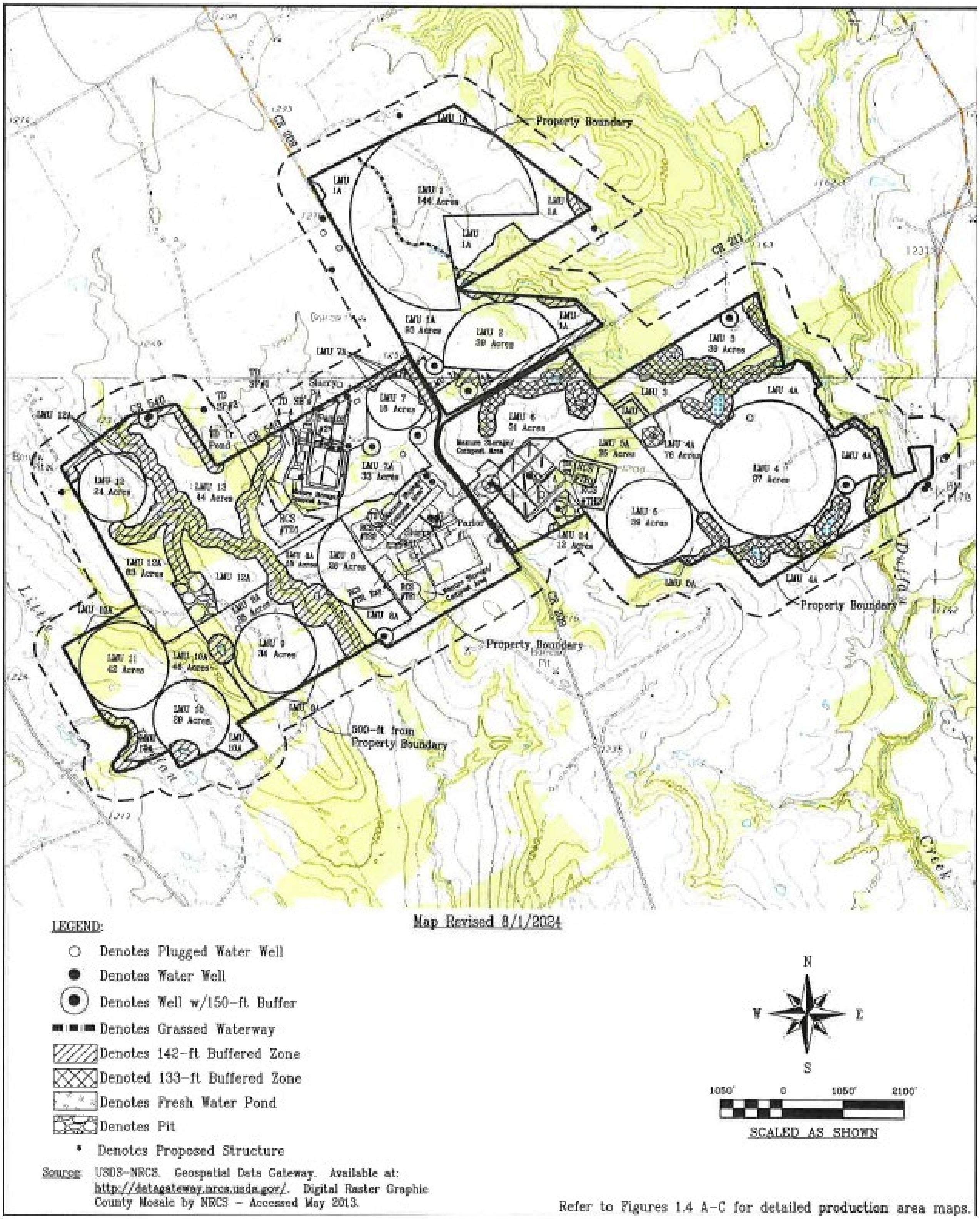
ATTACHMENT A

SITE MAP (PROPOSED PHASE 2) – 4



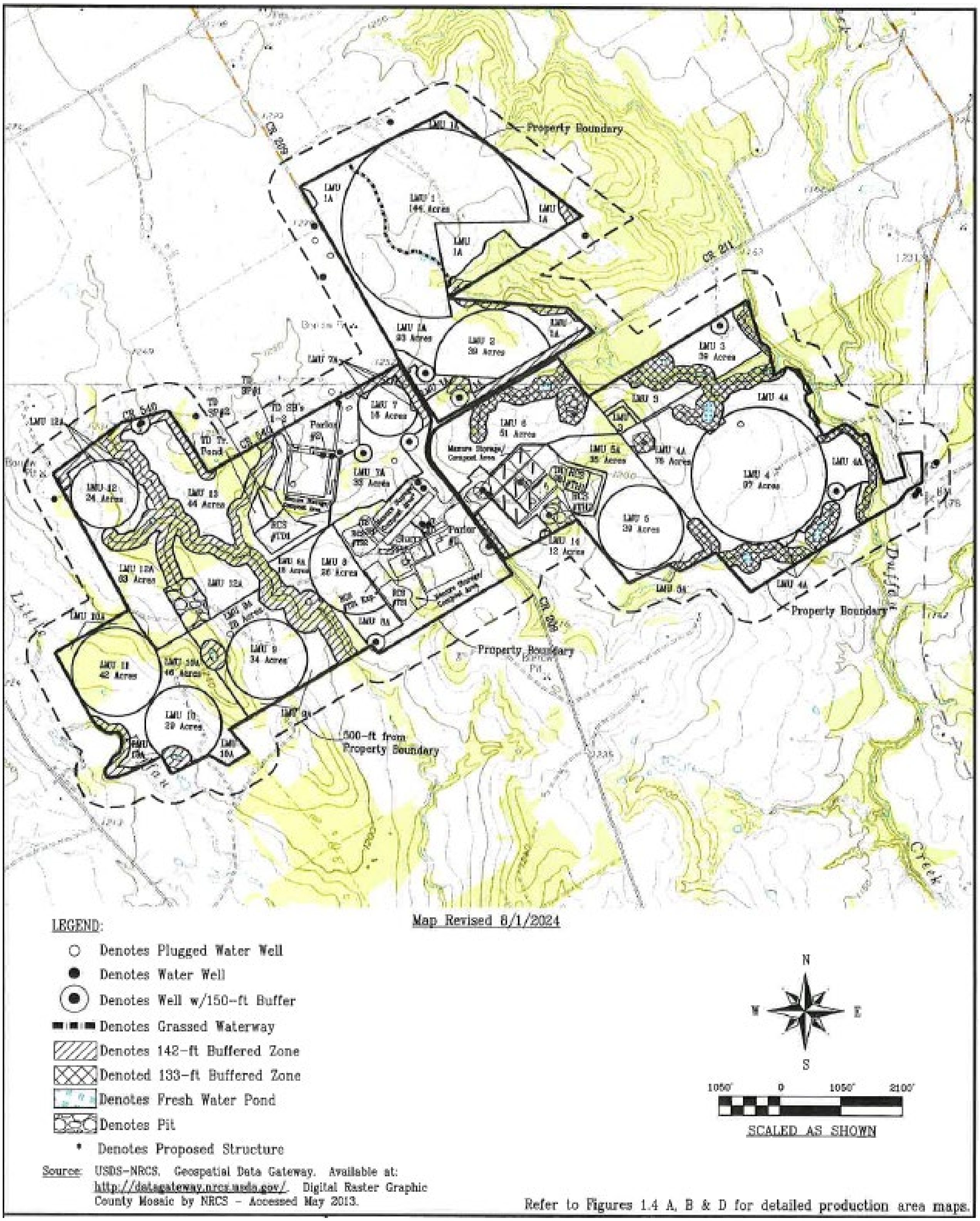
ATTACHMENT B

LAND MANAGEMENT UNITS – PHASE 1



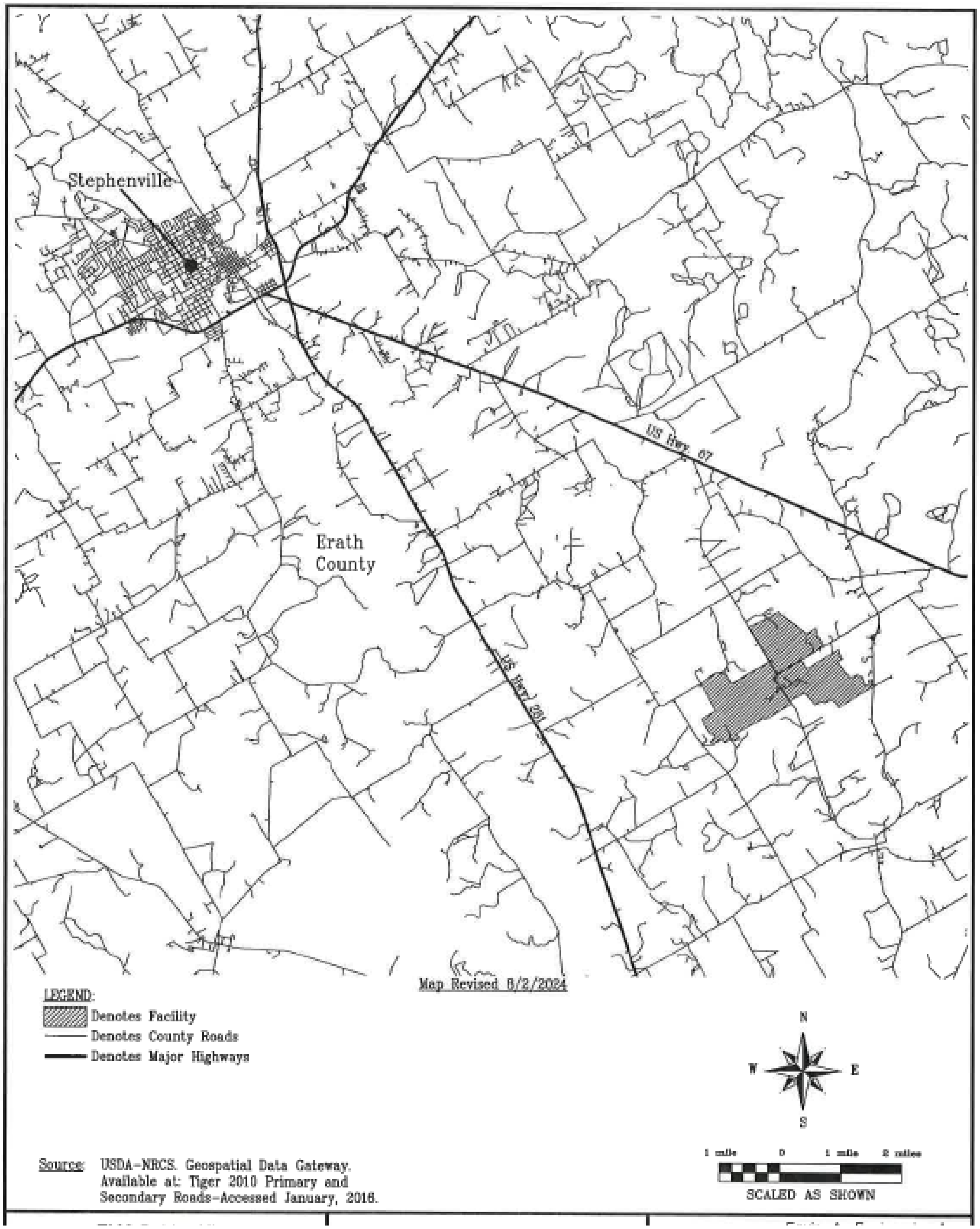
ATTACHMENT B

LAND MANAGEMENT UNITS – PHASE 2



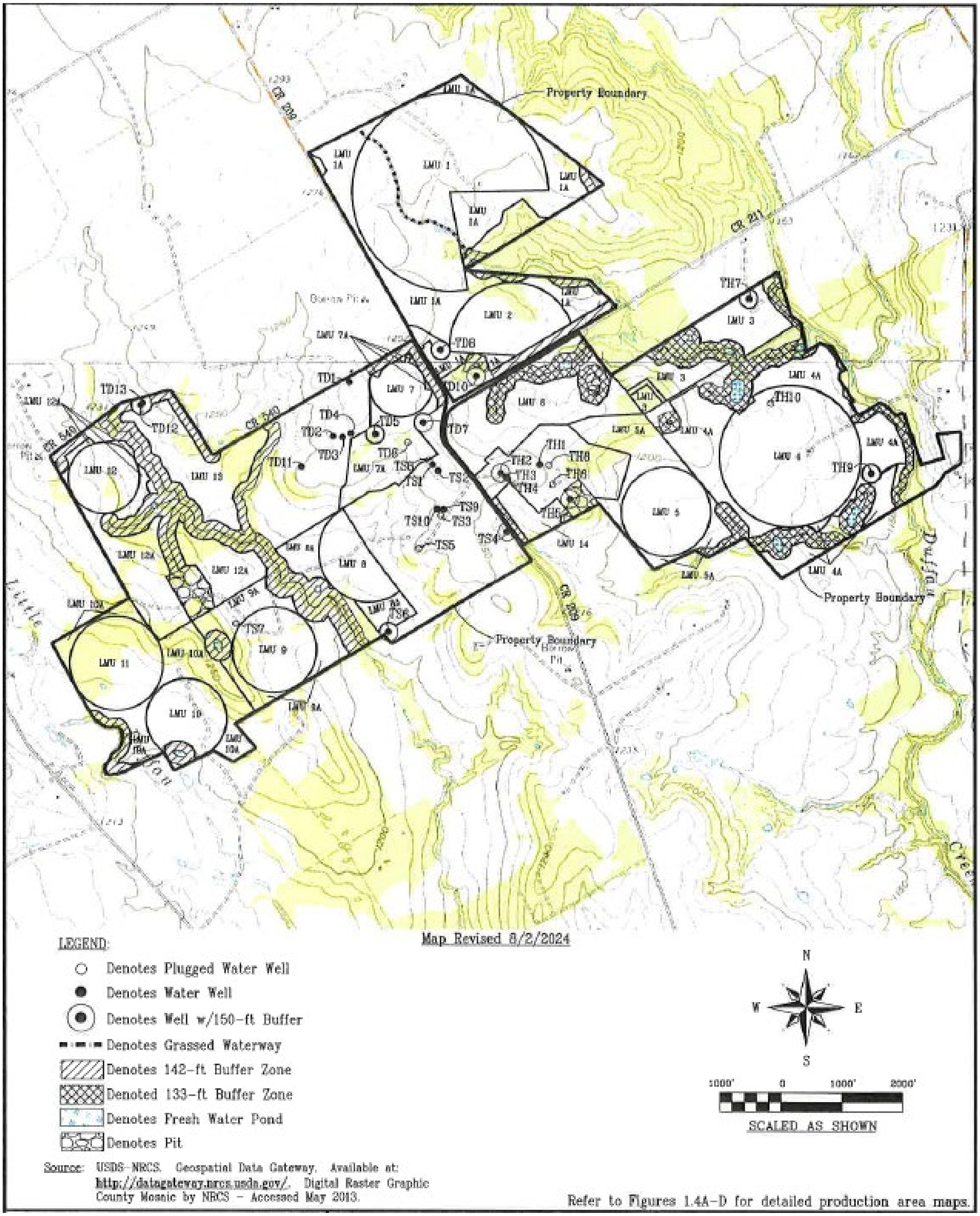
ATTACHMENT C

VICINITY MAP



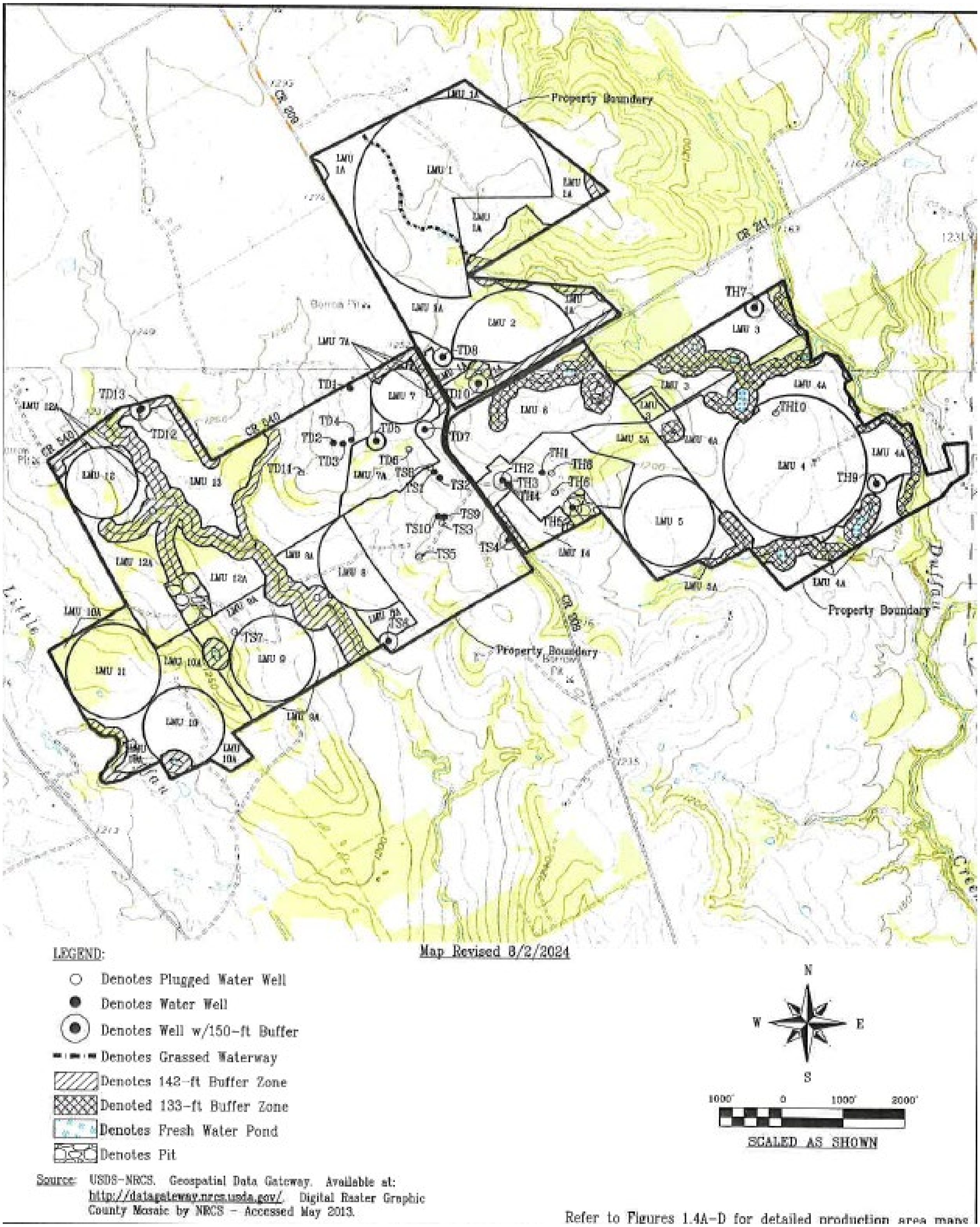
ATTACHMENT D

WELL LOCATION AREAS – PHASE 1



ATTACHMENT D

WELL LOCATION AREAS – PHASE 2



ATTACHMENT E

METHODOLOGY FOR CALCULATING MAXIMUM APPLICATION RATES AND ANNUAL RECALCULATION OF APPLICATION RATES

1. Identify the Soil Test Phosphorus (P) Level (Extremely Low, Very Low- Low, Medium, High, Very High) on the soil test analysis.

Soil Test P Rating	**Soil Test P Levels (ppm*)**
Extremely Low	Less than 5
Very Low - Low	5 to less than 20
Medium	20 to less than 50
High	50 to less than 100
Very High	Greater than or equal to 100

*ppm is equivalent to mg/kg of solids

2. Update Table 1 to Attachment E:
   (a) Populate the Sub Total column with the point value that corresponds to the Site Characteristic for each.
   (b) Calculate the Total Index Points
   (c) Select the P Runoff Potential from the total sum of the Index Points of the Site Characteristics using the Phosphorus Index Classification Table.

3. Determine which of the tables (Table 2A or Table 2B) of Table 2 to Attachment E on the following page is appropriate to use. Each table describes the criteria for its use.

4. Determine which application rate column is appropriate using the following criteria:
   (a) Use the Maximum TMDL Annual P Rate if this LMU is located in a segment with an approved TMDL.
   (b) Use Maximum Annual P Application if this LMU is <u>not</u> located in a segment with an approved TMDL and you wish to apply annually.
   (c) Use Maximum Biennial Application Rate if this LMU is <u>not</u> located in a segment with an approved TMDL and you wish to apply biennially.

5. Determine the Maximum Application Rate using the table identified in Step 3, the column identified in Step 4, and the P Runoff Potential identified in Step 2.(c).

6. Using one of the approved crops and yield goals identified on Attachment F for this LMU, determine the maximum application rate (in lbs/ac) for that crop and yield goal and the Maximum Application Rate identified in Step 5 from the S-Crop Table.
   (a) Example 1: If the Maximum Application Rate in Step 5 is "1.5 Times Annual Crop P Requirement", find the number identified on the S-Crop Table under the column "Crop P_2O_5 requirement" for your crop/yield goal, then multiply that number by 1.5 to determine your maximum application rate (in lbs/ac P_2O_5).
   (b) Example 2: If the Maximum Application Rate in Step 5 is "0.5 Times Annual Crop P Removal", find the number identified on the S-Crop Table under the column "Crop P_2O_5 Removal Rate" for your crop/yield goal, then multiply that number by 0.5 to determine your maximum application rate (in lbs/ac P_2O_5).

ATTACHMENT E

TABLE 1: PHOSPHORUS INDEX WORKSHEET FOR EAST TEXAS FROM NRCS PRACTICE STANDARD 590

Client Name:			Field(s):		Date:	
Planner:			Location:		Crop:	
Impaired Watershed (Y or N):			Runoff Curve No.:		% Slope:	
Site Characteristic (Weighting Factor)	**[Weighting Factor Times the Column Factor]** 0	1	2	4	8	**Sub Total**
Soil Test P Rating	N/A	Very Low – Low	Moderate	High	Very High	
(1.00)	[0]	[1.0]	[2.0]	[4.0]	[8.0]	
Fertilizer Phosphorus (P_2O_5) Application Rate	None Applied	1-40 lbs/ac P_2O_5	41-90 lbs/ac P_2O_5	91-150 lbs/ac P_2O_5	>150 lbs/ac P_2O_5	
(0.75)	[0]	[0.75]	[1.5]	[3.0]	[6.0]	
Organic Phosphorus (P_2O_5) Application Rate	None Applied	1-40 lbs/ac P_2O_5	41-90 lbs/ac P_2O_5	91-150 lbs/ac P_2O_5	>150 lbs/ac P_2O_5	
(0.75)	[0]	[0.75]	[1.5]	[3.0]	[6.0]	
Phosphorus Fertilizer Application Method and Timing	None Applied	Placed deeper than 2 in. or broadcast and incorporated within 48 hours	Surface applied 12/1-2/15	Surface applied 2/16-4/15 or 6/16-11/30	Surface Applied 4/16-6/15	
(0.50)	[0]	[0.50]	[1.0]	[2.0]	[4.0]	
Organic Phosphorus source Application Method and Timing	None Applied	Placed deeper than 2 in. or broadcast and incorporated within 48 hours	Surface applied 12/1-2/15	Surface applied 2/16-4/15 or 6/16-11/30	Surface Applied 4/16-6/15	
(0.50)	[0]	[0.50]	[1.0]	[2.0]	[4.0]	
Proximity of nearest field edge to named stream or lake	> 2000 feet	1000 – 1999 feet	500 – 999 feet	100 – 499 feet	< 100 feet	
(1.25)	[0]	[1.25]	[2.5]	[5.0]	[10.0]	
Runoff Class (Runoff Class Table 3)	Negligible	Low	Moderate	High	Very High	
(1.00)	[0]	[1.0]	[2.0]	[4.0]	[8.0]	
Soil Erosion (all sources)	Very Low <1 t/ac	Low 1-3 t/ac	Medium 3-5 t/ac	High 5-10 t/ac	Very High >10 t/ac	
(1.50)	[0]	[1.5]	[3.0]	[6.0]	[12.0]	
					Total Index Points:	

TABLE 2: APPLICATION RATES FROM NRCS PRACTICE STANDARD 590

Commercial fertilizers must be applied in accordance with SWFTL* recommendations. Application of all organic soil amendments must not exceed the values in Table 2A or 2B.

Table 2A. A Nutrient Management Plan (NMP)[1] is required where any organic soil amendments are applied where Soil Test P Level is less than 200 ppm statewide or, less than 350 ppm in arid areas[2] with distance to a named stream greater than one mile.

P – Index Rating	Maximum TMDL Annual P Application Rate	Maximum Annual P Application Rate	Maximum Biennial Application Rate
Very Low, Low	Annual Crop Nitrogen (N) Requirement	1.0 Times Annual Crop N Requirement	2.0 Times Annual Crop N Requirement
Medium	2.0 Times Annual Crop P Requirement[3]	2.0 Times Annual Crop P Requirement[3]	2.0 Times Annual Crop N Requirement
High	1.5 Times Annual Crop P Requirement[3]	1.5 Times Annual Crop P Requirement	Double the Maximum Annual P Application Not to Exceed 2 Times the Annual Crop N Requirement
Very High	1.0 Times Annual Crop P Requirement[3]	1.0 Times Annual Crop P Requirement[3]	Double the Maximum Annual P Application Not to Exceed 2 Times the Annual Crop N Requirement

Table 2B. A Nutrient Utilization Plan (NUP)[1] is required where Soil Test P Level is: equal to or greater than 200 ppm in nonarid areas[2], or equal to or greater than 350 ppm in arid areas[2] with distance to a named stream greater than one mile and erosion control is adequate to keep erosion at the soil loss tolerance (T) or less, or equal to or greater than 200 ppm in arid areas[2] with distance to a named stream less than one mile.

P – Index Rating	Maximum TMDL Annual P Application Rate	Maximum Annual P Application Rate	Maximum Biennial Application Rate
Very Low, Low	1.0 Times Annual Crop P Removal[4]	Annual Crop N Removal	2.0 Times Crop N Removal
Medium	1.0 Times Annual Crop P Removal[4]	1.5 Times Annual Crop P Removal[4]	Double the Maximum Annual P Application Not to Exceed 2 Times the Annual Crop N Removal
High	1.0 Times Annual Crop P Removal[4]	1.0 Times Annual Crop P Removal[4]	Double the Maximum Annual P Application Not to Exceed 2 Times the Annual Crop N Removal
Very High	0.5 Times Annual Crop P Removal[4]	0.5 Times Annual Crop P Removal[4]	Double the Maximum Annual P Application Not to Exceed 2 Times the Annual Crop N Removal

Footnotes Applicable to both Tables

[1]NMP and NUP designations are consistent with 30 TAC §321.40.
[2]All counties must use the 200 ppm P level limit to determine whether to use Table 2A or Table 2B. However, in counties receiving less than 25 inches of annual rainfall, the 350 ppm P level limit applies if the field application area is greater than 1 mile from a named stream or lake. See map in current Texas Agronomy Technical Note 15, Phosphorus Assessment Tool for Texas for county rainfall designations.
[3]Not to exceed the annual nitrogen requirement rate.
[4]Not to exceed the annual nitrogen removal rate.
SWFTL* Texas A&M AgriLife Extension Soil, Water and Forage Testing Laboratory

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SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS FROM THE NUTRIENT MANAGEMENT PLAN

Table 1: Alternative Crops and Yield Goals
Applicable to All Land Management Units: - 1,028 Acres

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Alfalfa Hay 10 Tons	530	532	180	101
Alfalfa Hay 12 Tons	640	638	180	121
Alfalfa Hay 2 Tons	120	106	35	20
Alfalfa Hay 4 Tons	210	213	80	40
Alfalfa Hay 6 Tons	300	319	130	60
Alfalfa Hay 8 Tons	420	426	180	81
Bahia 2 Cut Hay 7000 #	140	89	70	21
Bahia 3 Cut Hay 8000 #	210	102	80	24
Bahia 4 Cut Hay 9000 #	280	114	115	27
Bahia Grazing + 1 Hay	110	83	70	19
Bahia Grazing 1 AU/1 ac	260	114	70	27
Bahia Grazing 1 AU/2 ac	220	108	45	25
Bahia Grazing 1 AU/3 ac	180	102	45	24
Bahia Grazing 1 AU/4 ac	140	95	45	22
Bahia Grazing 1 AU/5 ac	100	79	45	18
Bahia Grazing 1 AU/6 ac	60	65	45	15
Cantaloupes 15-20 tons	120	88	105	82
Coastal 2 Cut + Graze	260	198	125	62
Coastal 2 Cut Hay	200	169	125	39
Coastal 3 Cut + Graze	360	257	125	80
Coastal 3 Cut Hay	300	238	125	74
Coastal 4 Cut Hay	400	257	170	80
Coastal 5-6 Cut Hay	500	297	170	93
Coastal Grazing + 1 Hay	160	145	70	34
Coastal Grazing 1 AU/0.5 ac	300	218	70	68
Coastal Grazing 1 AU/1 ac	240	198	70	62
Coastal Grazing 1 AU/2 ac	200	169	70	39
Coastal Grazing 1 AU/3 ac	160	145	70	34
Coastal Grazing 1 AU/4 ac	120	120	70	28
Coastal Grazing 1 AU/5 ac	90	103	70	24
Coastal Grazing 1 AU/6 ac	60	86	70	20
Coastal GC (30%DM) 21-23 Ton	400	345	170	95
Coastal GC (30%DM) 18-20 Ton	350	300	170	82
Coastal GC (30%DM) 15-17 Ton	300	255	125	70
Coastal GC (30%DM) 9-11 Ton	200	170	125	47
Common 2 Cut Hay 6000 #	140	113	80	26
Common 3 Cut Hay 7400 #	210	141	80	46
Common 4 Cut Hay 8000 #	280	152	80	49
Common 5-6 Cut Hay 9000 #	350	171	80	56
Common Grazing + 1 Hay	110	100	70	23
Common Grazing + 2 Hay	180	132	80	30
Common Grazing + 3 Hay	250	148	80	48
Common Grazing 1 AU/1ac	260	152	70	49
Common Grazing 1 AU/2 ac	220	143	45	46
Common Grazing 1 AU/3 ac	180	132	45	30
Common Grazing 1 AU/4 ac	140	113	45	26
Common Grazing 1 AU/5 ac	100	94	45	22
Common Grazing 1 AU/6 ac	60	79	45	18

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SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS FROM THE NUTRIENT MANAGEMENT PLAN

Table 1: Alternative Crops and Yield Goals
Applicable to All Land Management Units: - 1,028 Acres

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Corn 111 - 130 bu	144	117	105	47
Corn 131 - 150 bu	164	135	105	54
Corn 151 - 170 bu	180	153	130	61
Corn 171 - 190 bu	210	171	130	68
Corn 191 - 210 bu	250	189	130	75
Corn 211 - 230 bu	280	207	130	83
Corn 231 - 250 bu	300	225	130	90
Corn 250 - 275 bu	325	243	130	97
Corn 276 - 300 bu	350	261	130	104
Corn 301 - 350 bu	375	279	130	111
Corn 50 - 70 bu	70	63	80	25
Corn 71 - 90 bu	90	81	80	32
Corn 91 - 110 bu	120	99	105	39
Cotton 0.5 Bale	25	18	30	9
Cotton 1.0 Bale	50	36	55	18
Cotton 2.0 Bale	100	71	105	35
Cotton 3.0 Bale	150	107	105	53
Cotton 3.5 Bale	175	125	105	62
Cotton 4.0 Bale	200	142	105	71
Cotton 4.5 Bale	225	160	105	80
Cotton 5.0 Bale	250	178	105	89
Eastern gamagrass- 3000 #	80	57	40	21
Eastern gamagrass- 6000 #	120	114	60	41
Fescue, Tall Hay/Graze 7000#	150	140	80	42
Grain Sorg. 1000 #	20	17	30	8
Grain Sorg. 10000 #	200	167	130	82
Grain Sorg. 1500 #	30	25	30	12
Grain Sorg. 2000 #	40	33	30	16
Grain Sorg. 3000 #	60	50	55	25
Grain Sorg. 4000 #	80	67	55	33
Grain Sorg. 5000 #	100	84	80	41
Grain Sorg. 6000 #	120	100	80	49
Grain Sorg. 7000 #	140	117	130	58
Grain Sorg. 8000 #	160	134	130	66
Grain Sorg. 9000 #	180	150	130	74
Guar 3500 lbs	25	22	80	76
Johnsongrass Hay 6000 #	140	101	80	32
Klein 3 Cut Hay 7200 #	150	83	55	16
Klein 4 Cut Hay 7800 #	150	90	55	18
Klein Grazing + 1 Hay	80	69	55	14
Klein Grazing 1 AU/1.5 ac	150	90	80	18
Klein Grazing 1 AU/2.5 ac	80	69	55	14
Klein Grazing 1 AU/6 ac	40	58	55	11
Legume Overseeded	80	60	105	15
Legume w/ryegrass	160	94	160	38
Midland Bermuda 4000 #	120	75	80	17
Midland Bermuda 6000 #	150	113	105	26
Midland Bermuda 8000 #	200	150	105	35

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SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS FROM THE NUTRIENT MANAGEMENT PLAN

Table 1: Alternative Crops and Yield Goals
Applicable to All Land Management Units: - 1,028 Acres

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Native Grazing or Hay 4000#	80	44	70	34
Native Grazing or Hay 3000#	40	33	55	25
Native Grazing or Hay 1500#	20	17	27	13
Native Grazing or Hay 750#	10	8	13	6
Oat Light Grazing	120	107	55	40
Oat Moderate Grazing	160	110	80	41
Oats Hay 2-3 tons	120	100	55	37
Oats Heavy Grazing plus Hay	200	117	80	43
Old World Bluestem- 3000 #	40	33	55	25
Old World Bluestem- 6000 #	80	66	55	51
Peanut Hay Dryland 1 Ton	50	47	70	11
Peanut Hay Dryland 2 Tons	100	93	70	22
Peanut Hay Irrigated 3 Tons	150	140	95	33
Peanuts Irrigated 4500 #	180	162	95	18
Rice Early 7500 #	195	104	45	41
Rice Late 7500 #	180	104	45	41
Rice plus Ratoon Early 10000 #	295	139	60	55
Rice plus Ratoon Late 10000 #	280	139	60	55
Rye Forage 5000 #	140	84	55	31
Rye Forage 7000 #	240	117	80	43
Ryegrass Hay 6000	140	100	55	37
Ryegrass Heavy Grazing	200	117	80	43
Ryegrass Moderate Grazing	140	84	55	31
SG Green Chop(25% DM) 8 to 9 tons	260	203	90	73
SG Green Chop(25% DM) 6 to 7 tons	200	158	80	57
SG Green Chop(25% DM) 4 to 5 tons	135	113	60	41
SG Green Chop(25% DM) 2 to 3 tons	75	68	40	24
SG Silage(35% DM) 12 to 14 tons	160	128	90	67
SG Silage(35% DM) 10 to 11 tons	120	101	70	53
SG Silage(35% DM) 8 to 9 tons	95	83	40	43
SG Silage(35% DM) 5 to 7 tons	70	64	30	34
Silage - Corn(35% DM) 11 - 15 Ton	140	119	80	58
Silage - Corn(35% DM) 16 - 20 Ton	240	183	100	77
Silage - Corn(35% DM) 21 - 25 Ton	350	263	105	96
Silage - Corn(35% DM) 26 - 30 Ton	420	315	135	115
Silage - Corn(35% DM) 7 - 10 Ton	85	79	60	38
Silage - Sorg(35% DM) 11 - 15 Ton	200	179	75	55
Silage - Sorg(35% DM) 16 - 20 Ton	280	238	95	74
Silage - Sorg(35% DM) 21 - 25 Ton	360	298	115	92
Silage - Sorg(35% DM) 26 - 30 Ton	380	315	130	111
Silage - Sorg(35% DM) 31 - 40 Ton	450	364	155	135
Silage - Sorg(35% DM) 41 - 50 Ton	580	455	190	168
Silage - Sorg(35% DM) 51 - 60 Ton	700	550	220	202
Silage - Sorg(35% DM) 7 - 10 Ton	125	119	60	37
Small Grain Heavy Grazing	240	112	105	41
Small Grain Light Grazing	60	75	80	28
Small Grain Moderate Grazing	160	97	105	36
Sorg. - Sudan Hay/Graze 11000 #	240	219	105	83

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SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS FROM THE NUTRIENT MANAGEMENT PLAN

Table 1: Alternative Crops and Yield Goals
Applicable to All Land Management Units: - 1,028 Acres

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Sorg. - Sudan Hay/Graze 7500 #	160	149	55	57
Sorg Forage Hay/Graze 11000 #	240	219	105	83
Sorg Forage Hay/Graze 7500 #	160	151	55	57
Soybean 30 bu	110	119	60	24
Soybean 50 bu	180	180	80	40
Sunflower 2000#	100	71	56	30
Sunflower 3000#	175	107	65	45
Triticale Graze or Hay 7000 #	160	117	105	43
Triticale Graze or Hay 9000 #	240	150	105	56
Watermelons 12 tons	80	53	55	49
Weeping Lovegrass 3500 #	70	39	55	30
Wheat Forage 2000 #	60	33	80	12
Wheat Forage 4000 #	160	67	105	25
Wheat Forage 6000 #	240	100	105	37
Wheat Grain 20 - 30 bu + Grazing	60	58	55	40
Wheat Grain 20 - 30 bu	45	37	55	26
Wheat Grain 31 - 40 bu + Grazing	80	71	75	48
Wheat Grain 31 - 40 bu	60	50	75	34
Wheat Grain 41 - 50 bu + Grazing	100	83	75	57
Wheat Grain 41 - 50 bu	75	62	75	43
Wheat Grain 51 - 60 bu + Grazing	120	96	90	65
Wheat Grain 51 - 60 bu	90	75	90	51
Wheat Grain 61 - 70 bu + Grazing	140	108	90	74
Wheat Grain 61 - 70 bu	105	87	90	60
Wheat Grain 71 - 80 bu + Grazing	160	121	95	82
Wheat Grain 71 - 80 bu	120	100	95	68
Wheat Grain 81 - 90 bu + Grazing	180	133	95	91
Wheat Grain 81 - 90 bu	135	112	95	77
Wheat Grain 91 - 100 bu + Grazing	200	146	95	99
Wheat Grain 91 - 100 bu	150	125	95	85
Wheat Heavy Grazing	240	114	105	42
Wheat Light Grazing	60	75	80	28
Wheat Moderate Grazing	160	97	105	36
Millet GC (25% DM) 18 - 24 Ton	180	140	60	46
Millet Hay/Graze 11000 #	150	95	45	40
Silage - Millet(35% DM) 15 - 18 Ton	190	139	60	46
Popcorn Shelled 3000 - 4000 #	80	74	80	27
Popcorn Shelled 4000 - 5000 #	100	92	80	33
Popcorn Shelled 5000 - 6000 #	120	110	80	40
Vetch Hay 1 Ton	70	60	105	14
Vetch Hay 2 Tons	140	120	105	28
Vetch Green chop(25%DM) 4 Tons	70	56	105	7
Vetch Green chop(25%DM) 8 Tons	140	112	105	14
Winter Pea Hay 5000#	140	137	105	35
Winter Pea Green chop(25%DM)8-9 Tons	140	123	105	32
Cowpea Hay 2 Tons	140	120	105	26
Cowpea GreenChop 8Tons(25%DM) Tons	140	120	105	26

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SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS (LMUs) FROM THE NUTRIENT MANAGEMENT PLAN

Table 2: Current Site-Specific Information from NMP

LMU Name	Acreage	Crop(s) and Yield Goal(s)	*Nitrogen Recommendation (lbs/ac)(*1)	*Phosphorus as P_2O_5 Recommendation (lbs/ac)(*1)	Nitrogen Maximum Application Rates (lbs/ac)* (*1)	Phosphorus as P_2O_5 Maximum Application Rates (lbs/ac)* (*1)
LMU #1	144	Coastal Graze 1 AU / 1 Ac Small Grains: Moderate Graze	155	90	155	90
LMU #1A	56	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	298	90	298	90
LMU #2	40	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	155	90	155	90
LMU #3	86	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	298	90	298	90
LMU #4	131	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	400	234	400	234
LMU #4A	14	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	400	121	400	121
LMU #5	39	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	400	234	400	234
LMU #5A	45	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	298	90	298	90
LMU #6	45	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	298	90	298	90
LMU #7	22	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	155	90	155	90
LMU #7A	14	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	298	90	298	90
LMU #8	80	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	155	90	155	90
LMU #8A	81	Coastal: Graze 1 AU / 1 Ac	298	90	298	90

LMU Name	Acreage	Crop(s) and Yield Goal(s)	*Nitrogen Recommendation (lbs/ac)(*1)	*Phosphorus as P_2O_5 Recommendation (lbs/ac)(*1)	Nitrogen Maximum Application Rates (lbs/ac)* (*1)	Phosphorus as P_2O_5 Maximum Application Rates (lbs/ac)* (*1)
		Small Grains: Moderate Graze				
LMU #9	13	Common: Graze 1 AU / 1 Ac Rye Grass: Moderate Graze	155	90	155	90
LMU #9A	58	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	298	90	298	90
LMU #10	28	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	155	90	155	90
LMU #10A	92	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	400	121	400	121
LMU #11	62	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	400	234	400	234
LMU #12	44	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	155	90	155	90
LMU #12A	63	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	300	91	300	91
LMU #13	44	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	300	91	300	91
LMU #14	12	Coastal: Graze 1 AU / 1 Ac Small Grains: Moderate Graze	300	91	300	91

NOTES- Applicable to Table 2.

*Nutrients Applied When Application is At Maximum Rates from NMP 590-633 Plan V 5.0 with the Print Date 08/12/2024. Any future revision to the NMP will be based on the current version of the 590-633 CNMP Component (NMP/NUP) Worksheet. Maximum rates are based on wastewater and manure analyses dated 06/04/2024 and soil analysis reports dated 03/08/2023 and 03/27/2023 by the Soil, Water and Forage Testing Laboratory, AgriLife Extension, College Station, Texas. The Maximum Rates (lb/ac) for nitrogen (N) and phosphorus (P_2O_5) will be updated based on most recent annual analyses of soil and waste.

(*1) Nutrient recommendations and maximum amount of nutrients derived from all sources have been established for both nitrogen and phosphorus based on the NMP submitted with the application. The permittee is required to recalculate these values annually in accordance with the requirements of this permit. These annual recalculations do not constitute a substantial change and therefore do not require an amendment of this permit.

Fact Sheet and Executive Director's Preliminary Decision

I. Description of Application

Applicant: 3T Martins Farm Hico, LLC and TMC Dairies, LLC

Permit No.: WQ0003190000

Regulated Activity: Concentrated Animal Feeding Operation; Dairy Cattle

Permit Action: Major Amendment

Authorization: Air & Water Quality Authorization

II. Executive Director's Recommendation

The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. For New, Major Amend & Renewal: The proposed permit shall be issued for a 5-year term in accordance with 30 TAC Chapter 305.

III. Reason for Proposed Project

The applicant has applied to the Texas Commission on Environmental Quality (TCEQ) for a major amendment of Texas Pollutant Discharge Elimination System Permit No. WQ0003190000 to authorize the applicant to make changes to the operation that will include an ultimate increase in the number of total dairy cattle from 9,150 to 13,500 head, of which 10,000 head will be milking cows. The proposed changes will be implemented in two phases. Phase 1 will involve a headcount increase from 9,150 to 10,000 head, of which 8,000 head will be milking. Other changes include the addition of an anaerobic digester and associated equipment, a manure compost area, a cross-ventilated barn, and a milking parlor, which will result in the reconfiguration of the drainage areas of retention control structures (RCSs) TS1 and TS2; and the removal of Wells TD9, TF1, and TF2 and plugging of Well TS5. In addition, changes to land management units (LMUs) are proposed that will reconfigure, rename, and remove multiple LMUs, which will result in a change to a portion of the facility property boundary. The total land application area will decrease from 1,094 to 1,028 acres. Phase 2 will involve a headcount increase from 10,000 to 13,500 head, of which 10,000 head will be milking; the addition of a cross-ventilated barn to the drainage area of RCSs TD1 and TD Treatment Pond; the reconfiguration of a milking parlor; the removal of pens, freestall barns, and two settling basins; and the plugging of Well TD11. TCEQ received this application on August 27, 2024.

IV. Facility Description and Location

Maximum Capacity: 13,500 total head, of which 10,000 head are milking.

Land Management Units (LMUs) (Acres): LMU #1 - 144, LMU #1A - 93, LMU #2 - 39, LMU #3 – 39, LMU #4 – 97 , LMU #4A – 76, LMU #5 – 39, LMU #5A – 35, LMU #6 – 51, LMU #7 – 16, LMU #7A – 33, LMU #8 – 26, LMU #8A – 18, LMU #9 – 34, LMU #9A – 28, LMU #10 – 29, LMU #10A – 46, LMU #11 – 42, LMU #12 – 24, LMU #12A – 63, LMU #13 – 44, LMU #14 – 12.

Location: The facility is located at 3618 County Road 540 Hico, Erath County, Texas 76457. Latitude: 32.119444° N and Longitude: 98.049444° W.

Drainage Basin: The facility is located in the drainage area of the North Bosque River in Segment No. 1226 of the Brazos River Basin.

The facility consists of 6 Retention Control Structures (RCSs), 1 Slurry Basin and 6 Settling Basins. The table below indicates the volume allocations for the RCSs:

RCSs TD1 & TD Treatment Pond; and TH2 & TH1 act in-series.

Table 1: Volume Allocations for RCSs (Acre-Feet) (Phase 1)

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity Without Freeboard	Actual Capacity Without Freeboard
RCS TS1	11.99	18.18	39.41	14.39	19.33	103.30	TBD
*RCS TS1	11.99	9.67	5.66	1.85	10.54	39.71	49.97
RCS TS2	14.29	0.0	0.0	0.10	2.16	16.55	24.69
RCS TD1	52.62	1.38	0.0	0.65	12.07	66.71	74.95
TD Treatment Pond	0.0	0.0	2.15	0.36	0.0	2.50	12.22
RCS TH1	0.0	0.0	0.0	0.0	0.0	0.0	15.83
RCS TH2	33.43	0.0	0.0	0.58	6.26	40.27	65.13

Table 1: Volume Allocations for RCSs (Acre-Feet) (Phase 2)

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity Without Freeboard	Actual Capacity Without Freeboard
RCS TS1	11.99	23.50	64.36	23.46	24.83	148.14	TBD
*RCS TS1	11.99	9.67	5.66	1.85	10.54	39.71	49.97
RCS TS2	14.29	0.0	0.0	0.10	2.16	16.55	24.69
RCS TD1	44.56	4.14	0	0.14	14.47	63.31	74.95
TD Treatment Pond	0	0	6.44	1.07	0	7.51	12.22
RCS TH1	0.0	0.0	0.0	0.0	0.0	0.0	15.83
RCS TH2	33.43	0.0	0.0	0.58	6.27	40.27	65.13

*Volumes when Digester is on Bypass
TBD – To Be Determined

A. The volume allocations are determined using Natural Resource Conservation Service standards, American Society of Agricultural and Biological Engineers standards, and/or site-specific data submitted in the permit application.

B. The Design Rainfall Event is the volume of runoff from the 25 year, 10 day storm event. The RCS is required to include adequate capacity to contain this amount of runoff as a margin of safety to protect against discharges during rainfall events that may exceed the average monthly values used to design the RCS, but do not constitute chronic or catastrophic rainfall. This volume allocation accommodates runoff from open lot surfaces, all areas between the open lots and the RCS, runoff from roofed areas that contribute to the RCS and direct rainfall on the surface of the RCS. Runoff curve numbers used to calculate the runoff volume from the open lot surfaces are reflective of the characteristics of open lot surfaces and range between 90 and 95. Runoff curve numbers used to compute the runoff from areas between the open lots and the RCS are reflective of the land use and condition of the areas between the open lots and RCS. A curve number of 100 is used for the RCS surface and all roofed areas.

C. Process Generated Wastewater is the volume of wet manure and wastewater generated by the facility that is flushed or otherwise directed to the RCS. Wastewater includes all water used directly or indirectly by the facility that comes in contact with manure or other waste. The RCS must contain the process generated wastewater from a 21 day period or greater. RCS TS1 and TD1 is designed to contain 30 days of process generated wastewater for this permit.

D. Treatment volume is required to minimize odors for facilities requesting air authorization under the Air Standard Permit in 30 TAC Section 321.43. Treatment volume is based on the amount of volatile solids produced and the volatile solids loading rate. Volatile solids are solid material in waste that can be decomposed through biological, physical, and chemical activity. The rate of solids decomposition is based on temperature; therefore it varies by geographic location. The volatile solids loading rate for this facility is 5.3 pounds per day of volatile solids per 1000 ft^3 of treatment volume.

E. Sludge accumulation volumes are required in the RCS that receives runoff from open lots, flushwater from freestall and cross ventilated barns, and flushwater from the milking parlor. The sludge accumulation volume for flushwater entering the RCS is based on a rate of 0.0729 cubic feet of storage capacity per pound of total solids in the wet manure entering the RCS during the design sludge accumulation period The sludge accumulation volume allocated for runoff from open lots is calculated using USDA Agricultural Field Waste Handbook, Kansas, Part 651.1083, which uses the following equation: (%SC) × (MAR) × (DA) × (SP), where %SC = percent solids content of runoff, MAR = mean annual runoff (in inches), DA = contributing drainage area (in acres), and SP = sediment storage period (in years). A minimum of one year of sludge storage is required in the RCS. Design sludge volumes in this permit reflect a one (1) year sludge accumulation period.

F. The RCS volume designated as Water Balance is the capacity needed in addition to the Process Generated Wastewater volume to provide adequate operating capacity so that the operating volume does not encroach into the design storm volume. The water balance is an analysis of the inflow into the RCS, all outflows from the RCS and the consumptive use requirements of the crops on the land areas being irrigated. The water balance is developed on a monthly basis. It estimates all inflows into the RCS including process generated wastewater and runoff from open lots, areas between open lots and the RCS, roofed areas and direct rainfall onto the RCS surface. Consumptive use potential for the areas to be irrigated is developed based on the potential evapotranspiration of the crops and the effective average monthly rainfall on the area to be irrigated. Runoff curve numbers used for the water balance are adjusted from one (1) day to 30 day curve numbers to more accurately reflect monthly values. Evaporation from the RCS surface is computed on a monthly basis. Monthly withdrawals from the RCS are developed based on the total inflow to the RCS minus evaporation from the RCS surface and limited by the monthly crop consumptive use potential.

G. Anaerobic Digester
The other components of the waste management system are a covered anaerobic digester system, and a methane generating system to process the wastewater from the milking parlor only. At the end of the digester process, the resulting liquid (wastewater) and the

solids that are separated from the process generated wastewater will be land applied in accordance with the facility's nutrient management plan.

According to the Applicant's representative, Enviro-Ag Engineering Inc., the anaerobic digester system will be owned and operated by DVO.

The NRCS Practice Standard Code 366 describes the digester as a component of a waste management system in which biological treatment breaks down animal manure and other organic materials in the absence of oxygen. This practice is applicable for one or more of the following purposes:

- Manage odors
- Reduce the net effect of greenhouse gas emissions
- Reduce pathogens
- Captures biogas to facilitate energy production
- Biogas production and capture are components of a waste management system plan and comprehensive nutrient management plan (CNMP)
- Sufficient and suitable organic feedstocks are readily available.

The table below shows the summary of impact of anaerobic digestion of dairy cattle manure on odor, greenhouse gas, ammonia, water quality and net farm income.

Table 2: Summary of observed impacts of anaerobic digestion on semisolid dairy cattle manure management.

Parameters	Impact
Odor	Substantial reduction
Greenhouse gas emissions	Methane – substantial reduction (2.32 tons/cow/yr on a carbon dioxide equivalent basis) Carbon dioxide 1.33 tons/cow/yr associated with the reduction in fossil fuel use to generate electricity
Ammonia emissions	No significant reduction
Potential Water quality impacts	Oxygen demand – substantial reduction (5.1 lbs/cow/day) Indicator organisms and potentially pathogens – significant reduction (fecal coliforms: >99 % (Fecal streptococcus: > 90% Nutrient enrichment – no reduction
Economic impact	Significant increase in net farm income ($101/cow/year after recovery of capital invested in 6.3 years)

Source: John H. Martin, Jr. Ph.D., July 20, 2005. An Evaluation of a Mesophilic, Modified Plug Flow Anaerobic Digester For Dairy Cattle Manure.

V. Summary of Changes from Existing Authorization

A. Section 1 on Page 1 of the permit has been amended to show:

1. the name of the new Owner - 3T Martins Farm Hico, LLC and Operator - TMC Dairies, LLC; and the new Site Name - TMC Dairies Hico,

2. the proposed headcount change: Phase 1 will see the total authorized maximum capacity increase from 9,150 to 10,000 total head, with 8,000 milking. Phase 2 will see the total authorized maximum capacity increase from 10,000 to 13,500 total head, with 10,000 milking, and
3. the revised RCSs required capacities for when digester is operational or on bypass, and the new LMU names and acreage.

B. Section V.C of the permit that relates to Air Quality Authorization has been amended to show the maximum sludge and minimum treatment volume for when the digester is operational and on bypass.

C. Table 3 of the permit that relates to the Well status and Best Management Practices has been amended to remove Wells TD9, TF1 and TF2; and a note to clarify that Well TS5 and TD11 will be removed during Phases 1 and 2, respectively. Section X.J. was also revised to remove Well TD11 from the list of wells that require annual site inspection.

D. Table 7 that relates to the LMU buffer distances has been revised to show the reconfigured and new LMUs name, and the LMU name revised throughout the permit.

E. Section VII.A.3(a)(1) of the permit has been revised to add the underlined text: The permittee shall ensure that the design and completed construction of the modified RCS(s) <u>and the anaerobic digester system</u> (See Special Provision X.A.) is certified by a licensed Texas Professional Engineer prior to use.

F. Section VII.D.2 of the Air Standard Permit Requirement that relates to wastewater treatment was replaced with the following text in order to address the digester system:

<u>Current Language</u>:

Wastewater treatment. The permittee shall design and operate RCSs to minimize odors in accordance with accepted engineering practices. Each RCS shall be operated in accordance with the design and an operation and maintenance plan that minimizes odors. The primary lagoon in a multi-stage lagoon system shall be designed with a minimum treatment volume so that the lagoon maintains a constant level at all times unless prohibited by climatic conditions. A multi-stage lagoon system shall be designed to minimize the amount of contaminated storm water runoff entering the primary lagoon by routing the contaminated storm water runoff into a secondary RCS.

<u>Revised Language</u>:

Wastewater treatment. The permittee shall design and operate RCSs to minimize odors in accordance with accepted engineering practices. Each RCS shall be operated in accordance with the design and an operation and maintenance plan that minimizes odors.

(a) Accepted engineering practices to minimize odors include anaerobic treatment lagoons, aerobic treatment lagoons, or other equivalent technology.

(b) Accepted design standards and requirements for each of these methods of treatment are:

(1) an anaerobic treatment lagoon shall be designed in accordance with American National Standards Institute/American Society of Agricultural Engineers EP403.3 July 1999 (or subsequent updates); NRCS Field Office Technical

Guidance, Practice Standard 359, Waste Treatment Lagoon, or the equivalent for the control of odors. The primary lagoon in a multi-stage lagoon system shall be designed with a minimum treatment volume so that the lagoon maintains a constant level at all times unless prohibited by climatic conditions. A multi-stage lagoon system shall be designed to minimize the amount of contaminated storm water runoff entering the primary lagoon by routing the contaminated storm water runoff into a secondary RCS;

(2) aerobic treatment lagoons shall be designed in accordance with NRCS, Field Office Technical Guidance, Practice Standard 359, Waste Treatment Lagoon; or technical requirements for sizing the aeration portion of the system located in 30 TAC Chapter 317; and

(3) equivalent technology or design standards shall indicate how the design of the RCS minimizes odors equivalent to an aerobic or anaerobic lagoon. These designs shall be developed and certified by a licensed Texas Professional Engineer. An "as-built" certification in letter form shall be completed by a licensed Texas Professional Engineer before operation of the RCSs.

(c) This permit authorizes the use of a covered anaerobic digester system.

G. Section X.A. that relates to the RCS volume has been amended to show former A.1 divided into A. 1 and 2 and added the underlined text to A.1. Former X.A.2- compliance schedule has been revised and renumbered as 3. and added (c) through (f), and Table 6 was amended to show the RCSs volumes when the digester is operational or on bypass.

RCS Modification / Volume.

1. <u>The permittee shall modify existing RCS TS1 to meet the total required capacity as listed on page 1 of this permit; construct the other components of the waste management system, which includes an anaerobic digester, screw separator, and a methane generating system</u>. Modifications shall comply with Section VII.A.3 of this permit.
2. The permittee shall maintain the wastewater volumes in each RCS in accordance with Table 6.
3. Compliance Schedule.
   (a) All RCSs modifications required by this permit shall be completed within 180 days after the issuance date of this permit and prior to exceeding 9,150 head. Upon written request to the TCEQ Regional Office, the Executive Director may grant an extension to the 180-day requirement.
   (b) Once construction and/or all modifications of RCS(s) are complete, the RCS management plan shall be developed and implemented within thirty (30) days.
   (c) Phase 1: The Permittee shall install the anaerobic digester and associated equipment, add a parlor and cross ventilated barn, and reconfigure the drainage area of retention control structures (RCSs) TS1 and TS2 as shown in Attachment A – Site Map (Proposed Phase 1) - 1. Once this phase is completed, the Permittee shall notify the TCEQ Stephenville Office for an inspection before the proposed headcount increase from 9,150 head to 10,000 head, of which 8,000 head will be milking.
   (d) Phase 2: The Permittee shall construct the cross ventilated barn, reconfigure a parlor and the drainage area of retention control structures (RCSs) TD1 and

TD Treatment Pond as shown in Attachment A – Site Map (Proposed Phase 2) – 4. Once this phase is completed, the Permittee shall notify the TCEQ Stephenville Office for an inspection before the proposed headcount increase from 10,000 head to 13,500 head, of which 10,000 head will be milking.

(e) The Permittee shall notify the TCEQ Region 4- Stephenville Office within 7 business days of completion of each phase. This permit prohibits all headcount increase until TCEQ Stephenville Office has certified that the modifications for the phase has been completed, and the facility can function as proposed.

(f) The Permittee shall operate as shown on Attachment A to the permit issued on January 4, 2024, if the proposed modifications to the production areas are not completed, and shall not exceed the 9,150 head, of which 5,500 head are milking.

H. Section X.O. that relates to settling basin efficiency has been revised as indicated below:

Current language: Manure and settled solids accumulations in the settling basin must be removed on a regular and consistent basis so as to assure attainment of the 65% (TD Treatment Pond) and 50% (RCS TS2) designed removal efficiencies.

Revised language: Manure and settled solids accumulations in the settling basin must be removed on a regular and consistent basis so as to assure attainment of the 30% designed removal efficiency; and maintain 42% anaerobic digester efficiency, and 76% Dissolved Air Flotation efficiency.

I. Special Provision X.V has been added to address the digester:

Anaerobic Digester.

1. The permittee shall have adequate RCS capacity to maintain minimum treatment volume for odor control at all times, including when the digester is bypassed or during digester maintenance.
2. The facility shall maintain the ability to bypass the digester in the event it is taken offline for maintenance or repair. If the digester is taken offline for a period lasting longer than 90 days, the Permittee shall notify the TCEQ Regional Office. If the digester is to be permanently discontinued, a permit amendment must be obtained.
3. The permittee shall use only cattle manure as feedstock and shall obtain a major amendment prior to use of cattle manure that is generated by another AFO for digester feedstock. The use of additional feedstocks other than cattle manure is prohibited by this permit.
4. The permittee shall ensure that the owner and operator of the digester obtains all necessary authorizations from the TCEQ Air Permits Division for the digester operation. Off-gasses, flares, internal combustion engines, or other emissions associated with the digester are not authorized under the CAFO Air Standard Permit.
5. Digestate shall be defined as manure. The permittee shall land apply the digestate in accordance with the site-specific certified nutrient management plan.
6. The anaerobic digester and any appurtenances such as recirculation basins and mixing pits shall be certified in accordance with 30 TAC §321.38(g)(2).
7. Discharges from the digester or digester appurtenances are not authorized under this permit. Any leaks or spills shall be retained on site and handled in accordance with the requirements of this permit.

J. The Attachments (A, B, and D) to the permit that relate to Site map, LMU Map and Well location Map) and Table 2 to Attachment F that relates to Current Site Specific Information from the NMP have been replaced.

VI. Proposed Permit Conditions and Monitoring Requirements

A. Effluent Limitations

Compost, manure, sludge, slurry and wastewater may only be discharged from a LMU or a properly designed, constructed, operated and maintained RCS into water in the state from this CAFO if any of the following conditions are met:

- discharge resulting from a catastrophic condition other than a rainfall event that the permittee cannot reasonably prevent or control;
- a discharge resulting from a catastrophic rainfall event from a RCS;
- a discharge resulting from a chronic rainfall event from a RCS; or
- a discharge resulting from a chronic rainfall event from a LMU that occurs because the permittee takes measures to de-water the RCS in accordance with the individual permit, relating to imminent overflow.

40 CFR §122.44 specifies that any requirements, in addition to or more stringent than promulgated effluent limitation guidelines, must be applied when they are necessary to achieve state water quality standards. Water quality based effluent limitations must be established when the TCEQ determines there is a reasonable potential to cause or to contribute to an in-stream excursion above the allowable ambient concentration of a state numeric criterion. For CAFO discharges the TCEQ must consider:

1. existing controls on point and non-point sources of pollution;
2. variability of the pollutant in the effluent; and
3. dilution of the effluent in the receiving water.

In proposing this permit, the TCEQ addresses considerations 2 and 3 since continuous discharges are prohibited and effluent discharges are authorized only during catastrophic conditions or a chronic or catastrophic rainfall event from a RCS properly designed, constructed, operated and maintained. The effluent pollutant levels are variable and effluent is usually not discharged. Additionally, during these climatic events, water bodies receiving a contribution of CAFO wastewater should be significantly diluted by other rainfall runoff.

Consideration 1 requires permit controls on CAFO discharges which will result in the numeric criteria of the water quality standards being met, thus ensuring that applicable uses of water in the state are attained. The principal pollutants of concern include organic matter causing biochemical oxygen demand, the discharge of ammonia-nitrogen, phosphorus and *Escherichia coli*. This permit requires discharges to be monitored for the pollutants of concern. Existing technology does not allow for practicable or economically achievable numeric effluent limitations at this time. The Environmental Protection Agency (EPA) has not promulgated effluent guidelines or numeric effluent limitations that would allow regular discharges of CAFO process wastewater or process-generated wastewater. The proposed permit addresses potential pollutant impacts through requirements including numerous narrative (non-numeric) controls on CAFO process wastewater and non-point sources of pollutant discharges associated with CAFOs. Setting specific water quality-based effluent limitations in this permit is not feasible (see 40 CFR §122.44 (k)(3)).

The general and site-specific provisions which are expected to result in compliance with water quality criteria and protection of attainable water quality are discussed in the following sections of this fact sheet: RCS Design and Operational Requirements; Requirements for Beneficial Use of Manure, Sludge, and Wastewater; Additional Water Quality Requirements; and Monitoring and Reporting Requirements.

B. RCS Design and Operational Requirements

The draft permit includes the following requirements related to proper RCS design, construction, operation and maintenance:

1. The RCS(s) must be designed and constructed to meet or exceed the margin of safety, equivalent to the volume of runoff and direct precipitation from the 25 year/10 day rainfall event. The design rainfall event, at which time the CAFO is authorized to discharge, is 12.2 inches. The application includes design calculations and certification by a Professional Engineer, which determine the design criteria for the RCS(s).
2. A RCS management plan is required to be implemented. This plan must establish expected end of the month water storage volumes for each RCS. These maximum levels are based on the design assumptions used to determine the required size of the RCS. This plan assures the permittee will maintain wastewater volumes within the designed operating capacity of the structures, except during chronic or catastrophic rainfall events. The permittee must document and provide an explanation for all occasions where the water level exceeds the expected end of the month storage volumes. By maintaining the wastewater level at or below the expected monthly volume, the RCS will be less likely to encroach into the volume reserved for the design rainfall event and/or discharge during smaller rainfall events.
3. The pond marker must have one-foot increments. This requirement identifies the level of wastewater storage to assist the permittee in the implementation of the RCS management plan. It also acts as an enforcement tool for TCEQ to determine compliance with the RCS management plan.
4. The wastewater level in the RCS(s) must be recorded daily. This requirement will assist the permittee in the implementation of the RCS management plan and will provide a visual indication of compliance.
5. The amount of sludge in the RCS(s) must be maintained at or below the designed sludge volume. Proper sludge management will reduce overflows associated with insufficient wastewater storage capacity. This permit requires that sludge accumulations in the RCS(s) be measured at least annually.
6. The RCS(s) must be adequately lined and certified by a Texas Professional Engineer; alternatively, certification must document that in situ material meets the requirements of constructed and installed liners. Groundwater has the potential to resurface as surface water. Therefore, preventing impacts to groundwater also provides protection to surface water. A liner certification, certified by a Professional Engineer, for the existing RCS(s) was submitted with the application.

Table 3: Existing RCS Liner Certifications

RCS Name	Liner Certification Date
TD1	09/12/2008 & 12/21/2010
TD Treatment Pond	09/12/2008
TS1	08/16/2010
TS2	06/07/2016
TH1	05/09/1990
TH2	12/01/2010
TH Settling Basin	02/02/1990
TD Settling Pond #1	09/12/2008
TD Settling Pond #2	09/12/2008
Slurry Pit (Slurry Pond)	09/12/2008
TS Settling Basin	01/02/1997

7. The RCS(s) must maintain two vertical feet of material equivalent to construction materials between the top of the embankment and the structure's spillway to protect from overtopping the structure. RCS(s) without spillways must have a minimum of two vertical feet between the top of the embankment and the required storage capacity.
8. The entry of uncontaminated stormwater runoff into RCS(s) must be minimized. The site includes diversion structures to direct contaminated runoff into the RCS(s) and to prevent uncontaminated stormwater runoff from entering the RCS(s).

C. Requirements for Beneficial Use of Manure, Sludge, and Wastewater

Nutrient pollutants of concern have narrative criteria and are discharged in CAFO wastewater. Nutrient pollutants have been addressed through imposition of BMPs. No water quality impacts are expected to occur from land application based upon properly prepared and implemented nutrient management practices. The proposed permit contains requirements related to the collection, handling, storage and beneficial use of manure, wastewater, and sludge. These requirements were established based on TCEQ rules, EPA guidance, NRCS Field Operations Technical Guidance and the Animal Waste Management Field Handbook, recommendations from the TCEQ's Water Quality Assessment Team, and best professional judgment.

The elements of a NMP as listed in 40 CFR §122.42(e)(1) have been incorporated into this permit. This permit requires a NMP developed by a certified nutrient management specialist, based on United States Department of Agriculture/Natural Resource Conservation Service (NRCS) Practice Standard 590 and each of the required elements to be implemented upon issuance of this permit. In relation to these items, the proposed permit meets federal requirements.

1. For LMUs with a soil phosphorus concentration of less than 200 ppm in Zone 1 depth (0-6 inches if incorporated, 0-2 or 2-6 inch if not incorporated), land application of commercial fertilizer, compost, manure, sludge, slurry and wastewater must be in accordance with a certified NMP. This plan is based on the NRCS Practice Standard Code 590. This plan involves a site-specific evaluation of the LMU to include soils, crops, nutrient need and includes the phosphorus index tool. The phosphorus index is a site-specific evaluation of the risk potential for phosphorus

movement into watercourses. The risk potential is determined by site characteristics such as soil phosphorus level, proposed phosphorus application rate, application method and timing, proximity of the nearest field edge to a named stream or lake, runoff class, and soil erosion potential. The application rates are adjusted according to the risk potential. The higher the risk potential, the lower the application rate; thus there is minimal potential to have excess nutrients available to leave the site and affect water quality.

2. For LMUs with a soil phosphorus concentration of 200-500 ppm in Zone 1 depth (0-6 inches if incorporated, 0-2 or 2-6 inch if not incorporated), land application of commercial fertilizer, compost, manure, sludge, slurry and wastewater must be in accordance with a nutrient utilization plan (NUP). The NUP is a revised NMP based on crop removal. A crop removal application rate is the amount of nutrients contained in and removed by the proposed crop. At the discretion of the certified nutrient management specialist, the NUP may also include a phosphorus reduction component. This NUP must be submitted to the TCEQ for review and approval.

3. For LMUs with a soil phosphorus concentration of greater than 500 ppm in Zone 1 depth (0-6 inches if incorporated, 0-2 or 2-6 inch if not incorporated), land application of commercial fertilizer, compost, manure, sludge, slurry and wastewater must be in accordance with a NUP based on crop removal which also includes a phosphorus reduction component. A phosphorus reduction component is a management practice, incorporated into the NUP, which is designed to further reduce the soil phosphorus concentration by means such as phosphorus mining, moldboard plowing, or other practices utilized by the permittee. This revised NUP must also be submitted to the TCEQ for review and approval. Permittees required to operate under a NUP with a phosphorus reduction component must show a reduction in the soil phosphorus concentration within twelve (12) months or may be subject to enforcement actions.

4. Table 3 below identifies the maximum application rate, as shown in the NMP submitted in the permit application. NMPs are routinely updated and the values shown below are subject to change.

Table 4: LMU Maximum Application Rates and Soil Phosphorus Levels

LMU Name	Soil Test P (ppm)	Max Annual P_2O_5 (lbs/ac)
LMU #1	368	90
LMU #1A	206	90
LMU #2	206	90
LMU #3	219	90
LMU #4	162	234
LMU #4A	162	121
LMU #5	174	234
LMU #5A	268	90
LMU #6	362	90
LMU #7	346	90
LMU #7A	346	90
LMU #8	461	90
LMU #8A	461	90

LMU Name	Soil Test P (ppm)	Max Annual P_2O_5 (lbs/ac)
LMU #9	356	90
LMU #9A	356	90
LMU #10	290	90
LMU #10A	144	121
LMU #11	144	234
LMU #12	277	90
LMU #12A	277	91
LMU #13	217	91
LMU #14	201	91

5. All generated manure, sludge or wastewater in excess of the amount allowed to be land applied by the NMP or NUP must be delivered to a composting facility authorized by the Executive Director, delivered to a permitted landfill, beneficially used by land application on land located outside of the major sole source impairment zone, or provided to operators of third-party fields for beneficial use subject to specified land application requirements and testing. By requiring specific outlets for excess manure, sludge and wastewater, the permit limits unregulated use of manure, sludge and wastewater within the watershed.

6. The permittee must continue to operate under a Comprehensive NMP (CNMP) certified by the Texas State Soil and Water Conservation Board (TSSWCB). The CNMP must be developed by a qualified individual(s) in accordance with TSSWCB regulations. The CNMP is a whole farm plan that addresses nutrient management from the origin in the feed rations to final disposition. The CNMP considers all nutrient inputs, onsite use and treatment, outputs, and losses. Inputs include animal feed, purchased animals, and commercial fertilizer. Outputs include animals sold, harvested crops removed from the facility, and manure removed from the facility. Losses include volatilization, stormwater runoff, and leaching.

7. The permittee must implement additional conservation practices on LMUs adjacent to water in the state. These conservation practices include a 100-foot vegetative buffer, filter strips, vegetative barrier, and/or contour buffer strips. Site specific conditions and NRCS practice standards specify which conservation practices, in addition to the required 100-foot vegetative buffer, must be implemented. The conservation practices reduce erosion, suspended solids and nutrients in runoff from LMUs. This will improve the quality of stormwater runoff prior to entering water in the state.

8. In Table 4 below, the Additional Buffer Setback distance was determined by using the NRCS Conservation Practice Code 393, Filter Strip. The practice code uses a combination of hydrologic soil groups and field slope percentages to calculate an appropriate filter strip length.

Table 5: Buffer Distances for Each LMU

LMU Name	Vegetative Buffer Setback (feet)	Additional Buffer Setback NRCS Code 393 Filter Strip Flow Length (feet)
LMU #1	Not Applicable	
LMU #1A	100	42

LMU Name	Vegetative Buffer Setback (feet)	Additional Buffer Setback NRCS Code 393 Filter Strip Flow Length (feet)
LMU #2	100	42
LMU #3	100	33
LMU #4	100	33
LMU #4A	100	33
LMU #5	Not Applicable	
LMU #5A	100	33
LMU #6	100	33
LMU #7	100	42
LMU #7A	100	42
LMU #8	Not Applicable	
LMU #8A	100	42
LMU #9	Not Applicable	
LMU #9A	100	42
LMU #10	100	42
LMU #10A	100	42
LMU #11	Not applicable	
LMU #12	Not applicable	
LMU #12A	100	42
LMU #13	100	42
LMU #14	100	42

9. Land application is prohibited between the hours of 12 a.m. and 4 a.m. This provision reduces the potential of irrigation related discharges associated with equipment malfunctions.

10. Discharge of wastewater from irrigation is prohibited, except a discharge resulting from irrigation events associated with imminent overflow conditions. Precipitation-related runoff from LMUs is allowed by the permit, when land application practices are consistent with a NMP or NUP.

11. Terms of the NMP and Changes to the Terms of the NMP

    The permit addresses the terms of the NMP and changes to the terms of the NMP to clarify substantial and non-substantial changes.

    (a) Attachment E of the draft permit describes the methodology for calculating maximum application rates and annual recalculation of application rates and Attachment F of the draft permit shows the list of the proposed alternative crops, their yield goals, and the N and P requirements and removal rates for each crop and yield goal.

    (b) To the extent that the alternative crops were identified in the application, annual recalculations do not constitute a substantial change to the terms of the NMP, and therefore will not require a permit amendment. The maximum amounts of N and P from all sources of nutrients and the amounts of manure and process wastewater to be applied on alternative crops will be determined in accordance with the methodology described in Attachment E of the draft permit when such crops are being used.

(c) Nutrient recommendations and maximum amount of nutrients derived from all sources have been established for both nitrogen (N) and phosphorus (P) based on the NMP that was submitted with the application. The permittee is required to recalculate these values annually based on the most recent analyses of wastewater, manure, and soil.

(d) Section VII.A.8(a)(2) of the permit lists changes to the terms of the NMP that will require a major amendment to the permit. Changes that would result in a major amendment are:

- Increase in animal headcount;
- Increase in LMU acreage or a change in LMU location; or
- Change in crop and yield goal (not listed in Attachment F of the proposed permit).

(e) Any changes (substantial or non-substantial) to the NMP, other than the annual recalculation of application rates outlined in Attachment E, must be submitted to the ED for review. If the ED determines that the changes to the NMP are non-substantial, the revised NMP will be made publicly available and included in the permit record. If the ED determines that the changes to the NMP are substantial, the information provided by the permittee will be subject to the major amendment process.

12. Third-Party Fields.
The proposed permit authorizes the use of third-party fields, i.e. land not owned, operated, controlled, rented, or leased by the CAFO owner or operator that have been identified in the Pollution Prevention Plan (PPP). The permittee must have a contract with the operator of the third-party fields. The written contract must require all transferred manure, wastewater, and sludge to be beneficially applied to third-party fields in accordance with the applicable requirements in 30 Texas Administrative Code §321.36 and §321.40 at an agronomic rate based on soil test phosphorus in Zone 1 depth (0-6 inches if incorporated, 0-2 or 2-6 inch if not incorporated). A certified nutrient management specialist must annually collect soil samples from each third-party field used and have the samples analyzed in accordance with the requirements for permitted LMUs. The permittee is prohibited from delivering manure, wastewater, and sludge to an operator of a third-party field once the soil test phosphorus analysis shows a level equal to or greater than 200 ppm in Zone 1 depth (0-6 inches if incorporated, 0-2 or 2-6 inch if not incorporated) or after becoming aware that the third-party operator is not following the specified requirements and the contract. The permittee will be subject to enforcement action for violations of the land application requirements on any third-party field. The third-party fields must be identified in the PPP. The permittee must submit a quarterly report with the name, locations, and amounts of manure, wastewater, and sludge transferred to operators of third-party fields.

VII. Additional Water Quality Requirements

The approved recharge feature certification submitted in the permit application must be updated and maintained in the onsite PPP. The recharge feature certification identifies any natural or artificial features on the CAFO site, either on or beneath the ground surface, which could provide or create significant pathways for wastewater or manure to enter the underlying aquifer, and describes measures to prevent adverse impacts to groundwater. Groundwater has the potential to resurface as surface water. Therefore, preventing impacts to groundwater also provides protection to surface water.

Table 5 below shows potential soil limitations identified in the recharge feature evaluation and the proposed management practices to address those limitations.

Table 6: Soil Limitations

<table>
<tr><th>Soil Series
and Map ID</th><th>Potential Limitations</th><th>BMPs</th></tr>
<tr><td>Maloterre: Ma</td><td>Depth to Bedrock; Droughty</td><td rowspan="3">Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP).

Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that Land Management Unit.

No land application to inundated soils.</td></tr>
<tr><td>Purves-Dugout: Pd</td><td>Droughty; Depth to Bedrock; Slow water movement; Large surface stones</td></tr>
<tr><td>Purves: PcC</td><td>Droughty; Depth to Bedrock; Slow Water Movement</td></tr>
<tr><td>Nimrod: NdC</td><td>Filtering capacity; Seepage</td><td rowspan="7">Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP).

No land application to inundated soils.</td></tr>
<tr><td>Windthorst: WnC</td><td>Filtering capacity</td></tr>
<tr><td>Frio: FriA; Bunyan: Bu</td><td>Flooding</td></tr>
<tr><td>Hassee: WaB & WkA Clairette-Hassee: CtB; Slidell: HoB; Selden: SdC</td><td>Slow water movement; Depth to Saturated Zone</td></tr>
<tr><td>Bolar Denton: BdC</td><td>Slow Water Movement Depth to Hard Bedrock</td></tr>
<tr><td>Fairy-Hico: FhC2 & HfD2</td><td>Slow Water Movement Seepage</td></tr>
<tr><td>Hico-Windthorst: HwD3</td><td>Depth to Soft Bedrock</td></tr>
</table>

Table 6 below lists all wells on the facility, their status, and what BMP will be implemented to protect groundwater. A Well Buffer Exception request for Wells TD1, TD2, TD3, TD4, TD11, TH1, TH3, TH4, TS1, TS2, TS9 and TS10 was submitted to and approved by the TCEQ Water Quality Assessment Team.

Table 7: Water Well Protection

Well Number	Status	BMPs
TD1	Producing	Situated away from the drainage area of the confinement pens and a concrete surface slab
TD2	Producing	Situated away from the drainage area of the confinement pens, a concrete surface slab, and steel sleeve
TD3	Producing	Situated away from the drainage area of the confinement pens and a concrete surface slab

Well Number	Status	BMPs
TD4	Producing	Situated away from the drainage area of the confinement pens and a concrete surface slab
TD5	Producing	Maintain 150-foot buffer
TD6	Non-producing	Plugged
TD7	Producing	Maintain 150-foot buffer
TD8	Producing	Maintain 150-foot buffer
TD10	Producing	Maintain 150-foot buffer
TD11	Producing	Situated away from the drainage area of the confinement pens, a concrete surface slab, and surface sleeve cemented to ground level
TD12	Producing	Maintain 150-foot buffer
TD13	Producing	Maintain 150-foot buffer
TH1	Producing	No contact of waste with wellhead, concrete slab sealed to steel sleeve
TH2	Producing	Maintain 150-foot buffer
TH3	Producing	No contact of waste from the pen area with the wellhead, and concrete surface slab sealed to steel sleeve Maintain a 150-foot buffer between well and LMUs
TH4	Non-producing	No contact of waste from the pen area with the wellhead, and concrete surface slab sealed to steel sleeve, and capped. Maintain a 150-foot buffer between well and LMUs
TH5	Producing	Maintain 150-foot buffer
TH6	Non-producing	Plugged
TH7	Producing	Maintain 150-foot buffer
TH8	Non-producing	No evidence of well: due diligence on well status maintained in the PPP
TH9	Producing	Maintain 150-foot buffer
TH10	Non-producing	Plugged
TS1	Producing	Concrete surface slab around the wellhead and located up-gradient from the pollution source
TS2	Producing	Concrete surface slab around the wellhead and located up-gradient from the pollution source
TS3	Non-producing	Plugged
TS4	Producing	Maintain 150-foot buffer
TS5	Producing	Maintain 150-foot buffer
TS6	Producing	Maintain 150-foot buffer
TS7	Non-producing	Plugged
TS8	Non-producing	Plugged
TS9	Producing	Concrete surface slab around the wellhead, well is isolated from runoff by concrete retaining wall
TS10	Producing	Concrete surface slab around the wellhead, well is isolated from runoff by concrete retaining wall and an existing facility road diverts storm water from the wellhead

VIII. Monitoring and Reporting Requirements

A. The permittee is required to report all discharges to TCEQ. Discharges resulting from a chronic or catastrophic rainfall event or catastrophic conditions must be reported orally within one hour of the discovery of the discharge and in writing within fourteen (14) working days. For any discharges, grab samples must be collected and analyzed for Biochemical Oxygen Demand, *Escherichia coli*, Total Dissolved Solids, Total Suspended Solids, Nitrate, Total Phosphorus, Ammonia Nitrogen and pesticides (if suspected).

B. The permittee must provide a report to the TCEQ to substantiate a chronic rainfall discharge. After review of the report, if required by the Executive Director, the permittee must have an engineering evaluation by a licensed Texas Professional Engineer developed and submitted to the Executive Director. The report and engineering evaluation may be used to verify that the facility was maintained and operated according to the permit conditions. Information reviewed may include rainfall records at the CAFO, RCS wastewater levels preceding the discharge, irrigation records, and the current sludge volume. This requirement allows for closer scrutiny by TCEQ for discharges resulting from chronic conditions and provides documentation for enforcement of unauthorized discharges.

C. Soil samples must be taken annually from LMUs and analyzed for Nitrate, Phosphorus, Potassium, Sodium, Magnesium, Calcium, Soluble salts/electrical conductivity, and pH. The results are used in the NMP to determine land application rates. Annual soil samples must be collected by one of the following persons:

- the NRCS; a certified nutrient management specialist;
- the Texas State Soil and Water Conservation Board;
- the Texas AgriLife Extension; or
- an agronomist or soil scientist on full-time staff at an accredited university located in the State of Texas.

The TCEQ or its designee shall have soil samples collected annually for each current and historical LMUs and the TCEQ Regional Office must be notified ten (10) days prior to annual soil sample collection activities on third-party fields. The permittee is required to submit soil analyses for third-party fields to TCEQ.

D. The permittee is required to annually collect and analyze at least one (1) representative sample of wastewater, sludge (if applicable), or manure for total nitrogen, total phosphorus, and total potassium. The results are used in the NMP to determine land application rates.

E. Some of the land application records maintained by the permittee must be submitted to the TCEQ annually. These records include: date of compost, manure, sludge, slurry and wastewater application to each LMU; location of the specific LMU and the volume applied during each application event; acreage of each individual crop on which compost, manure, sludge, slurry and wastewater is applied; basis for and the total amount of nitrogen and phosphorus applied per acre to each LMU, including sources of nutrients and amount of nutrients on a dry weight basis other than compost, manure, sludge, slurry and wastewater and; weather conditions, such as temperature, precipitation, and cloud cover, during the land application and twenty-four (24) hours before and after the land application.

F. Other recordkeeping requirements include: daily records of RCS wastewater levels and measurable rainfall; weekly records of manure, wastewater, and sludge removed from the facility, inspections of control facilities and land application equipment; and monthly records of compost, manure, sludge, slurry and wastewater land applied.

IX. 303(D) Listing and Total Maximum Daily Load (TMDL)

The facility for this permit action is located within the watershed of the North Bosque River in Segment No. 1226 of the Brazos River Basin. The designated uses and dissolved oxygen criterion as stated in Appendix A of the Texas Surface Water Quality Standards (30 TAC §307.10) for Segment No. 1226 are primary contact recreation, public water supply, high aquatic life use, and 5.0 mg/L dissolved oxygen.

The facility is located in the watershed of Little Duffau Creek in Segment No. 1226K. The Segment is currently listed on the State's inventory of impaired and threatened waters (the 2022 Clean Water Act Section 303(d) list) for bacteria. The North Bosque River (Segments 1226 and 1255) was included in the 1998 Texas Clean Water Act 303(d) List and deemed impaired under narrative water quality standards related to nutrients and aquatic plant growth.

Segment No. 1226 is included in the Agency's document *Two Total Maximum Daily Loads for Phosphorus in the North Bosque River*, adopted by the Commission on February 9, 2001 and approved by EPA on December 13, 2001. *An Implementation Plan for Soluble Reactive Phosphorus in the North Bosque River Watershed* (I-Plan) was approved by the Commission on December 13, 2002 and approved by the Texas State Soil and Water Conservation Board on January 16, 2003.

According to the TMDL I-Plan, management measures for control of phosphorus loading will also have some corollary effect on reducing bacteria loading, since the nonpoint source nutrient and bacteria loads largely originate from the same sites and materials and are transported via the same processes and pathways.

The TMDL for the North Bosque River, Segments 1226 and 1255, identified the amount of phosphorus introduced into these segments, i.e. the load. Phosphorus load from two categories of sources was modeled to calculate the expected reductions in phosphorus load to meet instream water quality standards. Point sources included wastewater treatment plants; non-point sources included all other sources, such as CAFOs. The TMDL called for an average 50% reduction in the average concentration of soluble reactive phosphorus loadings from both point sources and non-point sources. The TMDL was developed assuming implementation of specific best management practices. This set of best management practices represents one way to achieve the water quality targets in stream and the overall reduction goal of the TMDL.

The TMDL was approved with the understanding that an adaptive management approach was an appropriate means to manage phosphorus load to the stream. The I-Plan emphasized this approach to achieve the phosphorus reductions targeted in the TMDL. Adaptive management envisions adjustment of management practices over time as necessary to reach this target. The TMDL anticipated that, to control loading to the stream, dairy CAFO permittees would implement those best management practices which best addressed site-specific conditions. Accordingly, the TMDL is not directly tied to the number of animal units permitted in the watershed; it is instead tied to the amount of nutrients that may be land applied consistent with management practices that ensure appropriate agricultural utilization of nutrients.

Primary management strategies for dairies, both voluntary and regulatory, were identified in the I-Plan which included: phosphorus-based application rates in LMUs, voluntarily measures to reduce the amount of phosphorus in dairy cow diets, voluntarily removing 50% of dairy-generated manure from the watershed, more stringent RCS design requirements to reduce the potential for overflows from RCSs, evaluation of chronic rainfall and incidences of RCS overflows, additional tailwater requirements, additional protective measures to prevent runoff caused by excessive irrigation, CNMPs, and educational requirements for dairy operators and employees.

The proposed permit includes the following requirements to address the recommendations in the I-Plan:

- RCS(s) designed and constructed for 25 year, 10 day rainfall event
- RCS management plan
- pond marker with one foot increments
- daily recordkeeping of wastewater levels
- chronic rainfall discharge notification, including records that substantiate that the overflow was a result of cumulative rainfall that exceeded the design rainfall event without the opportunity for dewatering
- NMP and NUP based on phosphorus risk index
- CNMP
- specific outlets for excess manure, sludge and wastewater
- additional record-keeping for exported manure, sludge and wastewater to track each permittee's contribution toward the 50% voluntary removal goal in the Bosque River Total Maximum Daily Load (TMDL)
- prohibition of discharges from LMUs, except as related to imminent overflow
- minimize ponding and puddling of wastewater and prevent tailwater discharges
- additional conservation practices between land application areas and water in the state
- prohibition of land application between 12 a.m. and 4 a.m.
- automatic shutdown or alarm system may be required if unauthorized discharge occurs from irrigation system
- employee and operator required training related to land application of manure, sludge, and wastewater, proper operation and maintenance of the facility, good housekeeping, material management practices, recordkeeping requirements, and spill response and clean up

The voluntary phosphorus diet reductions may be implemented through consultations between a nutritionist and the permittee. Any such dietary phosphorus reductions will result in reduced phosphorus concentrations in manure. These strategies are facets of CNMPs.

The RCS storage capacity requirements, nutrient management practices, increased TCEQ oversight of operational activities, and requirements of the I-Plan, which are incorporated into the draft permit, are designed to reduce the potential for this CAFO to contribute to further impairment from bacteria, oxygen-demanding constituents and nutrients such as total phosphorus. Furthermore, it is anticipated the implementation of the primary management strategies and permit provisions identified above will result in phosphorus load reduction in the watershed and achieve the reductions targeted in the TMDL. The draft permit provisions are consistent with the approved TMDL and I-Plan that establish measures for reductions in loading of phosphorus (and consequently other potential pollutants) to the North Bosque River Watershed. Therefore, the draft permit is consistent with the requirements of the antidegradation implementation procedures in 30 Texas Administrative Code Section 307.5 (c)(2)(G) of the Texas Surface Water Quality Standards.

VIII. Threatened or Endangered Species

The discharge from this permit action is not expected to have an effect on any federal endangered or threatened aquatic or aquatic dependent species or proposed species or their critical habitat. This determination is based on the United States Fish and Wildlife Service's (USFWS) Biological Opinion on the State of Texas authorization of the Texas Pollutant Discharge Elimination System (TPDES) dated September 14, 1998 and the October 21, 1998 update. To make this determination for TPDES permits, TCEQ and Environmental Protection Agency only considered aquatic or aquatic dependent species occurring in watersheds of critical concern or high priority as listed in Appendix A of the USFWS Biological Opinion. This determination is subject to reevaluation due to subsequent updates or amendments to the Biological Opinion. The permit does not require Environmental Protection Agency review with respect to the presence of endangered or threatened species.

IX. Procedures for Final Decision

When an application is declared administratively complete, the Chief Clerk sends a letter to the applicant instructing the applicant to publish the Notice of Receipt of Application and Intent to Obtain Permit in the newspaper. In addition, the Chief Clerk instructs the applicant to place a copy of the application in a public place for review and copying in the county where the facility is or will be located. This application will be in a public place throughout the comment period. The Chief Clerk also mails this notice to any interested persons and, if required, to landowners identified in the permit application. This notice informs the public about the application, and provides that an interested person may file comments on the application or request a contested case hearing or a public meeting.

Once a draft permit is completed, it is sent, along with the Fact Sheet and Executive Director's Preliminary Decision, to the Office of the Chief Clerk. At that time, Notice of Application and Preliminary Decision will be mailed to the individuals identified on the Office of the Chief Clerk mailing list and published in the newspaper. This notice sets a deadline for making public comments. The applicant must place a copy of the Executive Director's Preliminary Decision and draft permit in the public place with the application.

Any interested person may request a public meeting on the application. A public meeting is intended for the taking of public comment, and is not a contested case proceeding.

After the public comment deadline, the Executive Director prepares a response to all timely, relevant and material, or significant public comments significant on the application or the draft permit raised during the public comment period. The Office of the Chief Clerk then mails the Executive Director's Response to Comments and Final Decision to individuals who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that a person may request a contested case hearing or file a request for reconsideration of the Executive Director's decision within thirty (30) days after the notice is mailed.

The Executive Director will issue the permit unless a written hearing request or request for reconsideration is filed within thirty (30) days after the Executive Director's Response to Comments and Final Decision is mailed. If a hearing request or request for reconsideration is filed, the Executive Director will not issue the permit and will forward the application and request to the TCEQ's Commissioners for their consideration at a scheduled Commission meeting. If a contested case hearing is held, it will be a legal proceeding similar to a civil trial in state district court.

If the Executive Director calls a public meeting or the Commission grants a contested case hearing as described above, the Commission will give notice of the date, time, and place of the meeting or hearing. If a hearing request or request for reconsideration is made, the Commission will consider all public comments in making its decision and shall either adopt the Executive Director's response to public comments or prepare its own response.

For additional information about this application, contact Robert Chavez, P.E. at (512) 239-0442.

X. Administrative Record

The following items were considered in developing the proposed draft permit:

- TCEQ Permit No. WQ0003190000 issued January 4, 2024.
- The application received on August 27, 2024 and subsequent revisions.
- Interoffice Memorandum for groundwater review from the Water Quality Assessment Team, Water Quality Assessment Section, Water Quality Division October 11, 2024.
- Interoffice Memorandum for NMP review from the Water Quality Assessment Team, Water Quality Assessment Section, Water Quality Division, dated October 9, 2024.
- Interoffice Memorandum from the Standards Implementation Team, Water Quality Assessment Section, Water Quality Division, dated October 3, 2024.
- Bosque River TMDL Implementation Plan.
- Federal Clean Water Act - Section 402; Section 382.051 of the Texas Clean Air Act; Texas Water Code §26.027; 30 TAC §39, §305, §321 Subchapter B; Commission Policies; and EPA Guidelines.
- Texas 2022 Clean Water Act Section 303(d) List, Texas Commission on Environmental Quality, June 1, 2022; approved by EPA on July 7, 2022.

- NRCS Animal Waste Management Field Handbook and Field Office Technical Guidance for Texas.
- NRCS, ASABE and ASTM Standards.
- John Borrelli, Clifford B. Fedler & James M. Gregory, February 1, 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas.
- U.S. Department of Agriculture, Natural Resources Conservation Service, 25-Year, 10 – Day precipitation (inches), Arkansas, Louisiana, New Mexico, Oklahoma and Texas. USDA, Technical Paper No 49, Weather Bureau.

- American Society of Agricultural and Biological Engineers (ASABE) Standards:
  - ➢ ASABE D384.2 MAR05_R2010) Manure Production and Characteristics
  - ➢ ASABE EP403 4 FEB2011- Figure 2 (Loading Rate) and Table 1 (Sludge accumulation Rate)
- Midwest Plan Service (2004). Manure Characteristics MWPS – 18 Second Edition.

ENVIRO-AG ENGINEERING, INC.
EAE
AMARILLO · STEPHENVILLE · ARTESIA

Corporate Office:
3404 Airway Blvd.
Amarillo TX 79118

Central Texas:
9855 FM 847
Dublin TX 76446

New Mexico:
203 East Main Street
Artesia NM 88210

August 27, 2024

TCEQ
Registration, Review and Reporting Division
Permits Administration Review Section
Water Quality Applications Team, MC-148
12100 Park 35 Circle
Austin, TX 78753

Re: TMC Dairies Hico – Permit No. WQ#0003190000
Erath County, Texas.

Dear Administrative Review Section,

Enclosed please find the Major Amendment application for the above referenced facility. The $350 application fee was paid electronically and the voucher is attached. Should you have any questions please do not hesitate to contact me.

Respectfully Submitted,

Jourdan Mullin

Jourdan Mullin
Enviro-Ag Engineering, Inc.

Cc: TCEQ Region 4, Stephenville
TMC Dairies Hico
EAE file

30 TAC 321, SUBCHAPTER B APPLICATION, POLLUTION PREVENTION PLAN & CNMP

TMC Dairies Hico

Major Amendment

Prepared For:

3T Martins Farm Hico

PO Box 599

Hico, TX 76457

August 14, 2024

Prepared By:

ENVIRO-AG ENGINEERING, INC.

EAE

AMARILLO · STEPHENVILLE · ARTESIA

9855 FM 847 ♦ Dublin, TX 76446 ♦ Tel 254/965-3500 ♦ Fax 254/965-8000

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

ELECTRONIC WAIVER REQUEST FOR A CONCENTRATED ANIMAL FEEDING OPERATION (CAFO)

A Large CAFO, as defined in the CAFO rules at 30 TAC 321.32(14)(A), must request a waiver from e-reporting requirements codified in 40 Code of Federal Regulations §127.15 OR be required to submit CAFO annual reports electronically.

Are you requesting a waiver from e-reporting requirements?

☒ Yes, Indicate the type of waiver below.

☒ Temporary Waiver

☐ Permanent Waiver (available to facilities and entities owned or operated by members of religious communities that choose not to use certain modern technologies (e.g., computers, electricity))

☐ No, you must submit your application electronically through TCEQ ePermits system (STEERS) at https://www3.tceq.texas.gov/steers/index.cfm. Check How to Apply through STEERS.

If an electronic waiver request is granted, the Applicant(s) seeking authorization, or an authorized permittee(s) may continue to submit CAFO annual reports to TCEQ in a paper format.

Note:

- An approved waiver is not transferrable.
- Each Owner or Operator must request his own waiver.
- Temporary waiver will not extend beyond five years. However, permittees may re-apply for a new temporary waiver, if needed.

State Only CAFOs are exempt from this requirement.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

INDIVIDUAL PERMIT APPLICATION FOR A CONCENTRATED ANIMAL FEEDING OPERATION (CAFO)

If you have questions about completing this form, please contact the Applications Review and Processing Team at 512-239-4671.

SECTION 1. APPLICATION FEE

Minor Amendment - $150.00
Renewal - $315.00
New or Major Amendment - $350.00

Mailed	Check/Money Order Number:	
	Check/Money Order Amount:	
	Name Printed on Check:	
EPAY	Voucher Number: 718995 & 718996	
	Copy of Payment Voucher enclosed?	Yes ☒

SECTION 2. TYPE OF APPLICATION

A. Coverage: State Only ☐ TPDES ☒

B. Media Type: Water Quality ☐ Air and Water Quality ☒

C. Application Type: New ☐ Major Amendment ☒

Renewal ☐ Minor Amendment ☐

D. For amendments, describe the proposed changes: 3T Martins Farm Hico, LLC is submitting a major amendment application in two phases in order to maintain compliance throughout the transition. Phase 1 will see the headcount rise to 10,000 total with 8,000 milking, addition of the Jersey breed of dairy cattle along with the Holstein breed, addition of an anerobic digester and associated equipment, change in property boundary, reconfigure LMUs (see attached LMU cross-reference table), remove LMU #TH8 & #TD7, remove wells # TD9, #TF1 & TF2, well #TS5 is to be plugged and reconfigure drainage area on Figure 1.4A (addition of manure compost area, addition of cross-vent barn, addition of a parlor, plug well #TS5, expansion of RCS #TS1). Phase 2 will see the headcount rise to 13,500 total with 10,000 milking, reconfigure drainage area on Figure 1.4D (addition of cross-vent barn, remove pens, freestall barns, settling basins and plug well #TD11) and reconfigure parlor

Questions or Comments >>

Shopping Cart | Select Fee | Search Transactions | Sign Out

Print this voucher for your records. If you are sending the TCEQ hardcopy documents related to this payment, include a copy of this voucher.

Transaction Information

Voucher Number:	718995
Trace Number:	582EA000623216
Date:	08/27/2024 11:11 AM
Payment Method:	CC - Authorization 000004414G
Voucher Amount:	$300.00
Fee Type:	CAFO PERMIT - NEW OR MAJOR AMENDMENT
ePay Actor:	JOURDAN MULLIN
Actor Email:	jmullin@enviroag.com
IP:	156.146.244.233

Payment Contact Information

Name:	JOURDAN MULLIN
Company:	ENVIRO-AG ENGINEERING INC
Address:	3404 AIRWAY BLVD, AMARILLO, TX 79118
Phone:	806-679-5570

Site Information

Site Name:	TMC DAIRIES HICO
Site Location:	3618 COUNTY ROAD 540

Customer Information

Customer Name:	3T MARTINS FARM HICO
Customer Address:	PO BOX 599, HICO, TX 76457

Other Information

Program Area ID:	0003190000

Close

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Print this voucher for your records. If you are sending the TCEQ hardcopy documents related to this payment, include a copy of this voucher.

Transaction Information

Voucher Number:	718996
Trace Number:	582EA000623216
Date:	08/27/2024 11:11 AM
Payment Method:	CC - Authorization 000004414G
Voucher Amount:	$50.00
Fee Type:	30 TAC 305.53B WQ NOTIFICATION FEE
ePay Actor:	JOURDAN MULLIN
Actor Email:	jmullin@enviroag.com
IP:	156.146.244.233

Payment Contact Information

Name:	JOURDAN MULLIN
Company:	ENVIRO-AG ENGINEERING INC
Address:	3404 AIRWAY BLVD, AMARILLO, TX 79118
Phone:	806-679-5570

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Dancing Crane Dairy LMU Cross-reference List (2024 Major)

Existing LMU Name	New LMU Name
TD1-144 Acres	LMU 1- 144 Ac.
TD2-56 Acres	Split into – LMU 7 (Pivot)-16 Ac. LMU 7A (Outside Pivot)- 33 Ac.
TD3-40	LMU 13 – 44 Ac.
TD4-86	Split into – LMU 12 (Pivot)-24 Ac. LMU 12A (Outside Pivot)-63 Ac.
TD6-131	LMU 1A (outside pivot)-93 Ac. LMU 2 (pivot)-39 Ac.
TD7-14	No longer a LMU.
TH1-39	LMU 5-39 Ac.
TH2-45	LMU 5A-35 Ac.
TH3-45	LMU 6-51 Ac.
TH4E-22 TH4W-14	Combined into: LMU 3 – 39 Ac.
TH5-80 TH6-81	Combined - LMU 4 (Pivot)-97 Ac. LMU 4A (Outside Pivot)-76 Ac.
TH7-13	LMU 14 – 12 Ac.
TH8-58	No longer a LMU.
TS1-28	LMU 10 – 29 Ac.
TS2-92	Split into LMU 11 (Pivot)-42 Ac. LMU 10A (Outside Pivots)-46 Ac.
TS4-62	Split into LMU 9 (Pivot)-34 Ac. LMU 9A (Outside Pivot)-28 Ac.
TS5-44	Split into LMU 8 (Pivot)-26 Ac. LMU 8A (Outside Pivot)-18 Ac.

E. For existing permits:

What is the permit number? WQ0003190000

What is the EPA I.D. Number? TX 0123030

SECTION 3. FACILITY OWNER (APPLICANT) INFORMATION

A. What is the legal name of the facility owner?

3T Martins Farm Hico, LLC

B. If the applicant is an existing TCEQ customer, provide the Customer Number (CN) issued to this entity? CN Click here to enter text.

C. What is the contact information for the owner?

Mailing Address: PO Box 599

City, State and Zip Code: Hico, TX 76457

Phone Number: 208/320-2134 Fax Number: n/a

E-mail Address: tonymartinscattle@hotmail.com

D. Indicate the type of customer:

- ☐ Individual
- ☐ Limited Partnership
- ☐ General Partnership
- ☐ Trust
- ☐ Sole Proprietorship (D.B.A.)
- ☒ Corporation
- ☐ Estate
- ☐ Federal Government
- ☐ County Government
- ☐ State Government
- ☐ City Government
- ☐ Other Government
- ☐ Other, specify: Click here to enter text.

E. If the customer type is individual, complete Attachment 1.

F. Is this customer an independent entity?

☒ Yes ☐ No government, subsidiary, or part of a larger corporation

G. Number of employees:

☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 or higher

H. For Corporations and Limited Partnerships:

What is the Tax Identification Number issued by the State Comptroller: 32095399070

What is the Charter Filing Number issued by the Texas Secretary of State: 0805579160

SECTION 4. CO-APPLICANT INFORMATION

Complete this section only if another person or entity is required to apply as a co-permittee.

A. What is the legal name of the co-applicant?

TMC Dairies, LLC

B. If the applicant is an existing TCEQ customer, provide the Customer Number (CN) issued to this entity? CN 605985894

C. What is the contact information for the co-applicant?

Mailing Address: PO Box 599

City, State and Zip Code: Hico, TX 76457

Phone Number: Fax Number: 208/320-2134

E-mail Address: tonymartinscattle@hotmail.com

D. Indicate the type of customer:

- ☐ Individual
- ☐ Limited Partnership
- ☐ General Partnership
- ☐ Trust
- ☐ Sole Proprietorship (D.B.A.)
- ☒ Corporation
- ☐ Estate
- ☐ Federal Government
- ☐ County Government
- ☐ State Government
- ☐ City Government
- ☐ Other Government
- ☐ Other, specify: Click here to enter text.

E. If the customer type is individual, complete Attachment 1.

F. Is this customer an independent entity?

☒ Yes ☐ No government, subsidiary, or part of a larger corporation

G. Number of employees:

☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 or higher

H. For Corporations and Limited Partnerships:

What is the Tax Identification Number issued by the State Comptroller: 32079649995

What is the Charter Filing Number issued by the Texas Secretary of State: 0804106827

SECTION 5. APPLICATION CONTACT INFORMATION

This is the person TCEQ will contact if additional information is needed about this application.

Prefix (Mr., Ms., Miss): Mr.

Application Contact First and Last Name: Corey Mullin

Title: Consultant Credentials: Click here to enter text.

Company Name: Enviro-Ag Engineering, Inc.

Mailing Address: 9855 FM 847

City, State and Zip Code: Dublin, TX 76446

Phone Number: 254/965-3500 Fax Number: 254/965-8000

E-mail Address: cmullin@enviroag.com

SECTION 6. PERMIT CONTACT INFORMATION

Provide two names of individuals that TCEQ can contact during the term of the permit.

A. Prefix (Mr., Ms., Miss): Mr.

Permit Contact First and Last Name: Corey Mullin

Title: Consultant Credentials: Click here to enter text.

Company Name: Enviro-Ag Engineering, Inc.

Mailing Address: 9855 FM 847

City, State and Zip Code: Dublin, TX 76446

Phone Number: 254/965-3500 Fax Number: 254/965-8000 E-mail Address: cmullin@enviroag.com

B. Prefix (Mr., Ms., Miss): Mr.

Permit Contact First and Last Name: Tony Martins

Title: Managing Member Credentials: Click here to enter text.

Company Name: 3T Martins Farm Hico, LLC

Mailing Address: PO Box 599

City, State and Zip Code: Hico, TX 76457

Phone Number: 208/320-2134 Fax Number: n/a E-mail Address: tonymartinscattle@hotmail.com

SECTION 7. ANNUAL BILLING CONTACT INFORMATION

Please identify the individual for receiving the annual fee invoices.

Is the billing contact and contact information the same as the Owner or the Co-Applicant identified in Section 3) or Section 4) above?

☒ Yes, specify which applicant on the line below and go to Section 8)

Owner 3T Martins Farm Hico, LLC

☐ No, complete this section

Prefix (Mr., Ms., Miss): Click here to enter text.

First and Last Name: Click here to enter text.

Title: Click here to enter text. Credentials: Click here to enter text.

Company Name: Click here to enter text.

Mailing Address: Click here to enter text.

City, State and Zip Code: Click here to enter text.

Phone Number: Click here to enter text. Fax Number: Click here to enter text._E-mail Address: Click here to enter text.

SECTION 8. LANDOWNER INFORMATION

A. Landowner where the production area is or will be located

Landowner Name: 3T Martins Farm Hico, LLC

B. Landowner of the land management units (LMUs)

Landowner Name: 3T Martins Farm Hico, LLC

SECTION 9. PUBLIC NOTICE INFORMATION

A. Individual responsible for publishing the notices in the newspaper

Prefix (Mr., Ms., Miss): Mrs._First and Last Name: Jourdan Mullin

Title: Consultant Credentials: Click here to enter text.

Company Name: Enviro-Ag Engineering, Inc.

Mailing Address: 9855 FM 847

City, State and Zip Code: Dublin, TX 76446

Phone Number: 254/965-3500 Fax Number: 254/965-8000 E-mail Address: jmullin@enviroag.com

B. Method for receiving the notice package for the Notice of Receipt and Intent

☒ E-mail: jmullin@enviroag.com

☐ Fax Number: Click here to enter text.

☒ Regular Mail:

Mailing Address: 9855 FM 847

City, State and Zip Code: Dublin, TX 76446

C. Contact person to be listed in the notice

Prefix (Mr., Ms., Miss): Mr.

First and Last Name: Tony Martins

Title: Managing Member Credentials: Click here to enter text.

Company Name: 3T Martins Farm Hico, LLC

Phone Number: 208/320-2134

D. Public viewing location

If the facility is located in more than one county, a public viewing location for each county must be provided.

Public Building Name: Erath County Extension Office - Erath County Courthouse

Physical Address of Building: 100 Washington St. Room 206

City: Stephenville County: Erath

Phone Number: 254/965-1460

E. **Bilingual Notice Requirement**

For new, major amendment, and renewal applications. This information can be obtained by contacting the bilingual/ESL coordinator at the nearest elementary or middle school.

1. Is a bilingual education program required by the Texas Education Code at the nearest elementary or middle school to the facility or proposed facility?

Yes ☒ No ☐

(**If No**, alternative language notice publication is not required; skip to Section 10. Regulated Entity (Site) Information.)

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

Yes ☒ No ☐

3. Do the students at these schools attend a bilingual education program at another location?

Yes ☒ No ☐

4. Would the school be required to provide a bilingual education program but the school has waived out of this requirement under 19 TAC §89.1205(g)?

Yes ☒ No ☐

5. If the answer is yes to 1, 2, 3, or 4, public notice in an alternative language is required. Which language is required by the bilingual program? Spanish

6. Complete the CAFO Plain Language Summary Template (English) for CAFO Permit Applications for a new, renewal, major or minor amendment and submit with this application.

If a bilingual education program is required by the Texas Education Code at the nearest elementary or middle school to the facility or proposed facility, also complete the CAFO Plain Language Summary Template (Spanish) or provide a translated copy of the completed English plain language summary in the appropriate alternative language if different from Spanish.

F. **Public Involvement Plan Form**

Complete and attach one Public Involvement Plan (PIP) Form (TCEQ Form 20960) for each application for a new permit or major amendment to a permit.

SECTION 10. REGULATED ENTITY (SITE) INFORMATION

A. Site Name as known by the local community: TMC Dairies Hico

B. If this is an existing permitted site, provide the Regulated Entity Number (RN) issued to this site? RN 101523090

C. Site Address/Location:

ENGLISH LANGUAGE TEMPLATE FOR CAFO PERMIT APPLICATIONS

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by the TCEQ Public Participation Plan and Language Access Plan. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

1) Applicant's Name: 3T Martins Farm Hico, LLC and TMC Dairies, LLC
2) Enter Customer Number: CN not yet issued; CN605985894
3) Name of facility: TMC Dairies Hico
4) Enter Regulated Entity Number: RN101523090
5) Provide your permit Number: WQ0003190000
6) Facility Business: The facility confines 9,150 head of cattle in which 5,500 are milking. The facility has nineteen (19) land management units (LMUs) with the following acreages: LMU #TD1 - 144, LMU #TD2 - 56, LMU #TD3 - 40, LMU #TD4 - 86, LMU #TD6 -131, LMU #TD7 - 14, LMU #TH1 - 39, LMU #TH2 - 45, LMU #TH3 - 45, LMU #TH4E - 22, LMU #TH4W - 14, LMU #TH5 - 80, LMU #TH6 - 81, LMU#TH7 - 13, LMU #TH8 - 58, LMU #TS1 - 28, LMU #TS2 - 92, LMU #TS4 - 62 and LMU #TS5 - 44 acres. Six (6) retention control structures (RCSs), four concrete settling basins, one earthen slurry pit, one slurry pit with concrete bottom and earthen side and four settling basins. The required capacities are: RCS #TS1 - 24.78 ac-ft, RCS #TS2 - 22.07 ac-ft, RCS #TH2 - 40.27 ac-ft, RCS #TD1 - 58.10 ac-ft, RCS #TH1 - 0.00 ac-ft and RCS #TD Treatment Pond - 10.96 ac-ft. There are thirty-five (35) onsite wells of which seven (7) are plugged. The facility is located in the North Bosque River in Segment No. 1226 of the Brazos River Basin.
7) Facility Location: The facility is located on the East side of CR 209 at the intersection of CR 540 and CR 209, approximately 4 miles South of the intersection of CR 209 and US Hwy 67 approximately 7 miles Southeast of Stephenville in Erath County, Texas.
8) Application Type: Individual Permit Major Amendment
9) Description of your request: 3T Martins Farm Hico, LLC is submitting a major amendment application in two phases in order to maintain compliance throughout the transition. Phase 1 will see the headcount rise to 10,000 total with 8,000 milking, addition of the Jersey breed of dairy cattle along with the Holstein breed, addition of an anerobic digester and associated equipment, change in property boundary, reconfigure LMUs (see attached LMU cross-reference table), remove LMU #TH8 & #TD7, remove wells # TD9, #TF1 & TF2, well #TS5 is to be plugged and reconfigure drainage area on Figure 1.4A (addition of manure compost area, addition of cross-vent barn, plug well #TS5, expansion of RCS #TS1). Phase 2 will see the headcount rise to 13,500 total with 10,000 milking, reconfigure drainage area on Figure 1.4D (addition of cross-vent barn, addition of a parlor, remove pens, freestall barns, settling basins and plug well #TD11) and reconfigure parlor #2.Click or tap here to enter text.

10) Potential pollutant sources at the facility include (list the pollutant sources): Manure, manure stockpiles, wastewater, sludge, slurry, compost, feed & bedding, silage stockpiles, dead animals, dust, lubricants, parlor chemicals, pesticides and fuel storage tanks.

11) The following best management practices will be implemented at the site to manage pollutants from the listed pollutant sources (describe the best management practices that are used): stormwater is stored in the lagoon (RCS) until land applied through irrigation and manure and sludge are stockpiled in the drainage area of the RCS until land applied or hauled offsite for beneficial use. Manure and sludge generated by the CAFO will be retained and used in an appropriate and beneficial manner in accordance with a certified site-specific nutrient management plan. Wastewater will be contained in the RCS properly designed ((25-year frequency 10-day duration (25 year/10 day), constructed, operated and maintained according to the provision of the permit. Maintain 100-foot buffer for all irrigation wells or 150-foot for all supply wells. Dust - control speed and regular pen maintenance. Fertilizers - store under roof and handle according to specified label directions. Fuel Tanks - provide secondary containment and prevent overfills/spills. Dead animals - dispose by a third-party rendering service or compost on-site. Collected within 24 hours of death and disposed within three days.

12) Unless otherwise limited, manure, sludge, or wastewater will not be discharged from a land management unit (LMU) or a retention control structure (RCS) into or adjacent to water in the state from a CAFO except resulting from any of the following conditions:

1) a discharge of manure, sludge, or wastewater that the permittee cannot reasonably prevent or control resulting from a catastrophic condition other than a rainfall event;

2) overflow of manure, sludge, or wastewater from a RCS resulting from a chronic/catastrophic rainfall event; or

3) a chronic/catastrophic rainfall discharge from a LMU that occurs because the permittee takes measures to de-water the RCS if the RCS is in danger of imminent overflow.

SPANISH

El siguiente resumen se proporciona para esta solicitud pendiente de permiso de calidad del agua que está siendo revisada por la Comisión de Calidad Ambiental de Texas según lo exige el Plan de Participación Pública y el Plan de Acceso Lingüístico de la TCEQ. La información provista en este resumen puede cambiar durante la revisión técnica de la solicitud y no es una representación federal exigible de la solicitud del permiso.

1) Nombre del solicitante: 3T Martins Farm Hico, LLC y TMC Dairies, LLC

2) Ingrese el número de cliente: CN aún no emitido; CN605985894

3) Nombre de la instalación: TMC Dairies Hico

4) Ingresar Número de Entidad Regulada: RN101523090

5) Proporcione su número de permiso: WQ0003190000

6) Instalación Comercial: La instalación encierra 9,150 cabezas de ganado vacuno de las cuales 5,500 son lecheras. La instalación cuenta con diecinueve (19) unidades de administración de tierras (LMU) con las siguientes superficies: LMU #TD1 - 144, LMU #TD2 - 56, LMU #TD3 - 40, LMU #TD4 - 86, LMU #TD6 -131, LMU # TD7 - 14, LMU #TH1 - 39, LMU #TH2 - 45, LMU #TH3 - 45, LMU #TH4E - 22, LMU #TH4W - 14, LMU #TH5 - 80, LMU #TH6 - 81, LMU#TH7 - 13, LMU #TH8 - 58, LMU #TS1 - 28, LMU #TS2 - 92, LMU #TS4 - 62 y LMU #TS5 - 44 acres. Seis (6) estructuras de control de retención (RCS), cuatro estanques de decantación de concreto, un pozo de lodos de tierra, un pozo de lodos con fondo de concreto y costado de tierra y cuatro estanques de sedimentación. Las capacidades requeridas son: RCS #TS1 - 24.78 ac-ft, RCS #TS2 - 22.07 ac-ft, RCS #TH2 - 40.27 ac-ft, RCS #TD1 - 58.10 ac-ft, RCS #TH1 - 0.00 ac-ft y Estanque de tratamiento RCS #TD - 10.96 ac-ft. Hay treinta y cinco (35) pozos en el sitio, de los cuales siete (7) están taponados. La instalación está ubicada en el Río Bosque Norte en el Segmento No. 1226 de la Cuenca del Río Brazos.

7) Ubicación de la instalación: La instalación está ubicada en el lado este de CR 209 en la intersección de CR 540 y CR 209, aproximadamente a 4 millas al sur de la intersección de CR 209 y US Hwy 67, aproximadamente a 7 millas al sureste de Stephenville en el condado de Erath, Texas.

8) Tipo de Solicitud: Enmienda Importante al Permiso Individual

9) Descripción de su solicitud: 3T Martins Farm Hico, LLC presenta una solicitud de enmienda importante en dos fases para mantener el cumplimiento durante la transición. En la fase 1, la plantilla aumentará a 10,000 en total con 8,000 lecheras, se agregará la raza Jersey de ganado lechero junto con la raza Holstein, se agregará un digestor anaeróbico y el equipo asociado, se cambiarán los límites de la propiedad y se reconfigurarán las LMU (consulte la tabla de referencias cruzadas de LMU adjunta), remover LMU #TH8 y #TD7, remover los pozos # TD9, #TF1 y TF2, el pozo #TS5 se

tapará y reconfigurará el área de drenaje en la Figura 1.4A (adición de área de abono de estiércol, adición de granero con ventilación cruzada, tapar pozo #TS5, ampliación del RCS #TS1). En la Fase 2, el número de empleados aumentará a 13,500 en total con 10,000 lecheras, se reconfigurará el área de drenaje en la Figura 1.4D (agregación de un granero con ventilación cruzada, adición de una sala de estar, eliminación de corrales, graneros de establos libres, estanques de sedimentación y tapar del pozo #TD11) y se reconfigurará de la sala de estar #2.

10) Las posibles fuentes de contaminantes en la instalación incluyen (enumere las fuentes de contaminantes): Estiércol, reservas de estiércol, aguas residuales, lodos, estiércol líquido, compost, piensos y camas, reservas de ensilaje, animales muertos, polvo, lubricantes, pesticidas y tanques de almacenamiento de combustible.

11) Las siguientes mejores prácticas de manejo se implementarán en el sitio para manejar los contaminantes de las fuentes de contaminantes enumeradas (describa las mejores prácticas de manejo que se utilizan): las aguas pluviales se almacenan en la laguna (RCS) hasta que se aplican a la tierra mediante riego y estiércol y lodo se almacenan en el área de drenaje del RCS hasta que se aplican a la tierra o se transportan fuera del sitio para un uso beneficioso. El estiércol y los lodos generados por CAFO se conservarán y utilizarán de manera apropiada y beneficiosa de acuerdo con un plan certificado de manejo de nutrientes específico del sitio. Las aguas residuales estarán contenidas en el RCS debidamente diseñado (frecuencia de 25 años, duración de 10 días (25 años/10 días), construido, operado y mantenido de acuerdo con la disposición del permiso. Mantener una zona de amortiguamiento de 100 pies para todos los pozos de riego o 150 pies para todos los pozos de suministro. Polvo: velocidad de control y mantenimiento regular del corral. Fertilizantes: almacénelos bajo techo y manipúlelos de acuerdo con las instrucciones especificadas en la etiqueta. Tanques de combustible: proporcionan contención secundaria y evitan sobrellenados/derrames. Animales muertos: elimínelos a través de un servicio de procesamiento de terceros o entierre en el sitio. Recolectado dentro de las 24 horas posteriores a la muerte y eliminado dentro de los tres días.

12) A menos que se limite de otro modo, el estiércol, los lodos o las aguas residuales no se descargarán desde una unidad de administración de tierra (LMU) o una estructura de control de retención (RCS) hacia el agua en el estado o junto a ella desde una CAFO, excepto que resulte de cualquiera de las siguientes condiciones:

1) una descarga de estiércol, lodo o aguas residuales que el tenedor del permiso no puede prevenir o controlar razonablemente como resultado de una condición catastrófica que no sea un evento de lluvia;

2) desbordamiento de estiércol, lodo o aguas residuales de un RCS como resultado de un evento de lluvia crónica/catastrófica; o

3) una descarga de lluvia crónica/catastrófica de una LMU que ocurre porque el tenedor del permiso toma medidas para vaciar el RCS si el RCS está en peligro de desbordamiento inminente.

Texas Commission on Environmental Quality

Public Involvement Plan Form for Permit and Registration Applications

The Public Involvement Plan is intended to provide applicants and the agency with information about how public outreach will be accomplished for certain types of applications in certain geographical areas of the state. It is intended to apply to new activities; major changes at existing plants, facilities, and processes; and to activities which are likely to have significant interest from the public. This preliminary screening is designed to identify applications that will benefit from an initial assessment of the need for enhanced public outreach.

All applicable sections of this form should be completed and submitted with the permit or registration application. For instructions on how to complete this form, see TCEQ-20960-inst.

Section 1. Preliminary Screening

☐ New Permit or Registration Application

☒ New Activity – modification, registration, amendment, facility, etc. (see instructions)

If neither of the above boxes are checked, completion of the form is not required and does not need to be submitted.

Section 2. Secondary Screening

☒ Requires public notice,

☐ Considered to have significant public interest, **and**

☐ Located within any of the following geographical locations:

- Austin
- Dallas
- Fort Worth
- Houston
- San Antonio
- West Texas
- Texas Panhandle
- Along the Texas/Mexico Border
- Other geographical locations should be decided on a case-by-case basis

If all the above boxes are not checked, a Public Involvement Plan is not necessary. Stop after Section 2 and submit the form.

☐ Public Involvement Plan not applicable to this application. Provide **brief** explanation.

Section 3. Application Information

Type of Application (check all that apply):

Air ☐ Initial ☐ Federal ☐ Amendment ☐ Standard Permit ☐ Title V

Waste ☐ Municipal Solid Waste ☐ Industrial and Hazardous Waste ☐ Scrap Tire
☐ Radioactive Material Licensing ☐ Underground Injection Control

Water Quality

☒ Texas Pollutant Discharge Elimination System (TPDES)

- ☐ Texas Land Application Permit (TLAP)
- ☒ State Only Concentrated Animal Feeding Operation (CAFO)
- ☐ Water Treatment Plant Residuals Disposal Permit

☐ Class B Biosolids Land Application Permit

☐ Domestic Septage Land Application Registration

Water Rights New Permit

☐ New Appropriation of Water

☐ New or existing reservoir

Amendment to an Existing Water Right

☐ Add a New Appropriation of Water

☐ Add a New or Existing Reservoir

☐ Major Amendment that could affect other water rights or the environment

Section 4. Plain Language Summary

Provide a brief description of planned activities.

TMC Dairies Hico is a dairy milking facility

Section 5. Community and Demographic Information

Community information can be found using EPA's EJ Screen, U.S. Census Bureau information, or generally available demographic tools.

Information gathered in this section can assist with the determination of whether alternative language notice is necessary. Please provide the following information.

Stephenville

(City)

Erath

(County)

(Census Tract)

Please indicate which of these three is the level used for gathering the following information.

☐ City ☐ County ☒ Census Tract

(a) Percent of people over 25 years of age who at least graduated from high school

88.9%

(b) Per capita income for population near the specified location

$24,810

(c) Percent of minority population and percent of population by race within the specified location

White - 75.6%. Black or African American - 3.29%. Hispanic - 12.7%. Two or More Races - 2.11%. Other 2.68%. Asian - 1.3%. Indian - 1.6%. Multiracial - 0.72%

(d) Percent of Linguistically Isolated Households by language within the specified location

0%

(e) Languages commonly spoken in area by percentage

English - 89.4%
Spanish - 10.6%

(f) Community and/or Stakeholder Groups

N/A

(g) Historic public interest or involvement

N/A

Section 6. Planned Public Outreach Activities

(a) Is this application subject to the public participation requirements of Title 30 Texas Administrative Code (30 TAC) Chapter 39?

☒ Yes ☐ No

(b) If yes, do you intend at this time to provide public outreach other than what is required by rule?

☐ Yes ☒ No

If Yes, please describe.

If you answered "yes" that this application is subject to 30 TAC Chapter 39, answering the remaining questions in Section 6 is not required.

(c) Will you provide notice of this application in alternative languages?

☐ Yes ☐ No

Please refer to Section 5. If more than 5% of the population potentially affected by your application is Limited English Proficient, then you are required to provide notice in the alternative language.

If yes, how will you provide notice in alternative languages?

☐ Publish in alternative language newspaper

☐ Posted on Commissioner's Integrated Database Website

☐ Mailed by TCEQ's Office of the Chief Clerk

☐ Other (specify)

(d) Is there an opportunity for some type of public meeting, including after notice?

☐ Yes ☐ No

(e) If a public meeting is held, will a translator be provided if requested?

☐ Yes ☐ No

(f) Hard copies of the application will be available at the following (check all that apply):

☐ TCEQ Regional Office ☐ TCEQ Central Office

☐ Public Place (specify)

Section 7. Voluntary Submittal

For applicants voluntarily providing this Public Involvement Plan, who are not subject to formal public participation requirements.

Will you provide notice of this application, including notice in alternative languages?

☒ Yes ☐ No

What types of notice will be provided?

☒ Publish in alternative language newspaper

☐ Posted on Commissioner's Integrated Database Website

☐ Mailed by TCEQ's Office of the Chief Clerk

☐ Other (specify)

If the site has a physical address such as 12100 Park 35 Circle, Austin, TX 78753, complete Item 1.

If the site does not have a physical address, provide a location description in Item 2. Example: located on the north side of FM 123, 2 miles west of the intersection of FM 123 and Highway 1.

Item 1: Physical Address of Project or Site:

Street Number and Name: 3618 County Road 540

City, State and Zip Code: Hico, TX 76457

Item 2: Site Location Description:

Location description: Click here to enter text.

City where the site is located or, if not in a city, what is the nearest city: Click here to enter text.

Zip Code where the site is located: 76457

D. County or counties if more than 1: Erath

E. Latitude: 32.119444 Longitude: 98.049444

F. Animal Type:

☒ Dairy-0241
☐ Beef Cattle- 0211
☐ Swine-0213
☐ Broiler-0251
☐ Laying Hens-0252
☐ Sheep/Goats-0214
☐ Auction-5154
☐ Other, specify: Click here to enter text.

G. Existing Maximum Number of Animals: 5,500 (Milking) 9,150 (Total)

Proposed Maximum Number of Animals: Phase 1 – 8,000 (Milking) 10,000 (Total). Phase 2 – 10,000 (Milking) 13,500 (Total)

H. What is the total LMU acreage? 1,028

SECTION 11. MISCELLANEOUS INFORMATION

A. Did any person who was formerly employed by the TCEQ represent your company and get paid for service regarding this application? Yes ☐ No ☒
If yes, provide the name(s) of the former TCEQ employee(s): Click here to enter text.

B. Is the facility located on Indian Country Lands? Yes ☐ No ☒
If yes, do not submit this application. You must obtain authorization through EPA Region 6.

C. Is the production area located within the protection zone of a sole source drinking water supply? Yes ☐ No ☒

D. Is any permanent school fund land affected by this application? Yes ☐ No ☒

If yes, provide the location and foreseeable impacts and effects this application has on the land(s). Click here to enter text.

E. Delinquent Fees and Penalties:

Do you owe fees to the TCEQ? Yes ☐ No ☒

Do you owe any penalties to the TCEQ? Yes ☐ No ☒

If you answered yes to either of the above questions, provide the amount owed, the type of fee or penalty, and an identifying number.
Click here to enter text.

SECTION 12. AFFECTED LANDOWNER INFORMATION

This section must be completed if the application type is new or major amendment. If the application type is renewal or minor amendment, skip to Section 13.

A. Landowner map. Attach a landowner map or drawing, with scale, that includes the following. Each landowner should be designated by a letter or number on both the list and the map.
- The applicant's property boundaries, including onsite and offsite LMUs; and
- The property boundaries of all landowners within 500 feet of the applicant's property.

B. Landowner list. Attach a separate list of the landowners' names and mailing addresses. The list must be cross-referenced to the landowners map.

C. Landowner list media. Indicate the format of the landowners list.

☒ Read/Writeable CD

☐ 4 sets of mailing labels

D. Landowner data source. Provide the source of the landowners' names and mailing addresses.

Erath County Appraisal District - August 2024

SECTION 13. ATTACHMENTS

A. All applications
- Supplemental Permit Information Form, if required by instructions on that form
- Current copy of tax records or deed showing ownership of the land
- Lease agreement, if LMUs are not owned by the applicant or co-applicant

B. New, Major amendment, or Renewal
- Completed Technical Information Packet (TCEQ-00760).

C. New and Major amendment
- Public Involvement Plan Form (TCEQ-20960).

D. Minor Amendment

Attach the following items if applicable:

- Current vicinity map, site map, runoff control map, and LMU map
- RCS design calculations
- Nutrient Management Plan or Land application rate calculations
- Other technical documents affected by the proposed amendment

SIGNATURE PAGE

If co-applicants are required, each co-applicant must submit an original, separate signature page.

Permit Number: WQ0003190000

Applicant: TMC Dairies Hico, LLC

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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code

§305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory Name: Tony Martins

Title: Managing Member

Signature: Tony Martins Date: 8-16-24

SUBSCRIBED AND SWORN to before me by the said Tony Martins on

this 16th day of August, 20 24

My commission expires on the 25th day of February, 20 28

(Seal) RICHARD LYN GEORGE NOTARY PUBLIC STATE OF TEXAS ID 132374303 EXP. 02-25-2028

Notary Public

RG

Erath

County, Texas

D. Minor Amendment

Attach the following items if applicable:

- Current vicinity map, site map, runoff control map, and LMU map
- RCS design calculations
- Nutrient Management Plan or Land application rate calculations
- Other technical documents affected by the proposed amendment

SIGNATURE PAGE

If co-applicants are required, each co-applicant must submit an original, separate signature page.

Permit Number: WQ0003190000

Applicant: 3T Martins Farm Hico, LLC

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 there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code

§305.44 to sign and submit this document, and can provide documentation in proof of such authorization upon request.

Signatory Name: Tony Martins

Title: Managing Member

Signature: Tony Martins Date: 8-16-24

SUBSCRIBED AND SWORN to before me by the said Tony Martins on

this 16th day of August, 2024

My commission expires on the 25th day of February, 2028

(Seal) RICHARD LYN GEORGE NOTARY PUBLIC STATE OF TEXAS ID 132374303 EXP. 02-25-2028

Notary Public

Erath

TCEQ USE ONLY

Application type: ☐ Renewal ☐ Major Amendment ☐ Minor Amendment ☐ New	
County: ______________________ Admin Complete Date: ____________________	
Agency Receiving SPIF: ☐ Texas Historical Commission	☐ U.S. Fish and Wildlife
☐ Texas Parks and Wildlife	☐ Army Corps of Engineers

SUPPLEMENTAL PERMIT INFORMATION FORM (SPIF)

This form is required for all TPDES applications

1. Applicant: 3T Martins Farm Hico, LLC and TMC Dairies, LLC
2. Permit Number: WQ0003190000 EPA ID Number: TX0123030
3. Address of the project (location description that includes street/highway, city/vicinity, and county). The facility is located on the East side CR 209 at the intersection of CR 540 and CR 290, approximately 4 miles South of the intersection of CR 209 and US Hwy 67 approximately 7 miles Southeast of Stephenville.
4. Provide the name, address, telephone and fax number of an individual that can be contacted to answer specific questions about the property.

   First and Last Name: Corey Mullin

   Company Name: Enviro-Ag Engineering, Inc.

   Mailing Address: 9855 FM 847

   City, State, and Zip Code: Dublin, TX 76446

   Phone Number: 254/965-3500 Fax Number: 254/965-8000
5. County where the facility is located: Erath
6. If the property is publicly owned and the owner is different than the permittee/applicant, please identify the owner. n/a
7. Identify the name of the water body (receiving waters) and TCEQ segment number that will receive the discharge. Segment No. 1226 of the Brazos River Basin
8. Provide a 7.5-minute USGS quadrangle map with the project boundaries plotted and a general location map showing the project area. (This map is required in addition to the map in the administrative report.)
9. Provide photographs of any structures 50 years or older on the property.
10. Does your project involve any of the following? Select all that apply.
    - ☐ Proposed access roads, utility lines, and construction easements
    - ☐ Visual effects that could damage or detract from a historic property's integrity
    - ☒ Vibration effects during construction or as a result of project design
    - ☐ Additional phases of development that are planned for the future
    - ☐ Sealing of caves, fractures, sinkholes, or other karst features
    - ☐ Disturbance of vegetation or wetlands
11. List proposed construction impact (surface acres to be impacted, depth of excavation, sealing of caves or other karst features): Less than 5 acres distrubed

12. Describe existing disturbances, vegetation & land use (plowing, other ground disturbances): The Land Management Units (LMUs) at the facility are planted in Coastal Bermuda grass and crops and practical agricultural practices will be utilized to maintain an appropriate crop rotation.

The following applies to New TPDES and Major Amendment to TPDES Permits:

13. List construction dates of any buildings or structures on the property: Commodity and hay barn built in 1990.

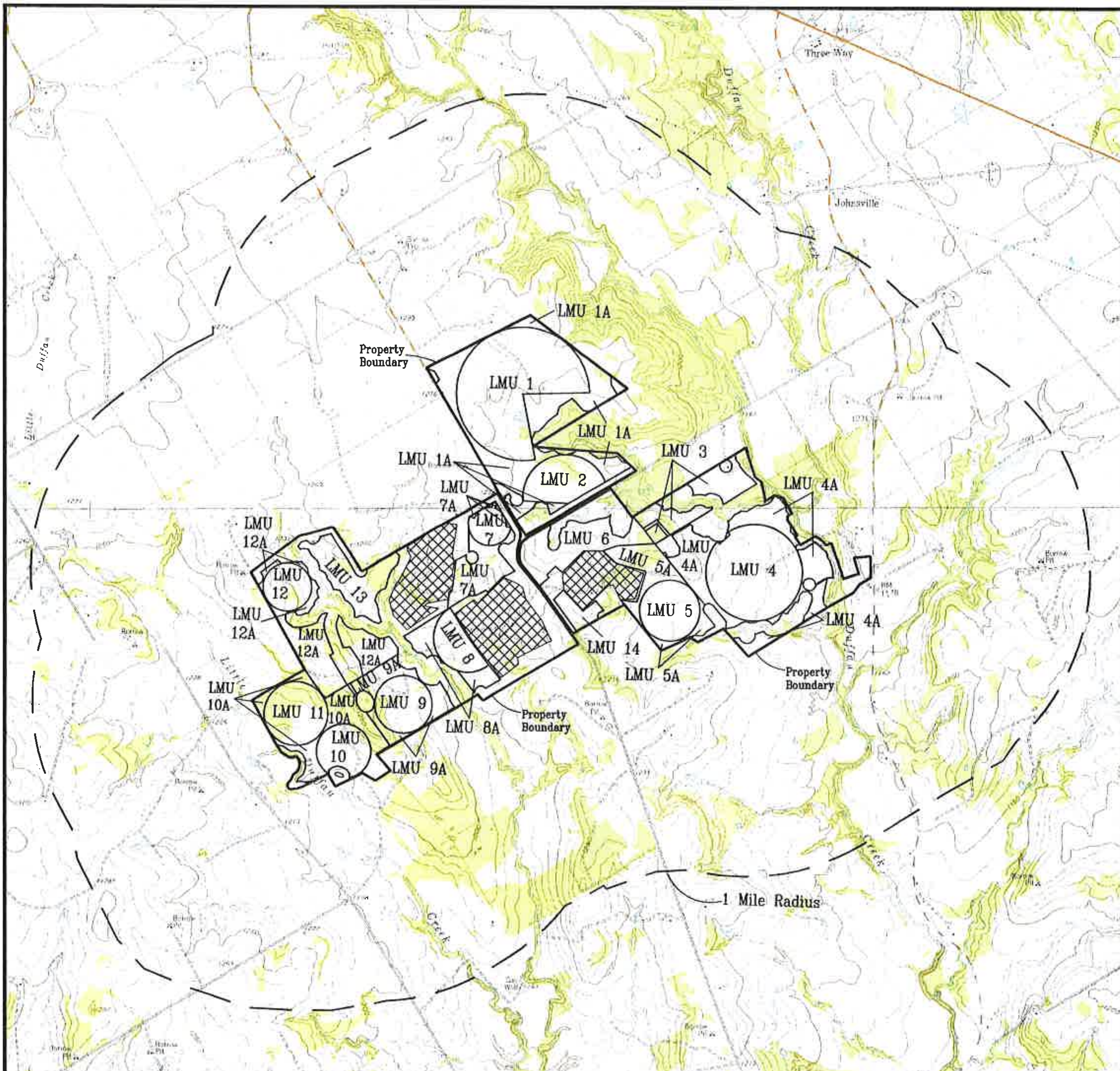
14. Provide a brief history of the property, and name of the architect/builder, if known: Oosteen, G&P Family Trust sold 10/3/2003, Oosteen, Gerald & Pamela S sold 7/5/2005.

The following applies to New, Amended and Renewal TPDES applications:

15. List each Retention Control Structure and its required capacity (Acre Feet). Phase 1 Digester - TS #1 - 103.30ac-ft, Phase 2 Digester - TS1 #2 - 148.14 ac-ft, Phase 1&2 Bypass - TS #1 - 39.71ac-ft, Phase 1 TD Treatment - 2.50 ac-ft, TD #1 - 66.71ac-ft, Phase 2 Treatment TD - 7.51 ac-ft, TD #1 - 63.30 ac-ft, TH#2 - 40.27 ac-ft, TS #2 - 16.55 ac-ft

16. Provide the location and number of acres where wastewater and manure are land applied: The facility has 1,028 acres of Land Management Units (LMUs) available for waste and wastewater application. See attached Figures 1.3A-B.

17. List the maximum number of head to be permitted. Phase 1 - 8,000 (Milking) 10,000 (Total). Phase 2 - 10,000 (Milking) 13,500 (Total)



Map Revised 8/1/2024

LEGEND:

Denotes Production Area

N
W E
S

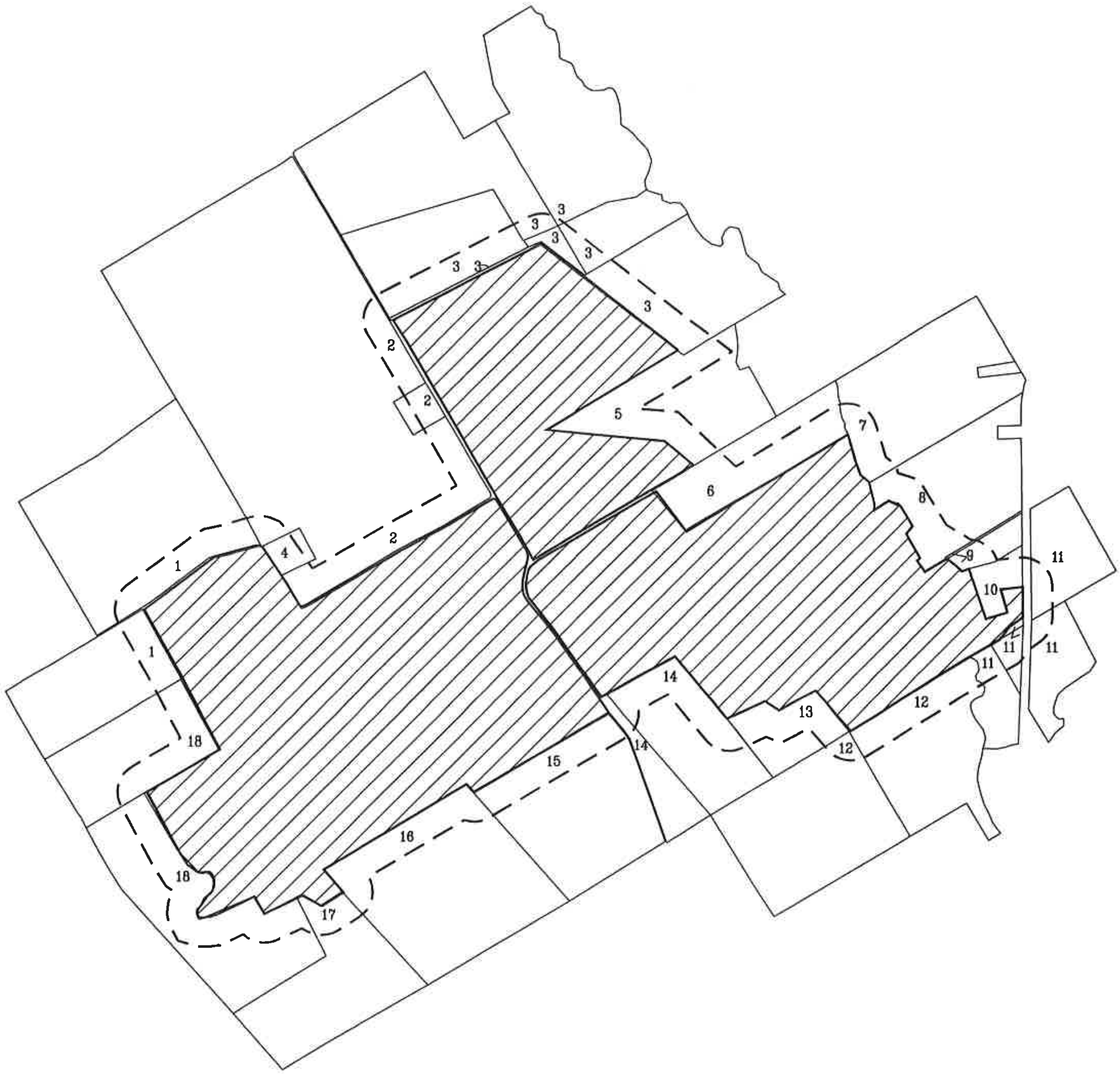
1700' 0 1700' 3400'

SCALED AS SHOWN

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS – Accessed May 2013.

• Refer to Figures 1.3 & 1.4 A-D for overall facility maps.

TMC Dairies Hico Hico, TX Erath County	SPIF Map	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



LEGEND:
Denotes Applicant Owned Property
Denotes 500 Ft. Radius From Facility Boundary
Denotes Adjacent Landowner Boundary

Map Revised 8/2/2024

Source: Erath County Appraisal District

TMC Dairies Hico Hico, TX Erath County	Adjacent Landowner Map	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

ADJACENT LANDOWNERS LIST

Name Stanley J Haedge Number on Map 1 Address 1265 CR 450 Address Hico, TX 76457	Name David E. & Linda S Jones Number on Map 10 Address 34088 FM 2481 Address Hico, TX 76457
Name Kuiper Dairy, LLC Number on Map 2 Address 1865 PR 1233 Address Hico, TX 76457	Name Randy (Tod) Scott Number on Map 11 Address 6433 Dorchester Trail Address North Richland Hills, TX 76182
Name Kenneth W & Donna Kay Mills Number on Map 3 Address 1572 CR 211 Address Hico, TX 76457	Name Paula Jolene Thomas & Randy Wayne Roberson Number on Map 12 Address 12509 Belle Amore Address Ft. Worth, TX 76126
Name Clemens J & Karin Kuiper Number on Map 4 Address 1865 PR 1233 Address Hico, TX 76457	Name LBL Farms, LLC Number on Map 13 Address 4005 Monticello Dr Address Fort Worth, TX 76107
Name Klaas Talsma Number on Map 5 Address 7469 CR 209 Address Hico, TX 76457	Name Barbara Little McMahan Number on Map 14 Address 912 CR 484 Address Stephenville, TX 76401
Name Michael Wayne Brannon Number on Map 6 Address 1909 CR 211 Address Hico, TX 76457	Name Willemina Jacoba Deboer Number on Map 15 Address 9710 CR 209 Address Hico, TX 76457
Name Larry Dale Little Number on Map 7 Address 32798 FM 2481 Address Hico, TX 76457	Name Fred Bruce Parker & Justin Parker Number on Map 16 Address P.O. Box 1016 Address Stephenville, TX 76401
Name Melvin Lee DeCross Number on Map 8 Address 33044 FM 2481 Address Hico, TX 76457	Name American Pioneer Ranch, LLC Number on Map 17 Address PO Box 2508 Address Stephenville, TX 76401
Name Lance M & Shawna L Rook Number on Map 9 Address 33808 FM 2481 Address Hico, TX 76457	Name Planners Equity LP Number on Map 18 Address 181 S Graham Address Stephenville, TX 76401

Please identify where you obtained the landowner information.

Erath County Appraisal District, August, 2024

Facility Name TMC Dairies Hico

Franchise Tax Account Status

As of : 08/14/2024 13:09:04

This page is valid for most business transactions but is not sufficient for filings with the Secretary of State

TMC DAIRIES LLC

Texas Taxpayer Number	32079649995
Mailing Address	PO BOX 599 HICO, TX 76457-0599
Right to Transact Business in Texas	ACTIVE
State of Formation	ID
Effective SOS Registration Date	06/11/2021
Texas SOS File Number	0804106827
Registered Agent Name	TONY MARTINS
Registered Office Street Address	3105 MESQUITE DR DALHART, TX 79022

Public Information Report

Public Information Report
TMC DAIRIES LLC
Report Year :2023

Information on this site is obtained from the most recent Public Information Report (PIR) processed by the Secretary of State (SOS). PIRs filed with annual franchise tax reports are forwarded to the SOS. After processing, the SOS sends the Comptroller an electronic copy of the information, which is displayed on this web site. The information will be updated as changes are received from the SOS.

You may order a copy of a Public Information Report from open.records@cpa.texas.gov or Comptroller of Public Accounts, Open Records Section, PO Box 13528, Austin, Texas 78711.

Title	Name and Address
MANAGING M	**TONY MARTINS** 3105 MESQUITE DR DALHART, TX 79022

Franchise Tax Account Status

As of : 08/14/2024 13:09:31

This page is valid for most business transactions but is not sufficient for filings with the Secretary of State

3T MARTINS FARM HICO, LLC

Texas Taxpayer Number	32095399070
Mailing Address	PO BOX 599 HICO, TX 76457-0599
Right to Transact Business in Texas	ACTIVE
State of Formation	TX
Effective SOS Registration Date	06/08/2024
Texas SOS File Number	0805579160
Registered Agent Name	ANNABEL MOORE
Registered Office Street Address	3 PARKSIDE DRIVE, SUITE 115 FRIENDSWOOD, TX 77546

Map

Property Details

Account

Property ID:	R000026311	**Geographic ID:**	R.0799.00060.00.0
Type:	Real	**Zoning:**	
Property Use:		**Condo:**	

Location

Situs Address:	CR540 (OFF)		
Map ID:	17-16-2	**Mapsco:**	
Legal Description:	Acres 225.090, A0799 VILLINEUF GILBERT;		
Abstract/Subdivision:			

Owner

Name:	TWO SISTERS DAIRY LLC
Agent:	
Mailing Address:	7469 CR209 HICO, TX 76457
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$0 (+)
Improvement Non-Homesite Value:	$0 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$0 (+)
Agricultural Market Valuation:	$1,125,450 (+)
Market Value:	$1,125,450 (=)
Agricultural Value Loss:	$1,090,880 (-)
Appraised Value:	$1,125,450 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$34,570
Ag Use Value:	$34,570

Information provided for research purposes only. Legal descriptions and acreage amounts are for Appraisal District use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: TWO SISTERS DAIRY LLC **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$1,125,450	$34,570
903	STEPHENVILLE ISD	$1,125,450	$34,570
MTD	MIDDLE TRINITY WATER	$1,125,450	$34,570
RER	ERATH ROAD & BRIDGE	$1,125,450	$34,570

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		225.09	9,804,920.00	0.00	0.00	$1,125,450	$34,569

Property Roll Value History

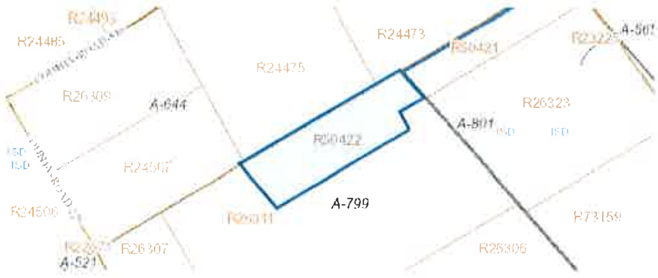
Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$0	$1,125,450	$34,570	$1,125,450	$0	$34,570
2023	$0	$1,125,450	$33,230	$1,125,450	$0	$33,230
2022	$0	$1,125,450	$39,590	$1,125,450	$0	$39,590
2021	$0	$900,360	$43,130	$900,360	$0	$43,130
2020	$0	$877,850	$40,680	$877,850	$0	$40,680
2019	$0	$877,850	$41,330	$877,850	$0	$41,330
2018	$0	$790,320	$40,990	$790,320	$0	$40,990
2017	$0	$633,750	$40,430	$633,750	$0	$40,430
2016	$0	$543,220	$38,510	$543,220	$0	$38,510
2015	$1,000	$543,220	$32,840	$544,220	$0	$33,840
2014	$1,000	$499,200	$29,090	$500,200	$0	$30,090

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			TWO SISTERS DAIRY LLC	3T MARTINS FARM HICO LLC			2024-04192
12/30/2005			TALSMA KLAAS & WILMA	TWO SISTERS DAIRY LLC	1267	1147	2/28/06
7/5/2005			OOSTEN GERALD & PAMELA S	TALSMA KLAAS & WILMA	1231	762-782	
10/3/2003			OOSTEN G & P FAMILY TRUST	OOSTEN GERALD & PAMELA S	1143	787	
5/4/1995	MULTI		KALSBEEK ARTHUR & JOANN	OOSTEN G & P FAMILY TRUST	887	317	

1/1/1968	MERCER H C TR #4012	KALSBEEK ARTHUR & JOANN	723	449

Map



Property Details

Account

Property ID:	R000050422	**Geographic ID:**	R.0799.00065.00.0
Type:	Real	**Zoning:**	
Property Use:		**Condo:**	

Location

Situs Address:	CR209		
Map ID:	17-16-2	**Mapsco:**	
Legal Description:	Acres 51.680, A0799 VILLINEUF GILBERT;		
Abstract/Subdivision:	/		

Owner

Name:	TALSMA KLAAS
Agent:	
Mailing Address:	7469 CR209 HICO, TX 76457
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$0 (+)
Improvement Non-Homesite Value:	$0 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$0 (+)
Agricultural Market Valuation:	$206,720 (+)
Market Value:	$206,720 (=)
Agricultural Value Loss:	$198,660 (-)
Appraised Value:	$206,720 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$8,060
Ag Use Value:	$8,060

Information provided for research purposes only. Legal descriptions and acreage amounts are for Appraisal District use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: TALSMA KLAAS **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$206,720	$8,060
903	STEPHENVILLE ISD	$206,720	$8,060
MTD	MIDDLE TRINITY WATER	$206,720	$8,060
RER	ERATH ROAD & BRIDGE	$206,720	$8,060

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		51.68	2,251,181.00	0.00	0.00	$206,720	$8,062

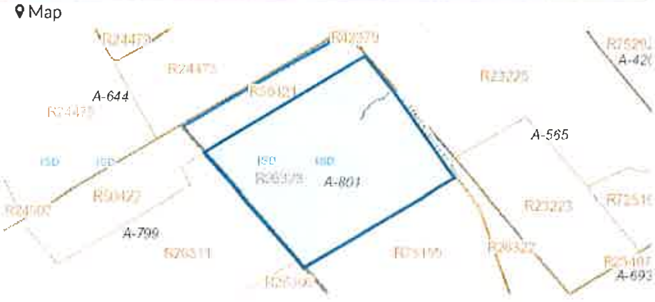
Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$0	$206,720	$8,060	$206,720	$0	$8,060
2023	$0	$206,720	$8,060	$206,720	$0	$8,060
2022	$0	$206,720	$8,790	$206,720	$0	$8,790
2021	$0	$139,540	$9,610	$139,540	$0	$9,610
2020	$0	$139,540	$9,100	$139,540	$0	$9,100
2019	$0	$139,540	$9,040	$139,540	$0	$9,040
2018	$0	$180,880	$9,040	$180,880	$0	$9,040
2017	$0	$144,700	$9,040	$144,700	$0	$9,040
2016	$0	$124,030	$8,530	$124,030	$0	$8,530
2015	$0	$124,030	$8,530	$124,030	$0	$8,530
2014	$0	$113,700	$7,650	$113,700	$0	$7,650

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			TALSMA KLAAS	3T MARTINS FARM HICO LLC			2024-04192
10/12/2006			TALSMA KLASS & WILMA	TALSMA KLASS	0	0	CV28329
1/1/1968			KALSBEEK ARTHUR & JOANN	TALSMA KLASS & WILMA	744	269	

Map



Property Details

Account

Property ID:	R000026323	**Geographic ID:**	R.0801.00020.00.0
Type:	Real	**Zoning:**	
Property Use:		**Condo:**	

Location

Situs Address:	8560 CR209		
Map ID:	17-16-2	**Mapsco:**	
Legal Description:	Acres 145.860, A0801 VANCE WM L B, DAIRY, HOUSE & MH SITES (ARTHUR KALSBEEK)(GERALD, OOSTEN)		
Abstract/Subdivision:			

Owner

Name:	TWO SISTERS DAIRY LLC
Agent:	
Mailing Address:	7469 CR209 HICO, TX 76457
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$55,000 (+)
Improvement Non-Homesite Value:	$867,690 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$10,000 (+)
Agricultural Market Valuation:	$719,300 (+)
Market Value:	$1,651,990 (=)
Agricultural Value Loss:	$689,690 (-)
Appraised Value:	$1,651,990 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$962,300
Ag Use Value:	$29,610

Information provided for research purposes only. Legal descriptions and acreage amounts are for Appraisal District use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: TWO SISTERS DAIRY LLC **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$1,651,990	$962,300
901	THREE WAY ISD	$1,651,990	$962,300
MTD	MIDDLE TRINITY WATER	$1,651,990	$962,300
RER	ERATH ROAD & BRIDGE	$1,651,990	$962,300

Property Improvement - Building

Type: SL **State Code:** D2 **Living Area:** 14,770.00 sqft **Value:** $100,501

Type	Description	Year Built
SL	SLAB	1990
HAY	HAYBARN	2011
UTIL1	UTILITIES 1	2023

Type: DB **State Code:** D2 **Living Area:** 5,600.00 sqft **Value:** $162,407

Type	Description	Year Built
DB	DAIRY BARN	1990
CHP	HOLD PEN COVERED	1990
SL	SLAB	1990
FSL	LOCKED FEED STANCHION	1990
SL	SLAB	1996
SL	SLAB	1996
HAY	HAYBARN	2008
UTIL2	UTILITIES 2	2023

Type: STG **State Code:** D2 **Living Area:** 144.00 sqft **Value:** $20,295

Type	Description	Year Built
STG	STRG BUILDING	1990
MT	MILK TANK	1990
MT	MILK TANK	1990

WTN	WATRTANKNO	1995
WTN	WATRTANKNO	1995
GBN	GRAINBN NO	1990
GBN	GRAINBN NO	1990
GBN	GRAINBN NO	1990

Type: FSB **State Code:** D2 **Living Area:** 102,000.00 sqft **Value:** $414,550

Type	Description	Year Built
FSB	FREE STALL BARN	2005
FSL	LOCKED FEED STANCHION	2005
FSB	FREE STALL BARN	2018
FSB	FREE STALL BARN	2018

Type: CB **State Code:** D2 **Living Area:** 11,236.00 sqft **Value:** $16,286

Type	Description	Year Built
CB	COMMODITY BARN	2018
SHOP	SHOP	2018
SL	SLAB	2018

Type: DB **State Code:** D2 **Living Area:** 14,880.00 sqft **Value:** $208,646

Type	Description	Year Built
DB	DAIRY BARN	2018
DB	DAIRY BARN	2018
SHED	SHED	2018
CHP	HOLD PEN COVERED	2018

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		143.86	6,266,542.00	0.00	0.00	$719,300	$29,612
SAE		1.00	43,560.00	0.00	0.00	$5,000	$0
SAE		1.00	43,560.00	0.00	0.00	$5,000	$0

Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$922,690	$729,300	$29,610	$1,651,990	$0	$962,300
2023	$832,190	$794,300	$28,840	$1,626,490	$0	$936,030
2022	$896,980	$764,300	$31,350	$1,661,280	$0	$973,330
2021	$870,530	$603,940	$33,440	$1,474,470	$0	$932,470
2020	$870,530	$589,550	$32,460	$1,460,080	$0	$931,490
2019	$753,580	$589,550	$32,580	$1,343,130	$0	$814,660
2018	$414,040	$536,120	$32,530	$950,160	$0	$475,070
2017	$381,290	$437,060	$32,460	$818,350	$0	$442,250
2016	$383,990	$372,700	$31,400	$756,690	$0	$437,890
2015	$389,260	$372,700	$31,400	$761,960	$0	$443,160
2014	$389,260	$345,570	$29,340	$734,830	$0	$441,100

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			TWO SISTERS DAIRY LLC	3T MARTINS FARM HICO LLC			2024-04192
12/30/2005			TALSMA KLAAS & WILMA	TWO SISTERS DAIRY LLC	1267	1147	2/28/06
7/5/2005			OOSTEN GERALD & PAMELA S	TALSMA KLAAS & WILMA	1231	762-782	
10/3/2003			OOSTEN G & P FAMILY TRUST	OOSTEN GERALD & PAMELA S	1143	787	
1/1/1968			MERCER H C TR #4012	KALSBEEK ARTHUR & JOANN	723	449	

Map

Property Details

Account

Property ID:	R000023225	**Geographic ID:**	R.0565.00020.00.0
Type:	Real	**Zoning:**	
Property Use:		**Condo:**	

Location

Situs Address:	8655 CR209		
Map ID:	17-16-2	**Mapsco:**	
Legal Description:	Acres 219.150, A0565 MURPHEE WILLIAM & A0801 WM VANCE(.78 ACS): DAIRY		
Abstract/Subdivision:			

Owner

Name:	O AND B FARMS, INC.
Agent:	
Mailing Address:	PO BOX 227 HAMILTON, TX 76531
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$0 (+)
Improvement Non-Homesite Value:	$87,280 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$0 (+)
Agricultural Market Valuation:	$1,095,750 (+)
Market Value:	$1,183,030 (=)
Agricultural Value Loss:	$1,052,740 (-)
Appraised Value:	$1,183,030 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$130,290
Ag Use Value:	$43,010

Information provided for research purposes only. Legal descriptions and acreage amounts are for Appraisal District use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: O AND B FARMS, INC. **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$1,183,030	$130,290
901	THREE WAY ISD	$1,183,030	$130,290
MTD	MIDDLE TRINITY WATER	$1,183,030	$130,290
RER	ERATH ROAD & BRIDGE	$1,183,030	$130,290

Property Improvement - Building

Type: HAY **State Code:** D2 **Living Area:** 5,000.00 sqft **Value:** $19,350

Type	Description	Year Built
HAY	HAYBARN	2003
SHED	SHED	2003

Type: CB **State Code:** D2 **Living Area:** 4,800.00 sqft **Value:** $13,275

Type	Description	Year Built
CB	COMMODITY BARN	1988
SL	SLAB	1988

Type: AS **State Code:** D2 **Living Area:** 3,700.00 sqft **Value:** $43,276

Type	Description	Year Built
AS	ANIMALSHADE	1995
AS	ANIMALSHADE	1995
AS	ANIMALSHADE	1995
WTN	WATRTANKNO	1990
FSL	LOCKED FEED STANCHION	1997
FSL	LOCKED FEED STANCHION	1995
AS	ANIMALSHADE	2008
AS	ANIMALSHADE	2008
AS	ANIMALSHADE	2008
AS	ANIMALSHADE	2008

AS	ANIMALSHADE	2022
AS	ANIMALSHADE	2022

Type: SHE3 **State Code:** D2 **Living Area:** 1,152.00 sqft **Value:** $11,379

Type	Description	Year Built
SHE3	3SIDE SHED	1988
SL	SLAB	1988
DBO	DAIRY BARN OUT	1988
WH	WELLHOUSE	1988
CHP	HOLD PEN COVERED	1988
SHED	SHED	2022
SHED	SHED	2022
STG	STRG BUILDING	2022

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		219.15	9,546,174.00	0.00	0.00	$1,095,750	$43,007

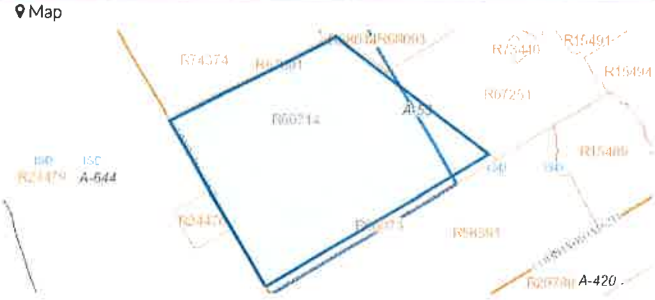
Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$87,280	$1,095,750	$43,010	$1,183,030	$0	$130,290
2023	$78,790	$1,095,750	$42,610	$1,174,540	$0	$121,400
2022	$76,850	$1,095,750	$46,080	$1,172,600	$0	$122,930
2021	$37,170	$876,600	$49,380	$913,770	$0	$86,550
2020	$37,170	$854,690	$47,590	$891,860	$0	$84,760
2019	$34,170	$854,690	$47,330	$888,860	$0	$81,500
2018	$33,840	$803,530	$47,100	$837,370	$0	$109,440
2017	$32,620	$657,520	$47,300	$690,140	$0	$108,420
2016	$32,620	$561,660	$45,190	$594,280	$0	$100,310
2015	$33,680	$561,660	$0	$595,340	$0	$595,340
2014	$33,680	$524,230	$21,470	$557,910	$0	$77,650

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			O AND B FARMS, INC.	3T MARTINS FARM HICO LLC			2024-04194
2/21/2023			TALSMA ANASTASIA	O AND B FARMS, INC.			2023-00941
6/6/2014			WYLY RANDY	TALSMA ANASTASIA			2014-03122
2/4/2005			MEMBERS TRUST SOUTHWEST FED CREDIT	WYLY RANDY	1207	1026	
4/6/2004			VANDERMEER STEVE	MEMBERS TRUST SOUTHWEST FED CREDIT	1165	1050	
1/1/1968			KALSBEEK ARTHUR & JOANN	VANDERMEER STEVE	727	108	
1/1/1968			MERCER H C TR #4012	KALSBEEK ARTHUR & JOANN	723	449	

Map



Property Details

Account

Property ID:	R000060714	Geographic ID:	R.0053.00015.00.0
Type:	Real	Zoning:	
Property Use:		Condo:	

Location

Situs Address:	CR211		
Map ID:	18-16-4	Mapsco:	
Legal Description:	Acres 216.936, A0053 BROWNING N P;		
Abstract/Subdivision:			

Owner

Name:	TALSMA ANASTASIA
Agent:	
Mailing Address:	717 SOUTH PALMWAY LAKE WORTH, FL 33460
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$0 (+)
Improvement Non-Homesite Value:	$0 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$0 (+)
Agricultural Market Valuation:	$867,740 (+)
Market Value:	$867,740 (=)
Agricultural Value Loss:	$805,700 (-)
Appraised Value:	$867,740 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$62,040
Ag Use Value:	$62,040

Information provided for research purposes only. Legal descriptions and acreage amounts are for Appraisal District use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: TALSMA ANASTASIA **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$867,740	$62,040
903	STEPHENVILLE ISD	$867,740	$62,040
MTD	MIDDLE TRINITY WATER	$867,740	$62,040
RER	ERATH ROAD & BRIDGE	$867,740	$62,040

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		216.94	9,449,732.00	0.00	0.00	$867,744	$62,044

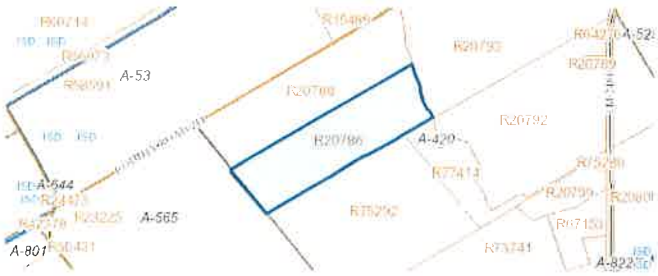
Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$0	$867,740	$62,040	$867,740	$0	$62,040
2023	$0	$867,740	$57,710	$867,740	$0	$57,710
2022	$0	$867,740	$82,870	$867,740	$0	$82,870
2021	$0	$585,730	$85,910	$585,730	$0	$85,910
2020	$0	$585,730	$81,790	$585,730	$0	$81,790
2019	$0	$585,730	$83,090	$585,730	$0	$83,090
2018	$4,160	$794,900	$79,780	$799,060	$0	$83,940
2017	$4,110	$631,090	$80,000	$635,200	$0	$84,110
2016	$4,110	$540,940	$75,520	$545,050	$0	$79,630
2015	$4,110	$540,940	$75,520	$545,050	$0	$79,630
2014	$4,110	$507,930	$72,100	$512,040	$0	$76,210

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			TALSMA ANASTASIA	3T MARTINS FARM HICO LLC			2024-04192
11/21/2018			TALSMA KLAAS	TALSMA ANASTASIA			2018-06704
10/12/2006			TALSMA KLASS & WILMA	TALSMA KLASS	0	0	CV28329

Map



Property Details

Account

Property ID:	R000020786	**Geographic ID:**	R.0420.00010.00.0
Type:	Real	**Zoning:**	
Property Use:		**Condo:**	

Location

Situs Address:	CR209 (OFF)		
Map ID:	17-16-2	**Mapsco:**	
Legal Description:	Acres 59.625, A0420 INNES GEORGE B;		
Abstract/Subdivision:			

Owner

Name:	O AND B FARMS, INC.
Agent:	
Mailing Address:	PO BOX 227 HAMILTON, TX 76531
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$0 (+)
Improvement Non-Homesite Value:	$0 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$0 (+)
Agricultural Market Valuation:	$298,130 (+)
Market Value:	$298,130 (=)
Agricultural Value Loss:	$288,830 (-)
Appraised Value:	$298,130 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$9,300
Ag Use Value:	$9,300

Information provided for research purposes only. Legal descriptions and acreage amounts are for Appraisal District use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: O AND B FARMS, INC. **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$298,130	$9,300
901	THREE WAY ISD	$298,130	$9,300
MTD	MIDDLE TRINITY WATER	$298,130	$9,300
RER	ERATH ROAD & BRIDGE	$298,130	$9,300

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		59.63	2,597,265.00	0.00	0.00	$298,125	$9,302

Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$0	$298,130	$9,300	$298,130	$0	$9,300
2023	$0	$298,130	$9,300	$298,130	$0	$9,300
2022	$0	$298,130	$10,140	$298,130	$0	$10,140
2021	$0	$238,500	$11,090	$238,500	$0	$11,090
2020	$0	$232,540	$10,490	$232,540	$0	$10,490
2019	$0	$232,540	$10,430	$232,540	$0	$10,430
2018	$0	$208,690	$10,430	$208,690	$0	$10,430
2017	$0	$166,950	$10,430	$166,950	$0	$10,430
2016	$0	$143,100	$9,840	$143,100	$0	$9,840
2015	$0	$143,100	$0	$143,100	$0	$143,100
2014	$0	$131,180	$10,320	$131,180	$0	$10,320

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			O AND B FARMS, INC.	3T MARTINS FARM HICO LLC			2024-04194
2/21/2023			TALSMA ANASTASIA	O AND B FARMS, INC.			2023-00941
6/6/2014			WYLY RANDY	TALSMA ANASTASIA			2014-03122
2/4/2005			MEMBERS TRUST SOUTHWEST FED CREDIT	WYLY RANDY	1207	1026	
6/1/2004			VANDERMEER STEVE & MARSHA	MEMBERS TRUST SOUTHWEST FED CREDIT	1174	591	FORECLOS DEED

7/23/1996	MULTI	BARTON ALVIN L	VANDERMEER STEVE	846	958

Map

Property Details

Account

Property ID:	R000075292	**Geographic ID:**	R.0420.00088.00.0
Type:	Real	**Zoning:**	
Property Use:		**Condo:**	

Location

Situs Address:	FM2481 (OFF)		
Map ID:	17-16-2	**Mapsco:**	
Legal Description:	Acres 100.000, A0420 INNES GEORGE B		
Abstract/Subdivision:			

Owner

Name:	O AND B FARMS, INC.
Agent:	
Mailing Address:	PO BOX 227 HAMILTON, TX 76531
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$0 (+)
Improvement Non-Homesite Value:	$0 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$0 (+)
Agricultural Market Valuation:	$500,000 (+)
Market Value:	$500,000 (=)
Agricultural Value Loss:	$484,400 (-)
Appraised Value:	$500,000 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$15,600
Ag Use Value:	$15,600

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Property Taxing Jurisdiction

Owner: O AND B FARMS, INC. **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$500,000	$15,600
901	THREE WAY ISD	$500,000	$15,600
MTD	MIDDLE TRINITY WATER	$500,000	$15,600
RER	ERATH ROAD & BRIDGE	$500,000	$15,600

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		100.00	4,356,000.00	0.00	0.00	$500,000	$15,600

Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$0	$500,000	$15,600	$500,000	$0	$15,600
2023	$0	$500,000	$15,600	$500,000	$0	$15,600
2022	$0	$500,000	$17,000	$500,000	$0	$17,000
2021	$0	$400,000	$18,600	$400,000	$0	$18,600
2020	$0	$390,000	$17,600	$390,000	$0	$17,600
2019	$0	$390,000	$17,500	$390,000	$0	$17,500
2018	$0	$350,000	$17,500	$350,000	$0	$17,500
2017	$0	$280,000	$17,500	$280,000	$0	$17,500
2016	$0	$240,000	$16,500	$240,000	$0	$16,500
2015	$0	$240,000	$0	$240,000	$0	$240,000
2014	$0	$220,000	$9,100	$220,000	$0	$9,100

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			O AND B FARMS, INC.	3T MARTINS FARM HICO LLC			2024-04194
2/21/2023			TALSMA ANASTASIA	O AND B FARMS, INC.			2023-00941
7/16/2014			DECROSS MELVIN LEE	TALSMA ANASTASIA			2014-04013

Map

Property Details

Account

Property ID:	R000073741	**Geographic ID:**	R.0420.00087.00.0
Type:	Real	**Zoning:**	
Property Use:		**Condo:**	

Location

Situs Address:	FM2481		
Map ID:	17-16-2	**Mapsco:**	
Legal Description:	Acres 123.260, A0420 INNES GEORGE B;		
Abstract/Subdivision:			

Owner

Name:	O AND B FARMS, INC.
Agent:	
Mailing Address:	PO BOX 227 HAMILTON, TX 76531
% Ownership:	100.00%
Exemptions:	For privacy reasons not all exemptions are shown online.

Property Values

Improvement Homesite Value:	$0 (+)
Improvement Non-Homesite Value:	$0 (+)
Land Homesite Value:	$0 (+)
Land Non-Homesite Value:	$0 (+)
Agricultural Market Valuation:	$616,300 (+)
Market Value:	$616,300 (=)
Agricultural Value Loss:	$597,070 (-)
Appraised Value:	$616,300 (=)
HS Cap Loss/Circuit Breaker:	$0 (-)
Assessed Value:	$19,230
Ag Use Value:	$19,230

Information provided for research purposes only. Legal descriptions and acreage amounts are for Appraisal District use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Property Taxing Jurisdiction

Owner: O AND B FARMS, INC. **%Ownership:** 100.00%

Entity	Description	Market Value	Taxable Value
072	ERATH COUNTY	$616,300	$19,230
901	THREE WAY ISD	$616,300	$19,230
MTD	MIDDLE TRINITY WATER	$616,300	$19,230
RER	ERATH ROAD & BRIDGE	$616,300	$19,230

Property Land

Type	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
SAE		123.26	5,369,206.00	0.00	0.00	$616,300	$19,229

Property Roll Value History

Year	Improvements	Land Market	Ag Valuation	Appraised	HS Cap Loss	Assessed
2025	N/A	N/A	N/A	N/A	N/A	N/A
2024	$0	$616,300	$19,230	$616,300	$0	$19,230
2023	$0	$616,300	$19,000	$616,300	$0	$19,000
2022	$0	$616,300	$20,730	$616,300	$0	$20,730
2021	$0	$493,040	$22,710	$493,040	$0	$22,710
2020	$0	$480,710	$21,480	$480,710	$0	$21,480
2019	$0	$480,710	$21,380	$480,710	$0	$21,380
2018	$0	$435,090	$21,350	$435,090	$0	$21,350
2017	$0	$347,700	$21,320	$347,700	$0	$21,320
2016	$0	$298,030	$20,130	$298,030	$0	$20,130
2015	$0	$298,030	$0	$298,030	$0	$298,030
2014	$0	$274,120	$16,060	$274,120	$0	$16,060

Property Deed History

Deed Date	Type	Description	Grantor	Grantee	Volume	Page	Number
7/26/2024			O AND B FARMS, INC.	3T MARTINS FARM HICO LLC			2024-04194
2/21/2023			TALSMA ANASTASIA	O AND B FARMS, INC.			2023-00941
1/7/2014			JONES DAVID E	TALSMA ANASTASIA			2014-00096
5/16/2011			JONES MICHAEL	JONES DAVID E			2011-02676
12/17/2007	L		JONES DAVID E & LINDA S	JONES MICHAEL	1364	318	

TECHNICAL INFORMATION PACKET FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOs)

Submit this Form with your Individual Permit Application (TCEQ – 000728)

Name of Site: TMC Dairies Hico

TCEQ Permit Number, if assigned: WQ000 3190000

Date Prepared: August 2024

SECTION 1. POLLUTANT SOURCES MANAGEMENT

For each potential pollutant source listed in the table below, provide the management practices utilized or enter "Not Applicable". Management practices should address the collection, storage and final disposition of each potential pollutant source. You may attach your list.

Table 1: Potential Pollutant Sources and Best Management Practices

Potential Pollutant Source	Best Management Practices
Manure and Manure Stockpiles	See Attached BMPs
Wastewater	See Attached BMPs
Sludge	See Attached BMPs
Compost	See Attached BMPs
Feed and Bedding	See Attached BMPs
Silage stockpiles	See Attached BMPs
Dead animals	See Attached BMPs
Dust	See Attached BMPs
Lubricants	See Attached BMPs
Pesticides	See Attached BMPs
Bulk cleaning chemicals	See Attached BMPs
Inorganic fertilizers	N/A
Fuel storage tanks	N/A
Other, specify: Parlor Chemicals	See Attached BMPs

SECTION 2. RETENTION CONTROL STRUCTURE DESIGN

A. Design Summary

1) Design Standards, Characteristic, and Values Sources Used

☒ Natural Resource Conservation Service

☒ American Society of Agricultural and Biological Engineers

☒ Other; specify: Midwest Plan Services

I. POLLUTANT SOURCES AND MANAGEMENT

B. For each potential pollutant source, provide the management practices utilized.

Note: A Best Management Practice, as defined in 30 TAC §321.32(7), is the schedule of activities, prohibitions of practices, maintenance procedures, and other management and conservation practices to prevent or reduce the pollution of water in the state. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge, land application, or drainage from raw material storage. The following practices should be updated in the on-site PPP as changes to facility operating procedures occur. Employee training should be provided upon development & implementation of any BMP.

Potential Pollutant Sources:	Potential Best Management Practices (BMPs)
Manure, Sludge, Stockpiles, Slurry, Bedding, Feed Waste & Compost	Temporary (< 30 days) & Permanent Storage (>30 days) Store in drainage area of the RCS - OR - If not located within drainage area, berm area to contain runoff. Annually sample manure/manure stockpiles/compost/slurry for nutrient concentrations. Manure, Sludge, Slurry and/or Compost -Land application on-site or to third-party fields. Regular pen maintenance (scraping & drainage)
Dust - Vehicle Traffic	Control speeds around the facility. Reduce travel on unpaved facility roads, or manage dust by sprinkling road with water and/or a suppressant on an as needed basis. Utilize paving products and/or gravel to manage dust on facility roads.
Dust - Feed Handling/Processing	Utilize dust abatement measures for feed handling equipment, Utilize choke feeding when handling feed ingredients & Utilize feed ingredients, such as moisture or other additives, to manage dust.
Feedstuff/Silage Stockpiles	Contain leachate in an earthen berm or in the RCS Minimize feed spoilage & utilize plastic covers or roofed areas for storage when applicable.
Lubricants/Pesticides/Herbicides/Parlor Chemicals	Store under roof Handle and dispose according to label directions
Fuel Tanks	Provide secondary containment Prevent overfills/spills
Wastewater	Store in RCS Land application according to NUP/NMP Land application will not occur during periods of saturation or frozen conditions (except in the event of imminent overflow) Annually sample for nutrient concentrations Maintain liner and capacity certifications Maintain adequate capacity as determined by the pond marker schematic
Dead Animals	Disposed by a third-party rendering service or composted on-site. Collected within 24 hours of death and disposed within three days of death

2) Total Number of Animals:

In Open Lots: 22 In Buildings: 2

3) Animal Housing Location, hours/day:

Open Lots: 2,000 Buildings: 8,000

4) Average Liveweight, pounds per head: Holstein – 1,400 lbs; Jersey – 1,000lbs

5) Volatile Solids Removed by Separator System: 90% (TS1) 65% (TD trt & TD1)

6) Volatile Solids Loading Rate, lbs/day/1000 ft^3: 5.3

7) Spilled Drinking Water, gallons/day: Included in clean up water

8) Water for Cleanup, gallons/day: 105,000

9) Water for Manure Removal, gallons/day: Included in clean up water

10) Recycled Wastewater, gallons/day: 0

B. Wastewater Runoff

1) Design Rainfall Amount, inches: 12.2

2) Design Rainfall Event:

☐ 25-year, 24 hour

☐ Soil Plant Air and Water (SPAW) Field and Pond Hydrology Model

☒ 25-year, 10 day

☐ Other; specify: Click here to enter text.

C. Retention Control Structure(s) (RCS) Volume Allocations

Table 2. RCS Volume Allocations (Acre-Feet)

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity	Actual Capacity
TS1	11.99	18.18	39.41	14.39	19.33	103.30*+	TBD
TS2	14.29	0.00	0.00	0.10	2.16	16.55^	24.69
TD Treatment	0.00	0.00	2.15	0.36	0.00	2.50+^	12.22
TD1	52.62	1.38	0.00	0.65	12.07	66.71+^	74.95
TH2	33.43	0.00	0.00	0.58	6.27	40.27^	65.13

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity	Actual Capacity
TH1	0.00	0.00	0.00	0.00	0.00	0.00	15.83
						*Anerobic Digester +Phase 1 ^Rounded Figure	

Indicate which RCSs are in-series: TD1& Treatment Pond; TH1 & TH2

2) Total Number of Animals:

In Open Lots: 22 In Buildings: 2

3) Animal Housing Location, hours/day:

Open Lots: 3,500 Buildings: 10,000

4) Average Liveweight, pounds per head: Holstein – 1,400 lbs; Jersey – 1,000lbs

5) Volatile Solids Removed by Separator System: 90% (TS1) 65% (TD trt & TD1)

6) Volatile Solids Loading Rate, lbs/day/1000 ft^3: 5.3

7) Spilled Drinking Water, gallons/day: Included in clean up water

8) Water for Cleanup, gallons/day: 105,000

9) Water for Manure Removal, gallons/day: Included in clean up water

10) Recycled Wastewater, gallons/day: 0

B. Wastewater Runoff

1) Design Rainfall Amount, inches: 12.2

2) Design Rainfall Event:

☐ 25-year, 24 hour

☐ Soil Plant Air and Water (SPAW) Field and Pond Hydrology Model

☒ 25-year, 10 day

☐ Other; specify: Click here to enter text.

C. Retention Control Structure(s) (RCS) Volume Allocations

Table 2. RCS Volume Allocations (Acre-Feet)

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity	Actual Capacity
TS1	11.99	23.50	64.36	23.46	24.83	148.14*~	TBD
TS2	14.29	0.00	0.00	0.10	2.16	16.55^	24.69
TD Treatment	0.00	0.00	6.44	1.07	0.00	7.51~	12.22
TD1	44.56	4.14	0.00	0.14	14.47	63.31~	74.95
TH2	33.43	0.00	0.00	0.58	6.27	40.27^	65.13

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity	Actual Capacity
TH1	0.00	0.00	0.00	0.00	0.00	0.00	15.83
						*Anerobic Digester ~Phase 2 ^Rounded Figure	

Indicate which RCSs are in-series: TD1& Treatment Pond; TH1 & TH2

2) Total Number of Animals:

In Open Lots: 22 In Buildings: 2

3) Animal Housing Location, hours/day:

Open Lots: 2,000 Buildings: 8,000

4) Average Liveweight, pounds per head: Holstein – 1,400 lbs; Jersey – 1,000lbs

5) Volatile Solids Removed by Separator System: 90% (TS1) 65% (TD trt & TD1)

6) Volatile Solids Loading Rate, lbs/day/1000 ft^3: 5.3

7) Spilled Drinking Water, gallons/day: Included in clean up water

8) Water for Cleanup, gallons/day: 105,000

9) Water for Manure Removal, gallons/day: Included in clean up water

10) Recycled Wastewater, gallons/day: 0

B. Wastewater Runoff

1) Design Rainfall Amount, inches: 12.2

2) Design Rainfall Event:

- ☐ 25-year, 24 hour
- ☐ Soil Plant Air and Water (SPAW) Field and Pond Hydrology Model
- ☒ 25-year, 10 day
- ☐ Other; specify: Click here to enter text.

C. Retention Control Structure(s) (RCS) Volume Allocations

Table 2. RCS Volume Allocations (Acre-Feet)

RCS Name	Design Rainfall Event Runoff	Process Generated Wastewater	Minimum Treatment Volume	Sludge Accumulation	Water Balance	Required Capacity	Actual Capacity
TS1	11.99	9.67	5.66	1.85	10.54	39.71<	49.97
						< Bypass Phase 1&2	

Indicate which RCSs are in-series: TD1& Treatment Pond; TH1 & TH2

D. RCS Liner or Lack of Hydrologic Connection Certification

Table 3: RCS Hydrologic Connection

RCS Name	Construction Date	Type of Hydrologic Connection Certification
TD Treatment Pond	Unknown	Liner Cert., Norman Mullin, P.E. 2008
TD1	Unknown	Liner Cert., Norman Mullin, P.E. 2010
TD Settling Pond #1	Unknown	Liner Cert., Norman Mullin, P.E. 2008
TD Settling Pond #2	Unknown	Liner Cert., Norman Mullin, P.E. 2008
TS1	Unknown	Liner Cert., Norman Mullin, P.E. 2010
TS2	Unknown	Liner Cert., Norman Mullin, P.E. 2016
TS Settling Pond	Unknown	Liner Cert., Jerry Holligan, P.E. 1997
TH1	Unknown	Liner tests certified by Southwest Laboratories, 1990
TH2	2010	Liner Cert., Norman Mullin, P.E. 2010
TH Settling Pond	Unknown	Liner tests certified by Southwest Laboratories, 1990
Slurry Pit	Unknown	Liner Cert., Norman Mullin, P.E. 2008

E. Playa Lakes

Are any playa lakes used for RCSs? Yes ☐ No ☒

SECTION 3. MANURE, SLUDGE, AND WASTEWATER HANDLING

A. Manure:

1) Use or Disposal Method:
   - ☒ Land Application to LMUs
   - ☒ Transfer to other persons
   - ☒ Third Party Fields
   - ☐ Other; specify: Click here to enter text.
2) Land Application Location:
   - ☒ Onsite ☒ Offsite ☐ Not Applicable
3) Composting Location:

☒ Onsite ☐ Offsite ☐ Not Applicable

B. Sludge:

1) Use or Disposal Method:

☒ Land Application to LMUs

☒ Transfer to other persons

☒ Third Party Fields

☐ Other; specify: Click here to enter text.

2) Land Application Location:

☒ Onsite ☒ Offsite ☐ Not Applicable

C. Wastewater:

1) Use or Disposal Method:

☒ Land Application to LMUs

☐ Total Evaporation

☒ Third Party Fields

☐ Other; specify: Click here to enter text.

2) Land Application Location:

☒ Onsite ☒ Offsite ☐ Not Applicable

D. Land Application Summary from the Nutrient Management Plan

For each Land Management Unit (LMU), provide the name, acre, crops/yield goals and application rates on Table 4 below. Add rows if needed or attach additional pages.

Table 4: Land Management Unit Summary from the Current NMP

LMU Name	Acre	Crop(s) and Yield Goal(s)	Application Rate (Ac-ft/Ac/Year OR Tons/Ac/Year)
1	144	Coastal graze 1AU/1ac; SG Mod Graze M	0.3 ac-ft/ac/yr
1A	93	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
2	39	Coastal graze 1AU/1ac; SG Mod Graze M	0.242 ac-ft/ac/yr
3	39	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
4	97	Coastal graze 1AU/1ac; SG Mod Graze M	1.25 ac-ft/ac/yr
4A	76	Coastal graze 1AU/1ac; SG Mod Graze M	165.6 tons/ac/yr
5	39	Coastal graze 1AU/1ac; SG Mod Graze M	1.25 ac-ft/ac/yr
5A	35	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
6	51	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr

LMU Name	Acre	Crop(s) and Yield Goal(s)	Application Rate (Ac-ft/Ac/Year OR Tons/Ac/Year)
7	16	Coastal graze 1AU/1ac; SG Mod Graze M	0.242 ac-ft/ac/yr
7A	33	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
8	26	Coastal graze 1AU/1ac; SG Mod Graze M	0.242 ac-ft/ac/yr
8A	18	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
9	34	Coastal graze 1AU/1ac; SG Mod Graze M	0.242 ac-ft/ac/yr
9A	28	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
10	29	Coastal graze 1AU/1ac; SG Mod Graze M	0.242 ac-ft/ac/yr
10A	46	Coastal graze 1AU/1ac; SG Mod Graze M	165.6 tons/ac/yr
11	42	Coastal graze 1AU/1ac; SG Mod Graze M	1.25 ac-ft/ac/yr
12	24	Coastal graze 1AU/1ac; SG Mod Graze M	0.242 ac-ft/ac/yr
12A	63	Coastal graze 1AU/1ac; SG Mod Graze M	62.1 tons/ac/yr
13	44	Coastal graze 1AU/1ac; SG Mod Graze M	62.1 tons/ac/yr
14	12	Coastal graze 1AU/1ac; SG Mod Graze M	62.1 tons/ac/yr

1) Wastewater production, ac-in/year: 5,084.04 ac-in/ac/yr (Tables 2.3A, D, F, G, Col. 4)
2) Estimated Wastewater application, ac-in/year: 3,675 ac-in/ac/yr (Tables 2.3A, D, F, G Col. 10)
3) Manure production, tons/year: 26,800 tons/yr (Table 2.1A)
4) Estimated manure application, tons/year: 2,386.93 tons/yr (NMP)

5) Estimated manure transferred to other persons, tons/year: 24,413.06 tons/yr (NMP)

E. Floodplain Information

1) Is any part of the production area within a 100-year floodplain? Yes ☐ No ☒

If YES, describe management practices to protect the sites. Click here to enter text.

2) Is land application or temporary storage of manure in a 100-year floodplain or near a water course? Yes ☒ No ☐

If YES, describe management practices. Vegetative buffers shall be maintained between all waters of the state and any waste/wastewater application.

F. Soil Limitations

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
BdC	Depth to Hard Bedrock Slow Water Movement	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
Bu, FriA	Flooding	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
CtB, WaB, WkA	Slow Water Movement Depth to Saturated Zone	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
FhC2, HfD2	Slow Water Movement Seepage	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
HoB	Slow Water Movement	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
HwD3	Depth to Soft Bedrock	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.

C. Wastewater:

1) Use or Disposal Method:

☒ Land Application to LMUs

☐ Total Evaporation

☒ Third Party Fields

☐ Other; specify: Click here to enter text.

2) Land Application Location:

☒ Onsite ☒ Offsite ☐ Not Applicable

D. Land Application Summary from the Nutrient Management Plan

For each Land Management Unit (LMU), provide the name, acre, crops/yield goals and application rates on Table 4 below. Add rows if needed or attach additional pages.

Table 4: Land Management Unit Summary from the Current NMP

LMU Name	Acre	Crop(s) and Yield Goal(s)	Application Rate (Ac-ft/Ac/Year OR Tons/Ac/Year)
1	144	Coastal graze 1AU/1ac; SG Mod Graze M	0.4 ac-ft/ac/yr
1A	93	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
2	39	Coastal graze 1AU/1ac; SG Mod Graze M	0.383 ac-ft/ac/yr
3	39	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
4	97	Coastal graze 1AU/1ac; SG Mod Graze M	1.125 ac-ft/ac/yr
4A	76	Coastal graze 1AU/1ac; SG Mod Graze M	1.125 ac-ft/ac/yr
5	39	Coastal graze 1AU/1ac; SG Mod Graze M	1.125 ac-ft/ac/yr
5A	35	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
6	51	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr

LMU Name	Acre	Crop(s) and Yield Goal(s)	Application Rate (Ac-ft/Ac/Year OR Tons/Ac/Year)
7	16	Coastal graze 1AU/1ac; SG Mod Graze M	0.383 ac-ft/ac/yr
7A	33	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
8	26	Coastal graze 1AU/1ac; SG Mod Graze M	0.383 ac-ft/ac/yr
8A	18	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
9	34	Coastal graze 1AU/1ac; SG Mod Graze M	0.383 ac-ft/ac/yr
9A	28	Coastal graze 1AU/1ac; SG Mod Graze M	61.7 tons/ac/yr
10	29	Coastal graze 1AU/1ac; SG Mod Graze M	0.383 ac-ft/ac/yr
10A	46	Coastal graze 1AU/1ac; SG Mod Graze M	165.6 tons/ac/yr
11	42	Coastal graze 1AU/1ac; SG Mod Graze M	1.125 ac-ft/ac/yr
12	24	Coastal graze 1AU/1ac; SG Mod Graze M	0.383 ac-ft/ac/yr
12A	63	Coastal graze 1AU/1ac; SG Mod Graze M	62.1 tons/ac/yr
13	44	Coastal graze 1AU/1ac; SG Mod Graze M	62.1 tons/ac/yr
14	12	Coastal graze 1AU/1ac; SG Mod Graze M	62.1 tons/ac/yr

1) Wastewater production, ac-in/year: 6,306.6 ac-in/ac/yr (Tables 2.3B, E, F, G, Col. 4)
2) Estimated Wastewater application, ac-in/year: 4,897.68 ac-in/ac/yr (Tables 2.3B, E, F, G, Col. 10)
3) Manure production, tons/year: 36,591 tons/yr (Table 2.1B)
4) Estimated manure application, tons/year: 1,732.66tons/yr (NMP)

5) Estimated manure transferred to other persons, tons/year: 34,585.36tons/yr (NMP)

E. Floodplain Information

1) Is any part of the production area within a 100-year floodplain? Yes ☐ No ☒

If YES, describe management practices to protect the sites. Click here to enter text.

2) Is land application or temporary storage of manure in a 100-year floodplain or near a water course? Yes ☒ No ☐

If YES, describe management practices. Vegetative buffers shall be maintained between all waters of the state and any waste/wastewater application.

F. Soil Limitations

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
BdC	Depth to Hard Bedrock Slow Water Movement	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
Bu, FriA	Flooding	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
CtB, WaB, WkA	Slow Water Movement Depth to Saturated Zone	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
FhC2, HfD2	Slow Water Movement Seepage	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
HoB	Slow Water Movement	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
HwD3	Depth to Soft Bedrock	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.

Soil Types	Limiting Characteristics	Best Management Practices
Ma	Depth to Bedrock Droughty	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that LMU. -No land application to inundated soils.
NdC	Filtering Capacity Seepage	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
WnC	Filtering Capacity	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
PcC	Droughty Depth to Bedrock Slow Water Movement	Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that LMU. -No land application to inundated soils.
Pd	Droughty Depth to Bedrock Slow Water Movement Large Surface Stones	Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that LMU. -No land application to inundated soils.
SdC	Depth to Saturated Zone	-Land application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.

G. Well Protection

Table 6: Water Well Status and Protective Measures

Well ID Number	Well Type	Producing or Non-Producing	Open, Cased, or Capped	Protective Measures
TD1	Domestic	Producing	Cased	See Attached Approved Buffer Exception
TD2	Domestic	Producing	Cased	See Attached Approved Buffer Exception
TD3	Domestic	Producing	Cased	See Attached Approved Buffer Exception
TD4	Domestic	Producing	Cased	See Attached Approved Buffer Exception
TD5	Domestic	Producing	Cased	Maintain 150-ft Buffer
TD6	Domestic	Non-Producing	Cased	See Attached Plugging Report
TD7	Domestic	Producing	Cased	Maintain 150-ft Buffer
TD8	Domestic	Producing	Cased	Maintain 150-ft Buffer
TD10	Domestic	Producing	Cased	Maintain 150-ft Buffer
TD11	Domestic	Non-Producing	Cased	See Attached Approved Well Buffer Exception (Phase 1) To Be Plugged (Phase 2)
TD12	Domestic	Producing	Cased	Maintain 150-ft Buffer
TD13	Domestic	Producing	Cased	Maintain 150-ft Buffer

Well ID Number	Well Type	Producing or Non-Producing	Open, Cased, or Capped	Protective Measures
TH1	Domestic	Producing	Cased	See Attached Approved Well Buffer Exception
TH2	Domestic	Producing	Cased	Maintain 150-ft Buffer
TH3	Domestic	Producing	Cased	See Attached Approved Well Buffer Exception
TH4	Domestic	Producing	Cased	See Attached Approved Well Buffer Exception
TH5	Domestic	Producing	Cased	Maintain 150-ft Buffer
TH6	Domestic	Non-Producing	Cased	See Attached Plugging Report
TH7	Domestic	Producing	Cased	Maintain 150-ft Buffer
TH8	Domestic	Non-Producing	Cased	No Evidence of well; see attached due diligence
TH9	Domestic	Producing	Cased	Maintain 150-ft Buffer
TS1	Domestic	Producing	Cased	See Attached Approved Well Buffer Exception
TS2	Domestic	Producing	Cased	See Attached Approved Well Buffer Exception
TS3	Domestic	Non-Producing	Cased	See Attached Plugging Report
TS4	Domestic	Producing	Cased	Maintain 150-ft Buffer

Well ID Number	Well Type	Producing or Non-Producing	Open, Cased, or Capped	Protective Measures
TS5	Domestic	Non-Producing	Cased	To Be Plugged
TS6	Domestic	Producing	Cased	Maintain 150-ft Buffer
TS7	Domestic	Non-Producing	Cased	See Attached Plugging Report
TS8	Domestic	Non-Producing	Cased	See Attached Plugging Report
TS9	Domestic	Producing	Cased	See Attached Approved Well Buffer Exception
TS10	Domestic	Producing	Cased	See Attached Approved Well Buffer Exception
TH10	Domestic	Non-Producing	Cased	See Attached Plugging Report

SECTION 4. AIR AUTHORIZATION SUMMARY

A. Type of Air Authorization

☒ Air Standard Permit in 30 TAC § 321.43

☐ Permit By Rule in 30 TAC Chapter 106 Subchapter F

☐ Individual Air Quality Permit

If Air Standard Permit is selected, then complete Sections B and C below.

B. Indicate the AFO Status and Buffer Option.

☐ Operation started after August 19, 1998:

- ☐ ½ mile buffer*
- ☐ ¼ mile buffer* and an odor control plan

☒ Operation started on or before August 19, 1998:

- ☐ ¼ mile buffer*
- ☒ odor control plan

*A written letter of consent from an affected landowner may be used in lieu of meeting the buffer distances specified.

C. Odor Receptors

Identify the number of occupied residences or business structures, schools (including associated recreational areas), places of worship, or public parks located within the following distances from permanent odor sources as defined in 30 TAC §321.32(43):

0 - ¼ mile: 11 (9 applicant

¼ - ½ mile: 6 (2 applicant)

½ - 1 mile: 12

SECTION 5. ATTACHMENTS

A. Maps

1) Site Map
2) Land Management Unit Map
3) Vicinity Map
4) Original United States Geological Survey 7.5 Minute Quadrangle Map
5) 100 Year Floodplain Map (if applicable)
6) Runoff Control Map
7) Natural Resource Conservation Service (NRCS) Soil Survey Map

B. Professional Certifications

1) Recharge Feature Certification Statement and Supporting Documents
2) RCS Design Calculations (Water Nutr, Animal Waste Management (AWM), or equivalent)
3) RCS As-Built Capacity Certifications (if constructed)
4) RCS Hydrologic Connection Certifications (if constructed)

C. Land Application

1) Nutrient Management Plan
2) Nutrient Utilization Plan. If the NUP is already approved, include the approval letter.
3) Copy of Annual Soil Sampling Analyses (used for the NMP that was submitted with the application)

4) Copy of Annual Manure and Wastewater Analyses (used for the NMP that was submitted with the application

D. Air Standard Permit Documentation (if required)

1) Area Land Use Map,
2) Odor Control Plan, if applicable
3) Written Consent Letters, if applicable

E. Groundwater Monitoring (if required)

1) Groundwater Monitoring Plan
2) Groundwater Monitoring Analyses

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 FACILITY MAPS

1.1 Vicinity Map

Figure 1.1, Vicinity Map, is a general highway map generated in AutoCAD using Tiger Primary and Secondary roads data from geospatial Data Gateway at http://datagateway.nrcs.usda.gov/ (retrieved 2016). The location of the facility is depicted on the map.

1.2 USGS Quadrangle Map

Figures 1.2A-B, entitled 7.5-Minute USGS Map is a seamless, high-quality copy of the 7.5-minute USGS quadrangle map (Clairette and Johnsville, TX, quadrangles) that shows the boundaries of land owned, operated, or controlled by Dancing Crane Dairy and used as part of the concentrated animal feeding operation; and all springs, lakes, or ponds located on-site and within 1 mile of the property boundary.

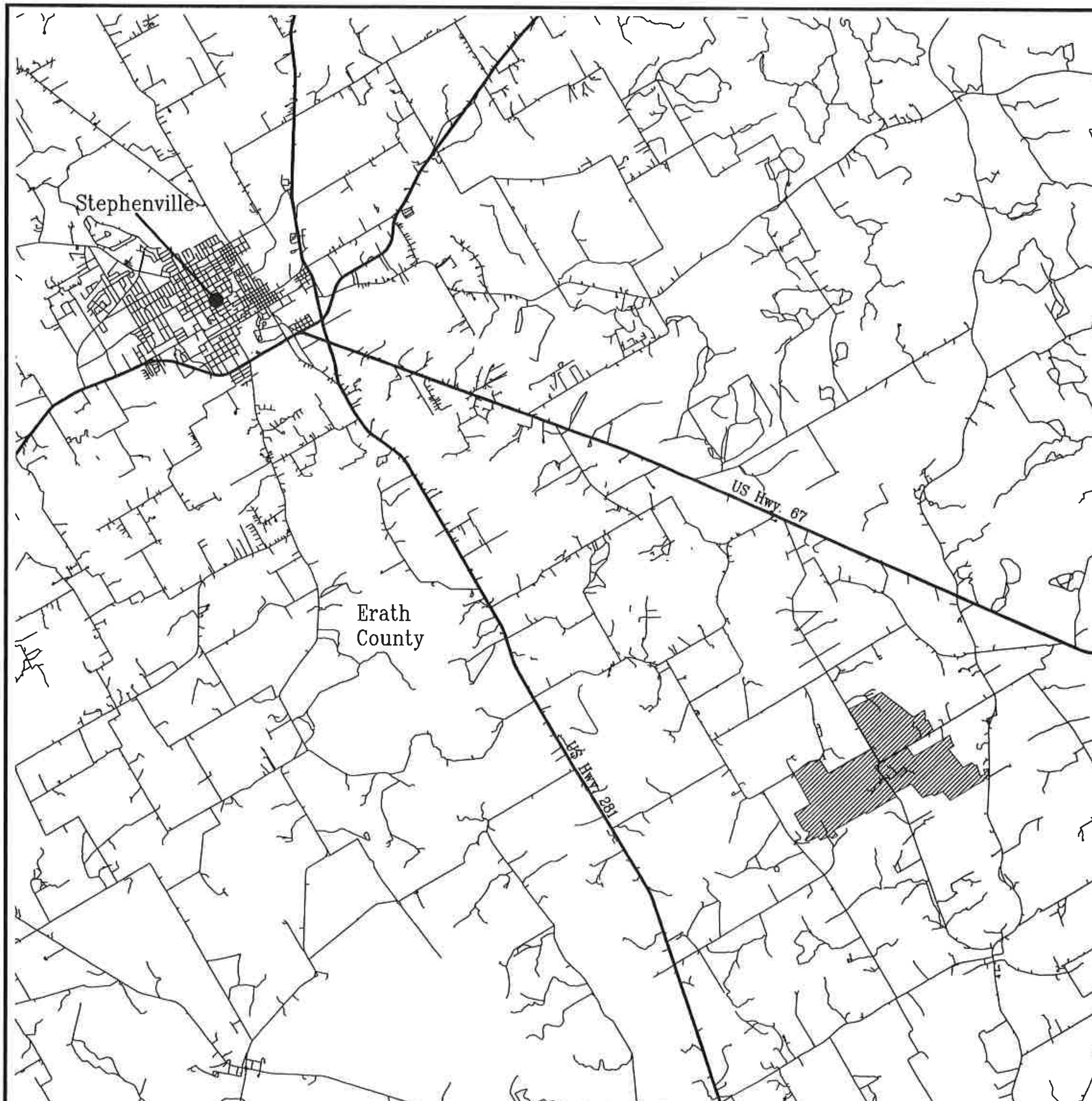
1.3 Site Map

Figures 1.3A-B, Site Map, is a scaled drawing of the entire property to be permitted showing the locations of the following information:

- Pens/Open Lots
- Barns
- Retention Control Structures
- Land Management Units
- Buffer zones
- Wells
- Freshwater Ponds
- Berms/Diversions
- Milking Parlor
- Manure/Compost Storage Areas
- Commodity/Feed Center Areas
- Pit
- Grassed Waterway
- Anerobic Digester

1.4 Runoff Control Map

Figures 1.4A-D is a scaled drawing of the production area showing the pens, barns, wells, RCSs, permanent manure storage and compost areas, drainage area boundaries and flow directions.



Map Revised 6/2/2024

LEGEND:
- Denotes Facility
- Denotes County Roads
- Denotes Major Highways

N
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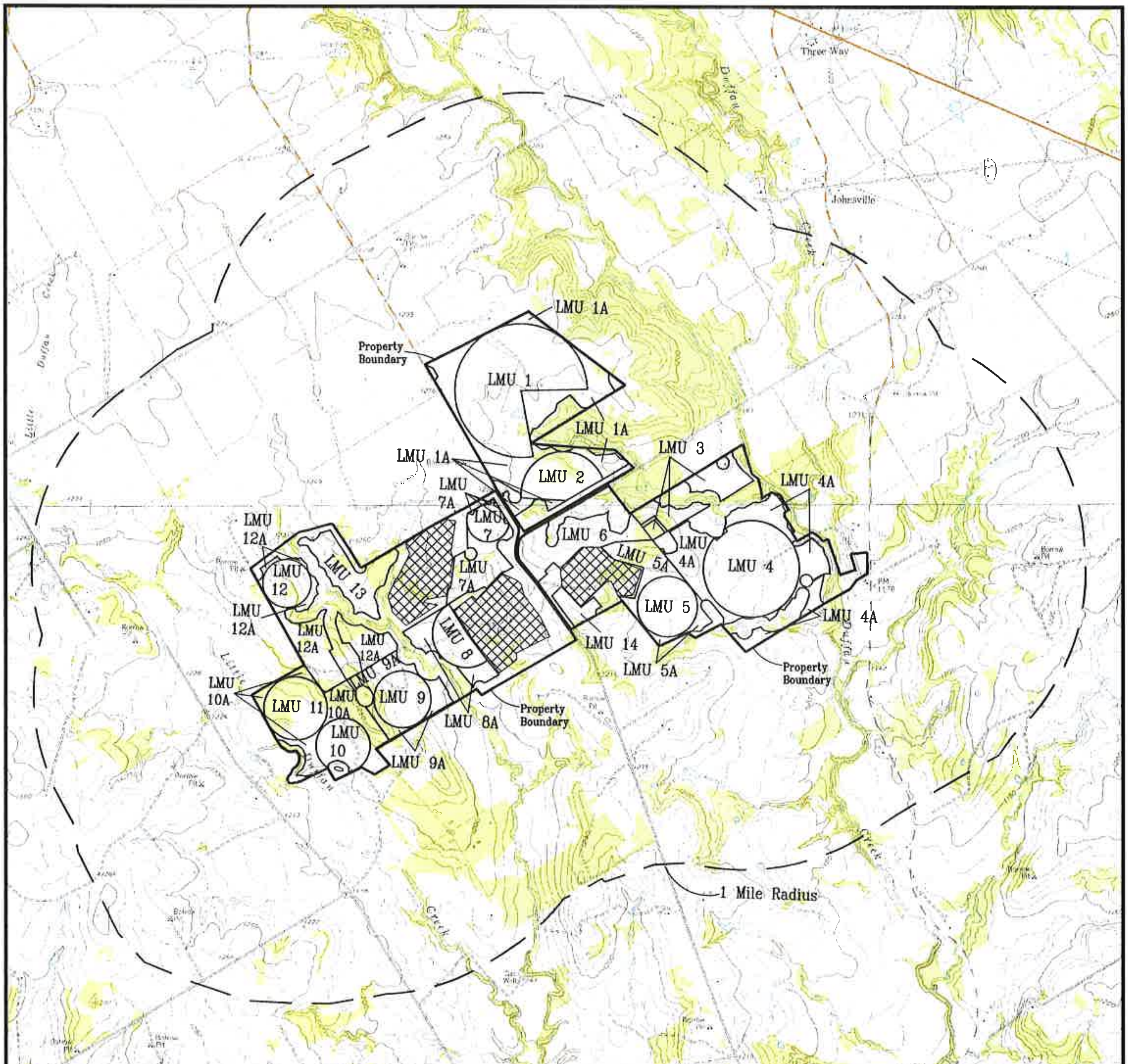
1 mile 0 1 mile 2 miles

SCALED AS SHOWN

Source: USDA-NRCS. Geospatial Data Gateway. Available at: Tiger 2010 Primary and Secondary Roads-Accessed January, 2016.

TMC Dairies Hico Hico, TX Erath County	Vicinity Map Figure 1.1 Page 2	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Map Revised 8/1/2024

LEGEND:
Denotes Production Area

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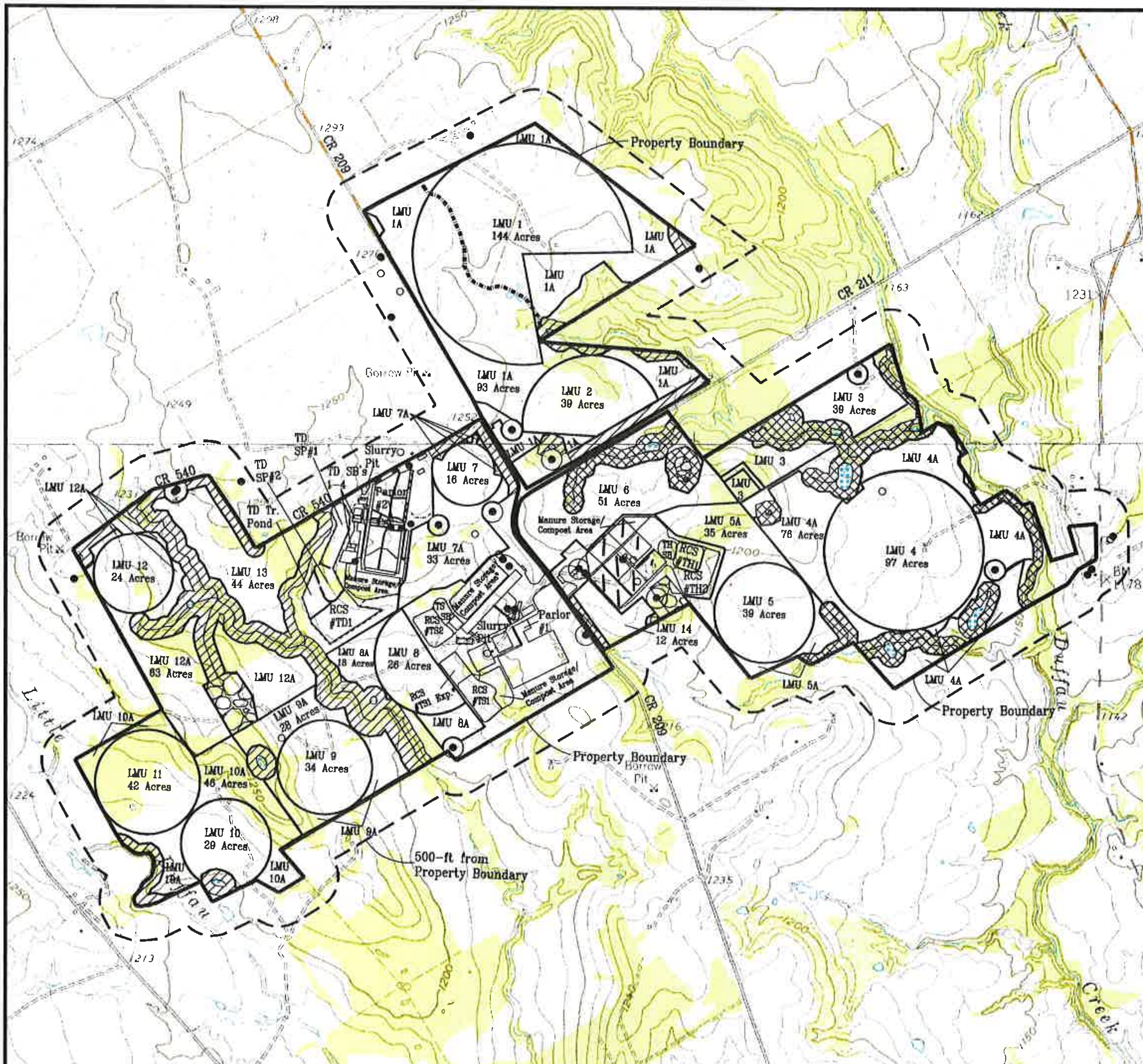
1700' 0 1700' 3400'

SCALED AS SHOWN

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS - Accessed May 2013.

• Refer to Figures 1.3 & 1.4 A-D for overall facility maps.

TMC Dairies Hico Hico, TX Erath County	USGS 7.5-Minute Quadrangle Map Figure 1.2 Page 3	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Map Revised 8/1/2024

LEGEND:

- ○ Denotes Plugged Water Well
- ● Denotes Water Well
- ◉ Denotes Well w/150-ft Buffer
- Denotes Grassed Waterway
- Denotes 142-ft Buffered Zone
- Denoted 133-ft Buffered Zone
- Denotes Fresh Water Pond
- Denotes Pit
- * Denotes Proposed Structure

N W E S

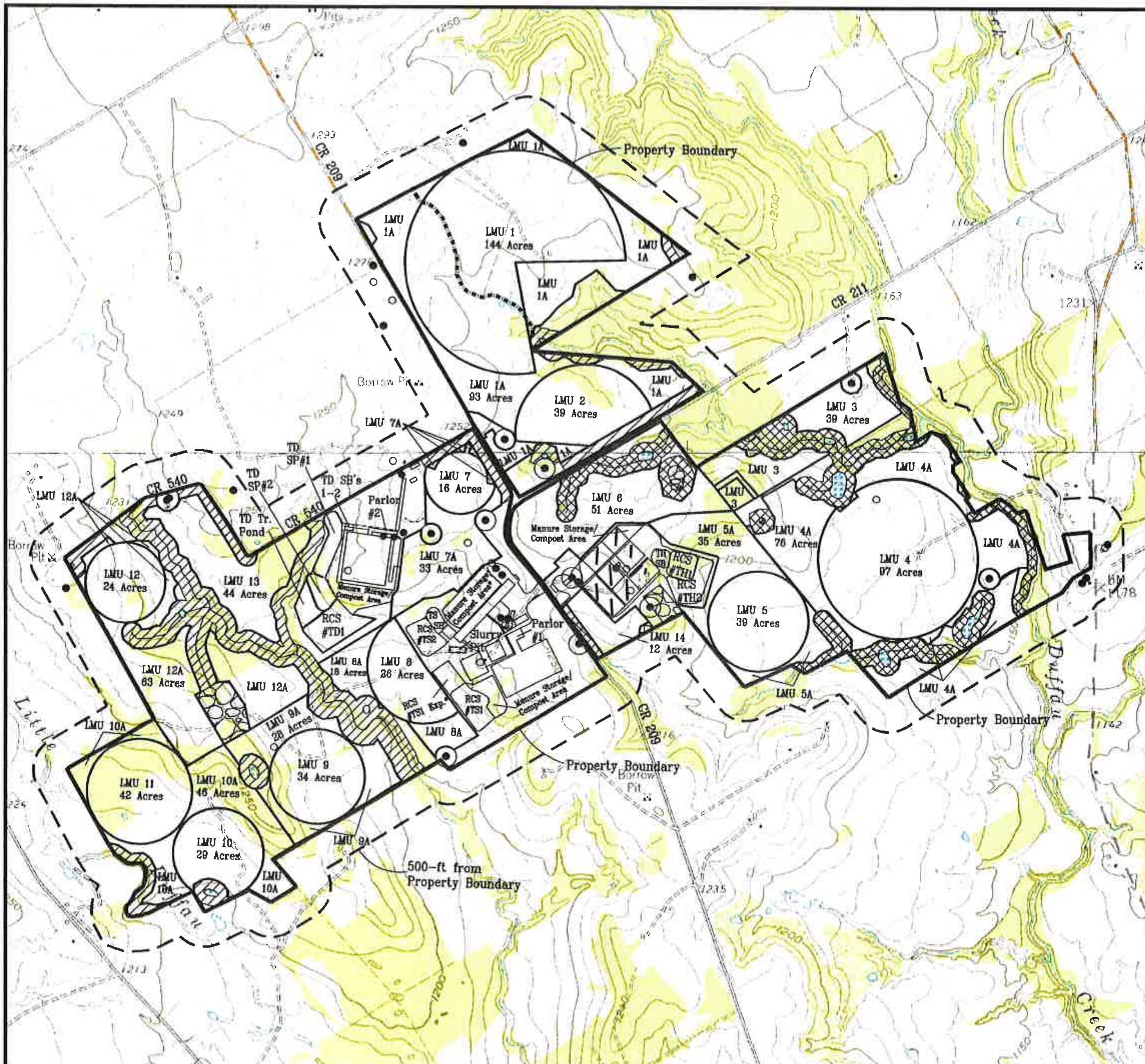
1050' 0 1050' 2100'

SCALED AS SHOWN

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS – Accessed May 2013.

Refer to Figures 1.4 A–C for detailed production area maps.

TMC Dairies Hico Hico, TX Erath County	Site Map Phase I Figure 1.3A Page 4	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Map Revised 8/1/2024

LEGEND:

- ○ Denotes Plugged Water Well
- ● Denotes Water Well
- ⊙ Denotes Well w/150-ft Buffer
- Denotes Grassed Waterway
- Denotes 142-ft Buffered Zone
- Denoted 133-ft Buffered Zone
- Denotes Fresh Water Pond
- Denotes Pit
- * Denotes Proposed Structure

N
W E
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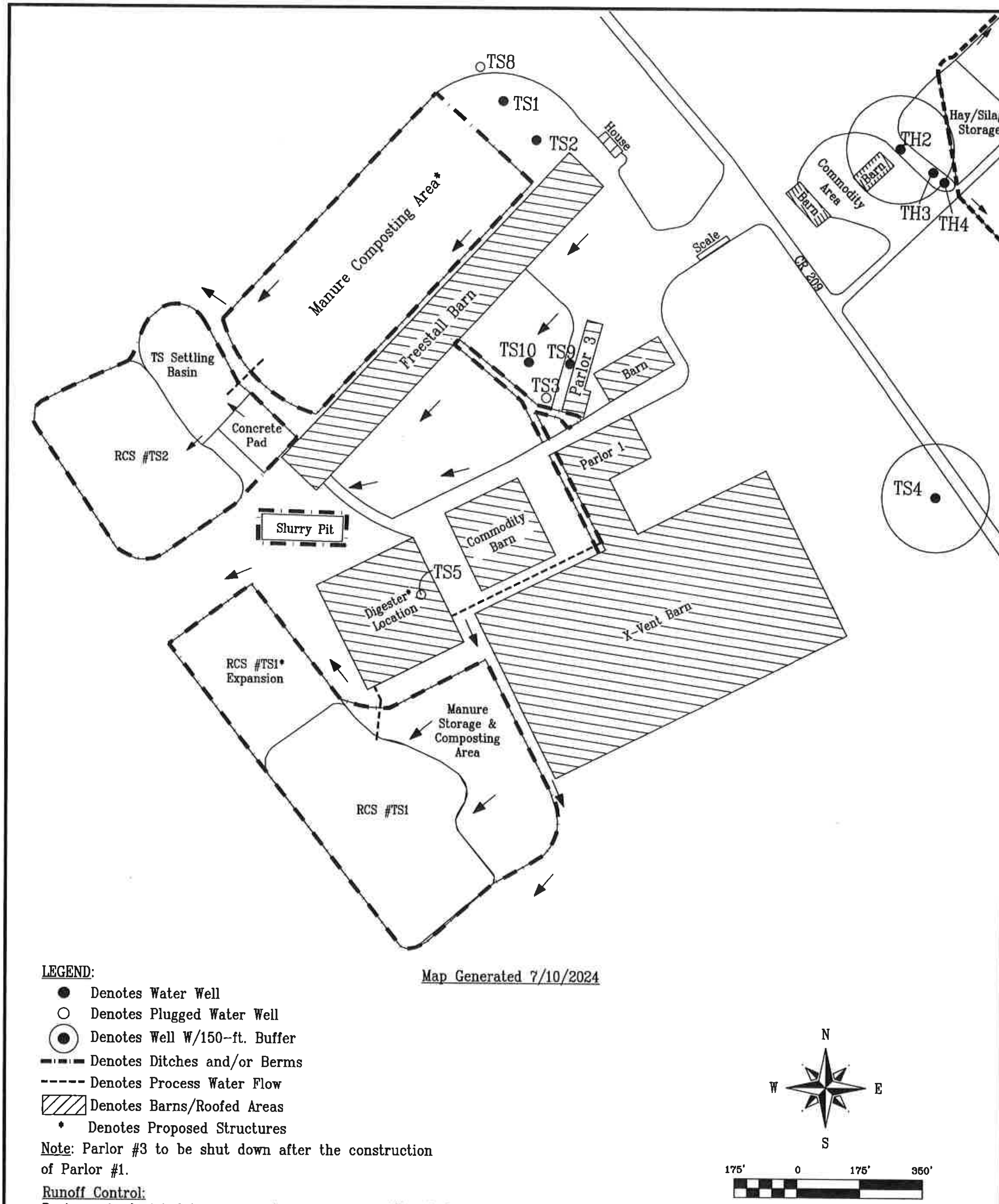
1050' 0 1050' 2100'

SCALED AS SHOWN

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS - Accessed May 2013.

Refer to Figures 1.4 A, B & D for detailed production area maps.

TMC Dairies Hico Hico, TX Erath County	Site Map Phase II Figure 1.3B Page 5	ENVIRO-AG ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



LEGEND:

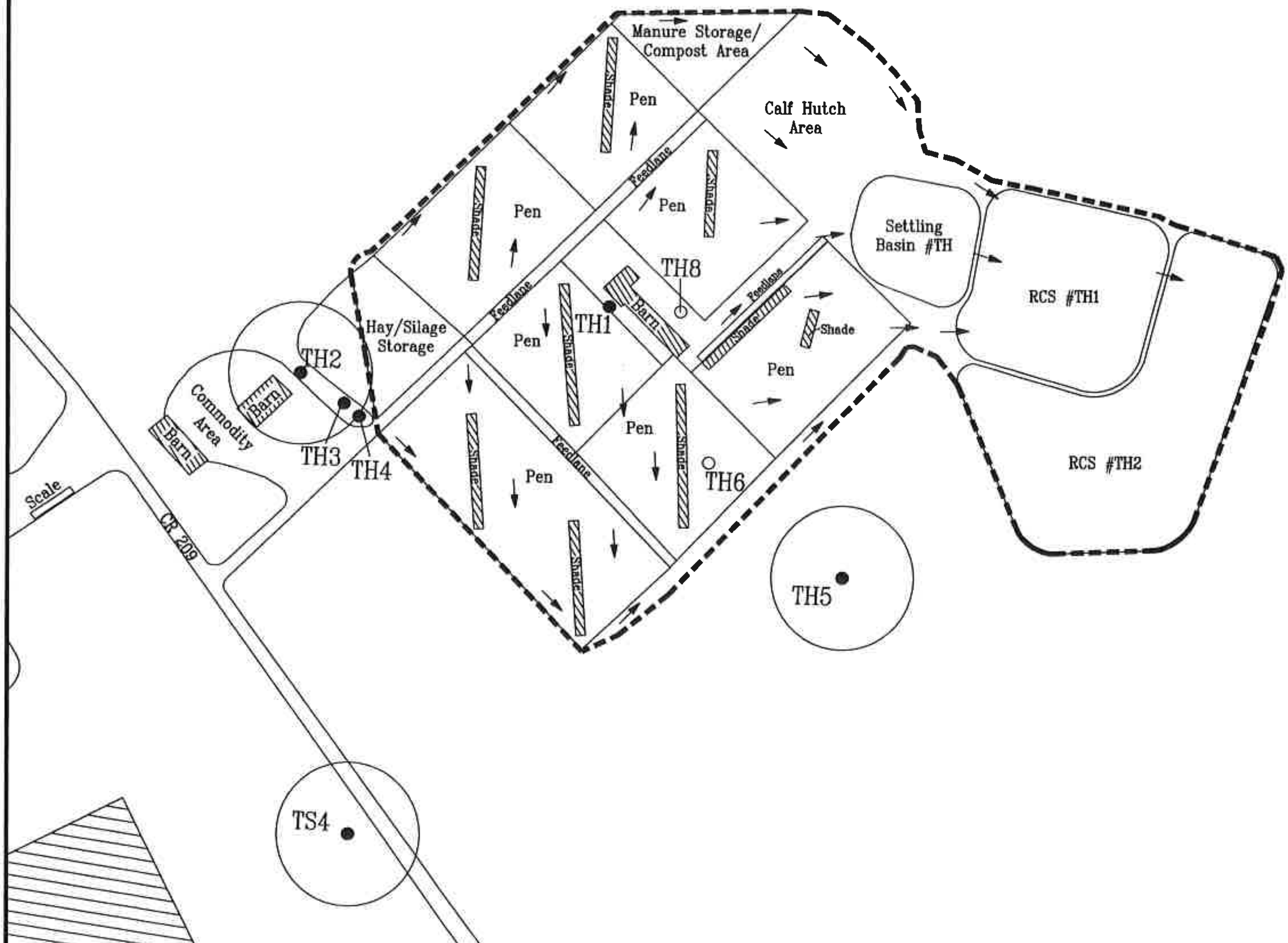
- ● Denotes Water Well
- ○ Denotes Plugged Water Well
- ◉ Denotes Well W/150-ft. Buffer
- ▬ · ▬ Denotes Ditches and/or Berms
- ----- Denotes Process Water Flow
- ▨ Denotes Barns/Roofed Areas
- * Denotes Proposed Structures

Map Generated 7/10/2024

Note: Parlor #3 to be shut down after the construction of Parlor #1.

Runoff Control:
Drainage is depicted by arrows shown on maps. The drainage will be directed to the RCS via ditches, berms or underground pipe.

TMC Dairies Hico Hico, TX Erath County	Runoff Control Map Figure 1.4A Page 6	ENVIRO–AG ENGINEERING, INC. — Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Map Generated 7/10/2024

LEGEND:
- ● Denotes Water Well
- ○ Denotes Plugged Water Well
- ◉ Denotes Well W/150-ft. Buffer
- ▬▬▬ Denotes Ditches and/or Berms
- ▨ Denotes Barns/Roofed Areas

N
W E
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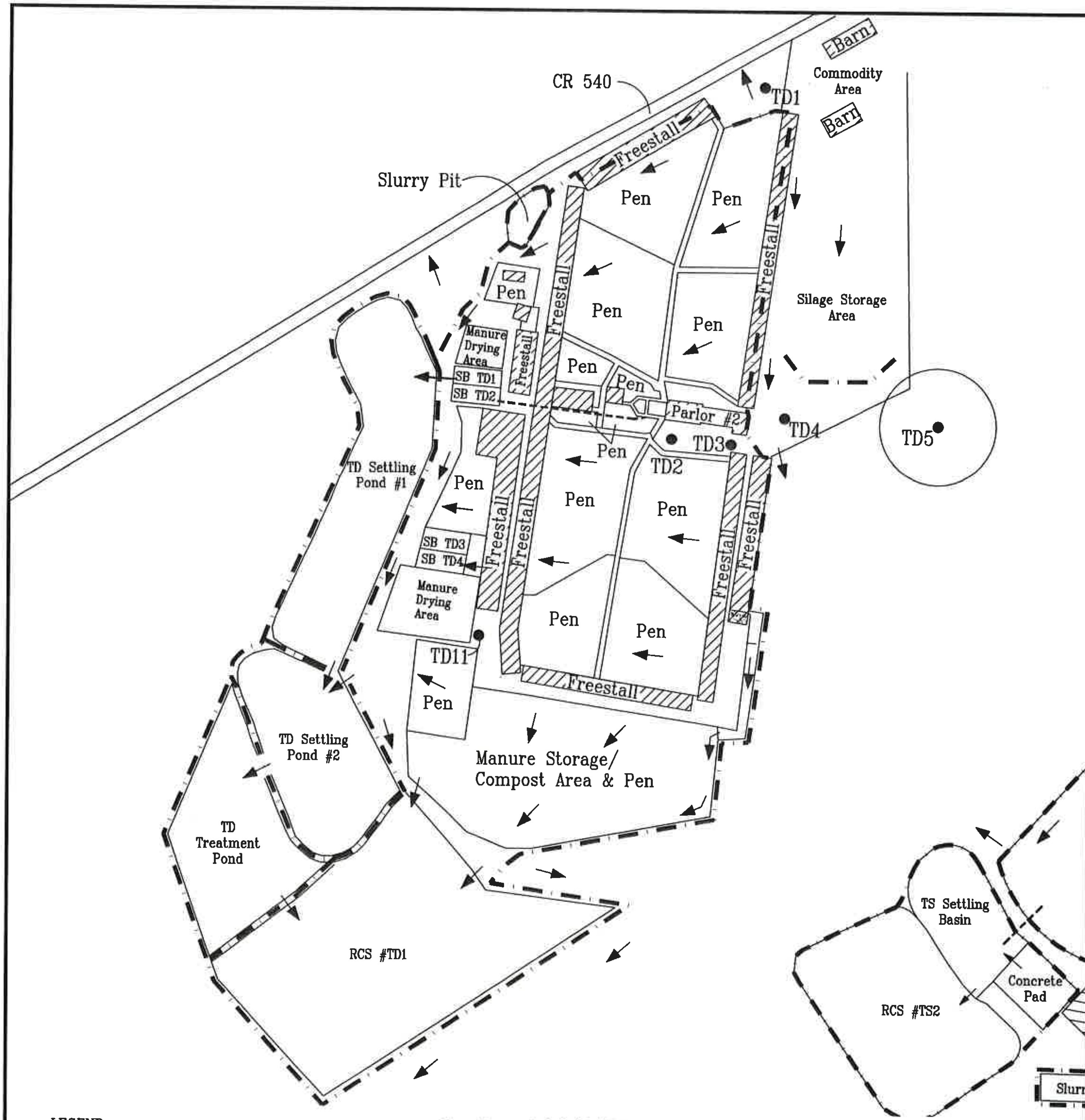
175' 0 175' 360'

SCALED AS SHOWN

Runoff Control:
Drainage is depicted by arrows shown on maps. The drainage will be directed to the RCS via ditches, berms or underground pipe.

TMC Dairies Hico Hico, TX Erath County	Runoff Control Map Figure 1.4B Page 7	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



LEGEND:

- Denotes Water Well
- Denotes Well W/150-ft. Buffer
- Denotes Ditches and/or Berms
- Denotes Process Water Flow
- Denotes Barns/Roofed Areas

Map Generated 7/10/2024

N
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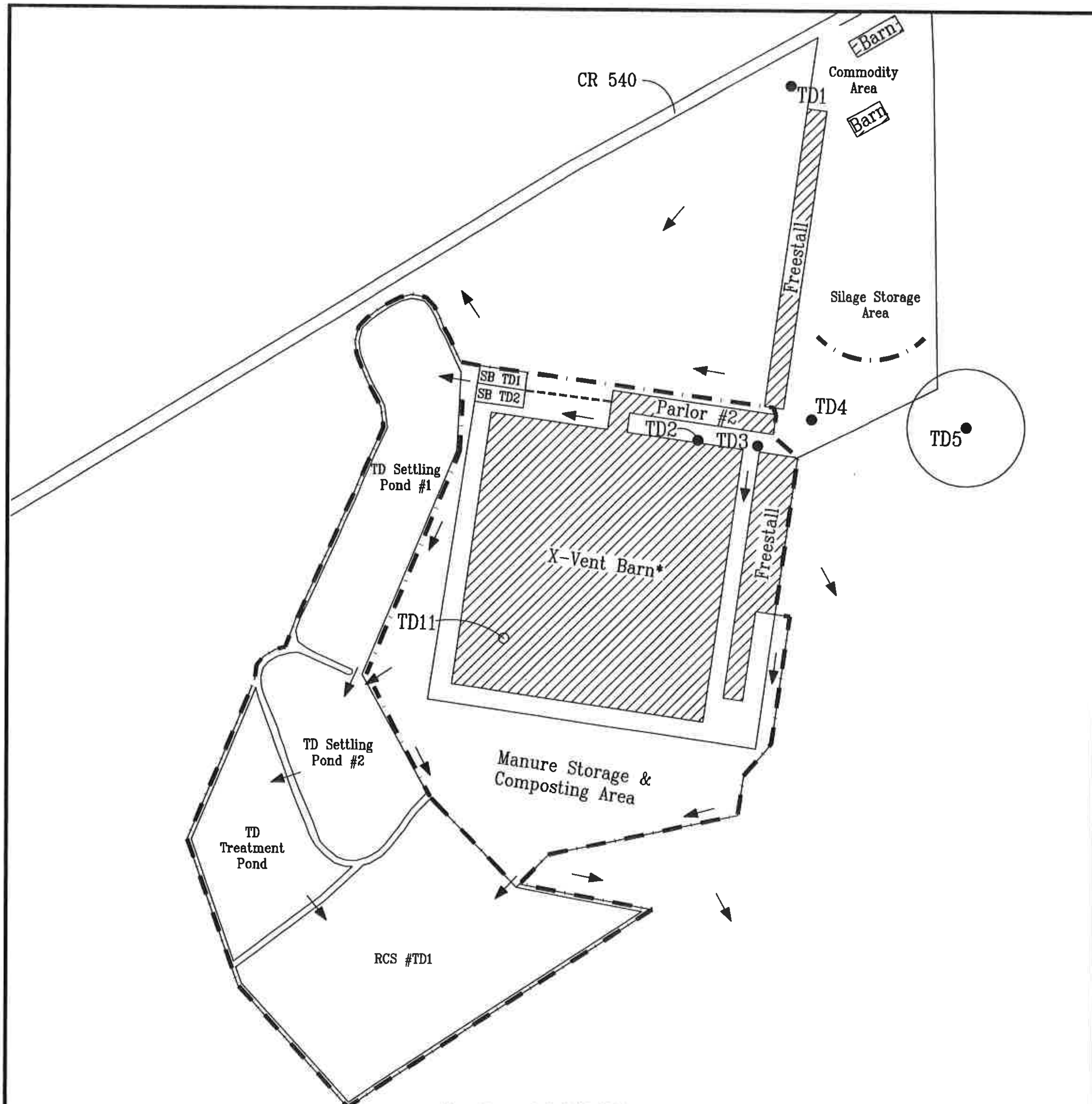
175' 0 175' 350'

SCALED AS SHOWN

Runoff Control:
Drainage is depicted by arrows shown on maps. The drainage will be directed to the RCS via ditches, berms or underground pipe.

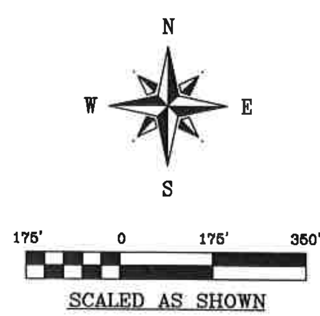
TMC Dairies Hico Hico, TX Erath County	Runoff Control Map Figure 1.4C Page 8	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Map Generated 7/10/2024

LEGEND:

- ● Denotes Water Well
- ⦿ Denotes Well W/150-ft. Buffer
- ━·━ Denotes Ditches and/or Berms
- ----- Denotes Process Water Flow
- ▨ Denotes Barns/Roofed Areas
- * Denotes Proposed Structures



Runoff Control:
Drainage is depicted by arrows shown on maps. The drainage will be directed to the RCS via ditches, berms or underground pipe.

TMC Dairies Hico Hico, TX Erath County	Runoff Control Map Figure 1.4D Page 9	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

2.0 CALCULATIONS & SPECIFICATIONS

2.1 Facility Overview

The existing facility consists of pens, freestall barns, cross-vent barn, three milking parlors, four concrete settling basins, one earthen slurry pit, one slurry pit with concrete bottom and earthen sides, four earthen settling basins, treatment pond and five retention control structures to confine 9,150 head, of which 5,500 head are milking.

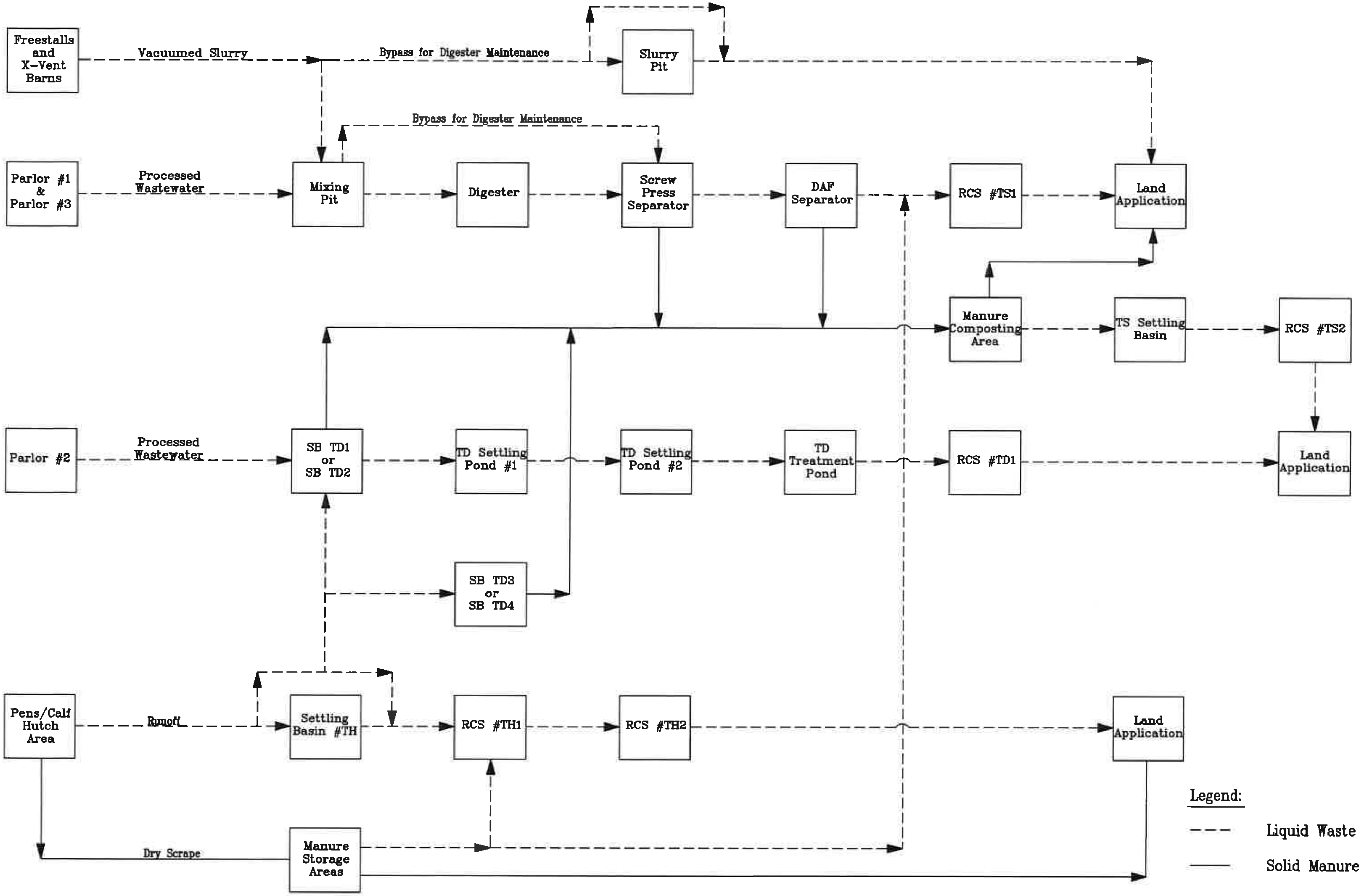
3T Martins Farm Hico, LLC has submitted a major amendment application. The application process is structured in two phases to maintain compliance throughout the transition. Phase 1 will see the headcount rise to 10,000 total with 8,000 milking, addition of the Jersey breed of dairy cattle along with the Holstein breed, addition of an anerobic digester and associated equipment, change in property boundary, reconfigure LMUs (see attached LMU cross-reference table), remove LMU #TH8 & #TD7, remove wells # TD9, #TF1 & TF2, and well #TS5 is to be plugged and reconfigure drainage area on Figure 1.4A (addition of manure compost area, addition of cross-vent barn, plug well #TS5, expansion of RCS #TS1). Phase 2 will see the headcount rise to 13,500 total with 10,000 milking, reconfigure drainage area on Figure 1.4D (addition of cross-vent barn, addition of a parlor, remove pens, freestall barns, settling basins and plug well #TD11) and reconfigure parlor #2.

The proposed changes reflect 3T Martins Farm Hico, LLC commitment to growth and efficiency, while also adhering to environmental regulations. The expansion will allow for increased milk production and the ability to manage additional waste effectively through enhanced treatment facilities. The phased approach demonstrates a careful consideration of operational compliance, ensuring that the dairy's expansion does not compromise its environmental responsibilities.

2.2 Manure Production

Tables 2.1A-B, As-Excreted Manure Characteristics Existing Dairy Facility, is included as a summary of the annual manure and nutrient production for the facility. The totals in Table 2.1 represent as-excreted manure and nutrient values for the maximum head count shown in the application.

Note: This data is intended for planning and design purposes and is not to be used for whole-farm nutrient mass balance calculations.



TMC Dairies Hico
Hico, TX
Erath County

Proposed Manure & Wastewater Flow Chart
Figure 2.1
Page 11

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August 13, 2024

To whom it may concern:

The DVO anaerobic digester (AD) with the addition of a mechanical solids separator and a DVO dissolved air flotation system, designed for operation at the TMC Dairy are expected to achieve a total solids (TS) reduction of 78% and a volatile solids (VS) reduction of 90%. Listed below is a breakdown of the separation systems and associated TS and VS reductions.

AD:
TS reduction of 34%
VS reduction of 42%

Screw Press:
TS reduction of 22%
VS reduction of 29%

Dissolved Air Flotation:
TS reduction of 58%
VS reduction of 76%

The information above is based on TMC Dairy using fiber solids as bedding and are the results from a compilation of sampling data from a similar system in operation for the past ten years in Indiana.

Steve Dvorak

Steve Dvorak, P.E.
President

ESTIMATED MANURE PRODUCTION
for a DAIRY FACILITY PHASE 1
Table 2.1A
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

FACILITY TOTAL	Parlor #1 Jersey Milkers in Parlor	Parlor #1 Jersey Milkers in Barn	Parlor #1 Holstein Milkers in Parlor	Parlor #1 Holstein Milkers in Barn	Parlor #2 Holstein Milkers in Parlor	Parlor #2 Holstein Milkers in Barn	Others* in Barns/Open Lots	Dairy Total	Total to Digester
	MANURE PRODUCTION CRITERIA								
1. Number of Animals (head):	**5,500**	**5,500**	**1,500**	**1,500**	**1,000**	**1,000**	**2,000**	**10,000**	**7,000**
2. Average Liveweight per head, lbs.	1,000	1,000	1,400	1,400	1,400	1,400	1,400	n/a	n/a
3. Total Liveweight, lbs.	5,500,000	5,500,000	2,100,000	2,100,000	1,400,000	1,400,000	2,800,000	11,800,000	n/a
4. Confinement period, hrs./hd/day	2	22	2	22	2	22	24	24	24
5. Percent of time in Confinement Area	8%	92%	8%	92%	8%	92%	100%	100%	100%
6. Adjusted Total Liveweight, lbs.	458,333	5,041,667	175,000	1,925,000	116,667	1,283,333	2,800,000	11,800,000	7,600,000
7. Total Manure Production, lbs./day (a)	50,875.00	559,625.00	19,375.00	213,125.00	12,916.67	142,083.33	142,000.00	1,140,000	843,000
8. Total Solids Production, lbs./day (a)	6,554.17	72,095.83	2,500.00	27,500.00	1,666.67	18,333.33	18,200.00	146,850	108,650
9. Total Solids Production, tons/year	1,196.14	13,157.49	456.25	5,018.75	304.17	3,345.83	3,321.50	26,800	19,829
10. Volatile Solids Production, lbs./day (a)	5,545.83	61,004.17	2,125.00	23,375.00	1,416.67	15,583.33	15,400.00	124,450	92,050
11. Total Nitrogen Production, lbs./day (a)	330.00	3,630.00	126.25	1,388.75	84.17	925.83	840.00	7,325	5,475
12. Total Phosphorus, P2O5 lbs./day (a)	169.58	1,865.42	65.00	715.00	43.33	476.67	300.00	3,635	2,815
13. Total Potassium, K2O lbs./day (a)	183.33	2,016.67	71.25	783.75	47.50	522.50	660.00	4,285	3,055

NOTES:
* - Includes dry cows, growing heifers and young stock.
(a) - Manure and nutrient production values are taken from Midwest Plan Service (MWPS)
Manure Characteristics MWPS-18 Section 1-Second Edition "Daily Manure Production and Characteristics, As-Excreted"; Table 6, 2004

ESTIMATED MANURE PRODUCTION
for a DAIRY FACILITY PHASE 2
Table 2.1B
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

FACILITY TOTAL	Parlor #1 Jersey Milkers in Parlor	Parlor #1 Jersey Milkers in Barn	Parlor #1 Holstein Milkers in Parlor	Parlor #1 Holstein Milkers in Barn	Parlor #2 Holstein Milkers in Parlor	Parlor #2 Holstein Milkers in Barn	Others* in Barn	Others* in Open Lots	Dairy Total	Total to Digester
	MANURE PRODUCTION CRITERIA									
1. Number of Animals (head):	**5,500**	**5,500**	**1,500**	**1,500**	**3,000**	**3,000**	**1,500**	**2,000**	**13,500**	**11,500**
2. Average Liveweight per head, lbs.	1,000	1,000	1,400	1,400	1,400	1,400	1,400	1,400	n/a	n/a
3. Total Liveweight, lbs.	5,500,000	5,500,000	2,100,000	2,100,000	4,200,000	4,200,000	2,100,000	2,800,000	n/a	n/a
4. Confinement period, hrs./hd/day	2	22	2	22	2	22	24	24	24	24
5. Percent of time in Confinement Area	8%	92%	8%	92%	8%	92%	100%	100%	100%	100%
6. Adjusted Total Liveweight, lbs.	458,333	5,041,667	175,000	1,925,000	350,000	3,850,000	2,100,000	2,800,000	16,700,000	13,550,000
7. Total Manure Production, lbs./day (a)	50,875.00	559,625.00	19,375.00	213,125.00	38,750.00	426,250.00	106,500.00	142,000.00	1,556,500	1,375,750
8. Total Solids Production, lbs./day (a)	6,554.17	72,095.83	2,500.00	27,500.00	5,000.00	55,000.00	13,650.00	18,200.00	200,500	177,300
9. Total Solids Production, tons/year	1,196.14	13,157.49	456.25	5,018.75	912.50	10,037.50	2,491.13	3,321.50	36,591	32,357
10. Volatile Solids Production, lbs./day (a)	5,545.83	61,004.17	2,125.00	23,375.00	4,250.00	46,750.00	11,550.00	15,400.00	170,000	150,350
11. Total Nitrogen Production, lbs./day (a)	330.00	3,630.00	126.25	1,388.75	252.50	2,777.50	630.00	840.00	9,975	8,883
12. Total Phosphorus, P2O5 lbs./day (a)	169.58	1,865.42	65.00	715.00	130.00	1,430.00	225.00	300.00	4,900	4,470
13. Total Potassium, K2O lbs./day (a)	183.33	2,016.67	71.25	783.75	142.50	1,567.50	495.00	660.00	5,920	5,118

NOTES:
* - Includes dry cows, growing heifers and young stock
(a) - Manure and nutrient production values are taken from Midwest Plan Service (MWPS)
Manure Characteristics MWPS-18 Section 1-Second Edition "Daily Manure Production and Characteristics, As-Excreted"; Table 6, 2004.

2.3 Process-Generated Wastewater Volume

The sources of process-generated wastewater are wash water from the milking parlors operations (15 gal/head/day) and the water generated from the production of biogas (1,000 gal/day). The flow of the process-generated wastewater can be found on Figures 2.1 A-E. The freestall barns are vacuumed for manure removal. All open lot pens are dry scraped for manure removal. The design storage volume in RCSs #TS1 and #TD1 for process-generated wastewater is 30 days and is calculated in Tables 2.2A-E.

2.4 25-Year, 10-Day Rainfall Storage Volume

In accordance with 30 TAC §321.42(c)(1), RCSs #TD1, #TS2, #TS1 and #TH2 are designed to maintain a margin of safety to contain the runoff and direct precipitation from the 25-year, 10-day storm event for this location, which is 12.2 inches of rainfall. Drainage area runoff volumes are calculated using the SCS method with curve numbers (CN) selected based on soil type and land use. The pen area runoff and compost area were calculated using a CN of 90, the pond area was calculated using a CN of 100, and the adjacent areas were calculated a CN of 90. Roofed/concrete areas were calculated using a CN of 100. Run-on from areas outside the control facility is directed away from the RCSs. Tables 2.2A-G show the calculated storage volume required for the rainfall runoff from a 25-year, 10-day storm.

2.5 Sludge Accumulation Volume

Sludge accumulation from the milking parlor wash water was calculated using a rate of 0.0729 cubic feet of sludge per pound total solids (from USDA-NRCS Agricultural Waste Management Handbook) and a sludge storage period of 1 year. The required sludge accumulation volume calculations are shown in Tables 2.2A-G.

2.6 Water Balance Model

Tables 2.3A-G, Water Balance Model, estimates the inflows and withdrawals from RCSs #TD1, #TS2, #TS1 and #TH2 including runoff, direct rainfall, process-generated wastewater, evaporation, and irrigation withdrawal based on crop demand in accordance with 30 TAC §321.38(e)(7)(C). Actual pond withdrawal amounts will vary with changing weather conditions. An additional volume is included in the RCSs to provide flexibility in managing RCS levels.

2.7 RCS Management Plan

A RCS Management Plan was developed by a licensed Texas professional engineer and has been implemented to incorporate the margin of safety, as specified in 30 TAC §321.42(g). The plan includes the elements specified in §321.42(g)(1)-(6), and a copy is maintained in the onsite PPP.

2.8 Minimum Treatment Volume Requirement

A minimum treatment volume for odor control is required to obtain air standard authorization from the TCEQ. The minimum treatment volume is determined by estimating the volatile solids production rate less the removal efficiency of the settling basins and using a loading rate specified by ASABE Standards (ASAE EP 403.4 FEB2011) of 5.30 lbs of volatile solids per 1,000 cubic feet of storage. Tables 2.2A-E shows the minimum treatment volume calculation.

2.10 Digester Discussion

Wastewater from the milking parlor is directed to the anerobic digester system. The manure from the barns is vacuumed and delivered to the mixing pit to adjust the total solids content required by the digester. The data supporting the calculations used in the volatile solids/total solids reduction in the digester, screw press, and dissolved air flotation systems are from actual sample results from testing by DVO (the digester/equipment company) and are attached.

PHASE 1 PARLOR 1 DIGESTER
REQUIRED STORAGE VOLUMES FOR ANEROBIC DIGESTER/ RUNOFF RETENTION CONTROL STRUCTURES
Table 2.2A
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

TREATMENT REQUIREMENT
SLUDGE VOLUME

Dry Manure Produced:	(lb/day)	108,650
Anaerobic Digester Efficiency (%) (a):		34%
	(lb/day)	71,709
Screw Press Efficiency (%) (a):		22%
	(lb/day)	55,933
Dissolved Air Flotation Efficiency (%) (a):		58%
	(lb/day)	23,492
Sludge Accumulation Rate (b):	(cuft/lb)	0.0729
Sludge Accumulation Period:	(years)	1
1-Year Sludge Volume:	(ac-ft)	14.35
TREATMENT VOLUME		
Volatile Solids Produced:	(lb/day)	92,050
Anaerobic Digester Efficiency (%) (a):		42%
	(lb/day)	53,389
Screw Press Efficiency (%) (a):		29%
	(lb/day)	37,906
Dissolved Air Flotation Efficiency (%) (a):		76%
Adjusted Volatile Solids Production:	(lb/day)	9,097
Design Loading Rate (lbVS/1000cuft-day) (g):		5.3
Treatment Volume:	(ac-ft)	39.41
TOTAL TREATMENT VOLUME		
Treatment Volume:		39.41
1-Year Sludge Volume:		14.35
Total Required Treatment Volume:	**(ac-ft)**	**53.76**

NOTES:
(a) Based on data provided by DVO.
(b) Sludge Accumulation Rate taken from Table 1, ASABE Standards (ASABE EP403.4 FEB 2011).
(c) Site Specific Data.
(d) Based on data provided by Nacelle Solutions.
(e) Using SCS method:
Where:
$S = (1000/CN) - 10$
$Q = ((I - 0.2S)^2)/(I + 0.8S)$
S = Potential maximum retention after runoff begins in)
Q = Runoff (in)
I = 25-Year, 10-Day Rainfall (in)
CN = Curve Number from SCS 210-VI-TR-55, 2nd Edition, June 1986
(f) USDA Agricultural Field Waste Handbook, Kansas, Part 651.1082. Suggested procedures for sediment volume estimation (Inputs-pen/adj contribution, 1.5% solids and 1 year).
(g) Loading Rate taken from Figure 2, ASABE Standards (ASABE EP403.4 FEB2011).

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

RUNOFF REQUIREMENT
PROCESS GENERATED WASTE/WASTEWATER

Parlor Wash Water (c):		(gal/head/day)	15
No. of Head in Parlor:			7,000
Volume of Process Water:		(gal/day)	105,000
Biogas Production Generated Water (d):		(gal/day)	1,000
Wet Manure Production:		(lb/day)	843,000
Total Solids Produced:		(lb/day)	108,650
Total Solids Removed by Seperation System:		(lb/day)	85,158
Wet Manure Production Less Separated Solids:		(lb/day)	757,842
		(gal/day)	91,430
Design Storage Period		(days)	30
Process Water Volume:		(ac-ft)	18.18
RAINFALL VOLUME			
Drainage Area Characteristics:	(acres)		CN
Pen Area:	0.00		90
Adjacent Areas:	3.50		90
Paved/Roof Areas:	0.15		100
RCS #TS1 Surface Area:	8.50		100
Total Drainage Area	12.15		
25-Year, 10-Day Rainfall:		(inches)	12.2
Runoff Volume Determination (e):	(inches)		(ac-ft)
Pen Area:	11.0		0.00
Adjacent Areas:	11.0		3.20
Paved/Roof Areas:	12.2		0.15
RCS #TS1 Surface Area:	12.2		8.64
Rainfall Volume:		(ac-ft)	11.99
TOTAL RCS VOLUME REQUIRED			
Runoff Sludge Volume (f):		(ac-ft)	0.04
Process Water Volume:		(ac-ft)	18.18
Rainfall Volume:		(ac-ft)	11.99
Additional from Water Balance:		(ac-ft)	19.33
Treatment Volume:		(ac-ft)	39.41
1-Year Sludge Volume:		(ac-ft)	14.35
Total Required RCS #TS1 Volume:		**(ac-ft)**	**103.30**

Norman Mullin
8/26/24

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PHASE 2 PARLOR 1 DIGESTER
REQUIRED STORAGE VOLUMES FOR ANEROBIC DIGESTER/
RUNOFF RETENTION CONTROL STRUCTURES
Table 2.2B
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

TREATMENT POND REQUIREMENT

SLUDGE VOLUME

Dry Manure Produced	(lb/day)	177,300
Anaerobic Digester Efficiency (%) (a):		34%
	(lb/day)	117,018
Screw Prress Efficiency (%) (a):		22%
	(lb/day)	91,274
Dissolved Air Flotation Efficiency (%) (a):		58%
	(lb/day)	38,335
Sludge Accumulation Rate (b):	(cuft/lb)	0.0729
Sludge Accumulation Period:	(years)	1
1-Year Sludge Volume:	(ac-ft)	23.42
TREATMENT VOLUME		
Volatile Solids Produced:	(lb/day)	150,350
Anaerobic Digester Efficiency (%) (a):		42%
	(lb/day)	87,203
Screw Prress Efficiency (%) (a):		29%
	(lb/day)	61,914
Dissolved Air Flotation Efficiency (%) (a):		76%
Adjusted Volatile Solids Production:	(lb/day)	14,859
Design Loading Rate (lbVS/1000cuft-day) (g):		5.3
Treatment Volume:	(ac-ft)	64.36
TOTAL TREATMENT VOLUME		
Treatment Volume:		64.36
1-Year Sludge Volume:		23.42
Total Required Treatment Volume:	**(ac-ft)**	**87.78**

RUNOFF POND REQUIREMENT

PROCESS GENERATED WASTE/WASTEWATER

Parlor Wash Water (c):		(gal/head/day)	15
No. of Head in Parlor:			7,000
Volume of Process Water:		(gal/day)	105,000
Biogas Production Generated Water (d):		(gal/day)	1,000
Wet Manure Production		(lb/day)	1,375,750
Total Solids Produced		(lb/day)	177,300
Total Solids Removed by Seperation System:		(lb/day)	138,965
Wet Manure Production Less Separated Solids:		(lb/day)	1,236,785
		(gal/day)	149,212
Design Storage Period:		(days)	30
Process Water Volume:		(ac-ft)	23.50
RAINFALL VOLUME			
Drainage Area Characteristics:	(acres)		CN
Pen Area:	0.00		90
Adjacent Areas:	3.50		90
Paved/Roof Areas:	0.15		100
RCS #TS1 Surface Area:	8.50		100
Total Drainage Area	12.15		
25-Year, 10-Day Rainfall:		(inches)	12.2
Runoff Volume Determination (e):	(inches)		(ac-ft)
Pen Area:	11.0		0.00
Adjacent Areas:	11.0		3.20
Paved/Roof Areas:	12.2		0.15
RCS #1 Surface Area:	12.2		8.64
Rainfall Volume:		(ac-ft)	11.99
TOTAL RCS VOLUME REQUIRED			
Runoff Sludge Volume (f):		(ac-ft)	0.04
Process Water Volume:		(ac-ft)	23.50
Rainfall Volume:		(ac-ft)	11.99
Additional from Water Balance		(ac-ft)	24.83
Treatment Volume:		(ac-ft)	64.36
1-Year Sludge Volume:		(ac-ft)	23.42
Total Required RCS #TS1 Volume:		**(ac-ft)**	**148.14**

NOTES:
(a) Based on data provided by DVO.
(b) Sludge Accumulation Rate taken from Table 1. ASABE Standards (ASABE EP403.4 FEB 2011).
(c) Site Specific Data.
(d) Based on data provided by Nacelle Solutions.
(e) Using SCS method:
Where:
S = (1000/CN) - 10
Q = ((I - 0.2S)^2)/(I + 0.8S)
S = Potential maximum retention after runoff begins in)
Q = Runoff (in)
I = 25-Year, 10-Day Rainfall (in)
CN = Curve Number from SCS 210-VI-TR-55, 2nd Edition, June 1986
(f) USDA Agricultural Field Waste Handbook, Kansas, Part 651.1082, Suggested procedures for sediment volume estimation (Inputs-pen/adj contribution, 1.5% solids and 1 year).
(g) Loading Rate taken from Figure 2. ASABE Standards (ASABE EP403.4 FEB2011).

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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PHASE 1 & 2 PARLOR 1 BYPASS
REQUIRED STORAGE VOLUMES FOR TREATMENT/
RUNOFF RETENTION CONTROL STRUCTURES
Table 2.2C
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

TREATMENT POND REQUIREMENT

TREATMENT VOLUME		
Volatile Solids Produced:	(lb/day)	7,671
Screw Press Efficiency (%) (a):		29%
	(lb/day)	5,446
Dissolved Air Flotation Efficiency (%) (a):		76%
	(lb/day)	1,307
Design Loading Rate (lbVS/1000cuft-day) (b):		5.30
Treatment Volume:	(ac-ft)	5.66
SLUDGE VOLUME		
Dry Manure Produced:	(lb/day)	9,054
Screw Press Efficiency (%) (a):		22%
	(lb/day)	7,062
Dissolved Air Flotation Efficiency (%) (a):		58%
	(lb/day)	2,966
Sludge Accumulation Rate (c):	(cuft/lb)	0.0729
Sludge Accumulation Period:	(years)	1
Sludge Volume:	(ac-ft)	1.81
TOTAL TREATMENT VOLUME		
Treatment Volume:	(ac-ft)	5.66
1-Year Sludge Volume:	(ac-ft)	1.81
Total Required Treatment Volume:	**(ac-ft)**	**7.47**

NOTES:
(a) Based on data provided by DVO.
(b) Loading Rate taken from Figure 2, ASABE Standards (ASABE EP403.4 FEB2011).
(c) Sludge Accumulation Rate taken from Table 1, ASABE Standards (ASABE EP403.4 FEB 2011).
(d) Value includes wet manure production from the milking parlor.
(e) Using SCS method:
Where:
S = (1000/CN) - 10
Q = ((I - 0.2S)^2)/(I + 0.8S)
S = Potential maximum retention after runoff begins in)
Q = Runoff (in)
I = 25-Year, 10-Day Rainfall (in)
CN = Curve Number from SCS 210-VI-TR-55, 2nd Edition, June 1986

(f) USDA Agricultural Field Waste Handbook, Kansas, Part 651.1082, Suggested procedures for sediment volume estimation (Inputs-pen/adj contribution, 1.5% solids and 1 year).

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

RUNOFF POND REQUIREMENT

PROCESS GENERATED WASTE/WASTEWATER			
Parlor Wash Water (d):		(gal/head/day)	15
No. of Head in Parlor:			7,000
Volume of Process Water:		(gal/day)	105,000
Design Storage Period:		(days)	30
Process Water Volume:		(ac-ft)	9.67
RAINFALL VOLUME			
Drainage Area Characteristics:	(acres)		CN
Pen Area:	0.00		90
Adjacent Areas:	3.50		90
Paved/Roof Areas:	0.15		100
RCS #TS1 Surface Area:	8.50		100
Total Drainage Area	12.15		
25-Year, 10-Day Rainfall:		(inches)	12.2
Runoff Volume Determination (e):	(inches)		(ac-ft)
Pen Area:	11.0		0.00
Adjacent Areas:	11.0		3.20
Paved/Roof Areas:	12.2		0.15
RCS #TS1 Surface Area:	12.2		8.64
Rainfall Volume:		(ac-ft)	11.99
TOTAL RCS VOLUME REQUIRED			
Runoff Sludge Volume (f):		(ac-ft)	0.04
Process Water Volume:		(ac-ft)	9.67
Rainfall Volume:		(ac-ft)	11.99
Additional from Water Balance:		(ac-ft)	10.54
Treatment Volume:		(ac-ft)	5.66
1-Year Sludge Volume:		(ac-ft)	1.81
Total Required RCS #TS1 Volume:		**(ac-ft)**	**39.71**

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PHASE 1 PARLOR 2
REQUIRED STORAGE VOLUMES FOR TREATMENT/
RUNOFF RETENTION CONTROL STRUCTURES
Table 2.2D
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

TD - TREATMENT POND REQUIREMENT

TREATMENT VOLUME		
Volatile Solids Produced:	(lb/day)	1,417
Settling Basin/Pond Efficiency (%) (a):		65%
Adjusted Volatile Solids Production:	(lb/day)	496
Design Loading Rate (lbVS/1000cuft-day) (b):		5.30
Treatment Volume:	(ac-ft)	2.15
SLUDGE VOLUME		
Dry Manure Produced:	(lb/day)	1,667
Settling Basin Efficiency (%):		65%
Adjusted Dry Manure Production:	(lb/day)	583
Sludge Accumulation Rate (c):	(cuft/lb)	0.0729
Sludge Accumulation Period:	(years)	1
Sludge Volume:	(ac-ft)	0.36
TOTAL TREATMENT VOLUME		
Treatment Volume:	(ac-ft)	2.15
1-Year Sludge Volume:	(ac-ft)	0.36
Total Required Treatment Volume:	**(ac-ft)**	**2.50**

NOTES:
(a) Midwest Plan Service, 1983, Revised 1987 (Waste Management, pg. 702.11).
(b) Loading Rate taken from Figure 2, ASABE Standards (ASABE EP403.4 FEB2011).
(c) Sludge Accumulation Rate taken from Table 10-7, USDA, NRCS Agricultural Waste Management Field Handbook.
(d) Value includes wet manure production from the milking parlor.
(e) Using SCS method:

Where:
S = (1000/CN) - 10
Q = ((I - 0.2S)^2)/(I + 0.8S)

S = Potential maximum retention after runoff begins in)
Q = Runoff (in)
I = 25-Year, 10-Day Rainfall (in)
CN = Curve Number from SCS 210-VI-TR-55, 2nd Edition, June 1986

(f) USDA Agricultural Field Waste Handbook, Kansas, Part 651.1082, Suggested procedures for sediment volume estimation (SC = 1.5% for 1 year).

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

RUNOFF REQUIREMENT

PROCESS GENERATED WASTE/WASTEWATER

Parlor Wash Water (d):	(gal/head/day)	15
No. of Head in Parlor:		1,000
Volume of Process Water:	(gal/day)	15,000
Design Storage Period:	(days)	30
Process Water Volume:	(ac-ft)	1.38

RAINFALL VOLUME

Drainage Area Characteristics:	(acres)	CN
Pen Area:	15.08	90
Adjacent/Manure Composting Areas:	12.15	90
Paved/Roof Areas:	5.84	100
Settling Basin/Pond Areas:	8.37	100
Treatment Pond Area:	2.74	100
RCS #TD1 Surface Area:	10.34	100
Total Drainage Area	54.52	

25-Year, 10-Day Rainfall Event:	(inches)	12.2

Runoff Volume Determination (e):	(inches)	(ac-ft)
Pen Area:	11.0	13.77
Adjacent/Manure Composting Areas:	11.0	11.10
Paved/Roof Areas:	12.2	5.94
Settling Basin/Pond Areas:	12.2	8.51
Treatment Pond Area:	12.2	2.79
RCS #TD1 Surface Area:	12.2	10.51
Rainfall Volume:	(ac-ft)	52.62

TOTAL RCS VOLUME REQUIRED

Process Water Volume:	(ac-ft)	1.38
Rainfall Volume:	(ac-ft)	52.62
Additional from Water Balance:	(ac-ft)	12.07
Sludge Accumulation Volume (f):	(ac-ft)	0.65
Total Required RCS #TD1 Volume:	**(ac-ft)**	**66.71**

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Firm No. F-2507

PHASE 2 PARLOR 2
REQUIRED STORAGE VOLUMES FOR TREATMENT/ RUNOFF RETENTION CONTROL STRUCTURES
Table 2.2E
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO:	TMC Dairies Hico
LOCATION:	Erath County
DATE:	July-24

TD - TREATMENT POND REQUIREMENT

TREATMENT VOLUME		
Volatile Solids Produced:	(lb/day)	4,250
Settling Basin/Pond Efficiency (%) (a):		65%
Adjusted Volatile Solids Production:	(lb/day)	1,488
Design Loading Rate (lbVS/1000cuft-day) (b):		5.30
Treatment Volume:	(ac-ft)	6.44
SLUDGE VOLUME		
Dry Manure Produced:	(lb/day)	5,000
Settling Basin Efficiency (%):		65%
Adjusted Dry Manure Production:	(lb/day)	1,750
Sludge Accumulation Rate (c):	(cuft/lb)	0.0729
Sludge Accumulation Period:	(years)	1
Sludge Volume:	(ac-ft)	1.07
TOTAL TREATMENT VOLUME		
Treatment Volume:	(ac-ft)	6.44
1-Year Sludge Volume:	(ac-ft)	1.07
Total Required Treatment Volume:	**(ac-ft)**	**7.51**

RCS #TD1 - RUNOFF REQUIREMENT

PROCESS GENERATED WASTE/WASTEWATER		
Parlor Wash Water (d):	(gal/head/day)	15
No. of Head in Parlor:		3,000
Volume of Process Water:	(gal/day)	45,000
Design Storage Period:	(days)	30
Process Water Volume:	(ac-ft)	4.14

RAINFALL VOLUME

Drainage Area Characteristics:	(acres)	CN
Pen Area:	0.00	90
Adjacent/Manure Composting Areas:	11.36	90
Paved/Roof Areas:	12.17	100
Settling Basin/Pond Areas:	8.37	100
Treatment Pond Area:	2.74	100
RCS #TD1 Surface Area:	10.34	100
Total Drainage Area	44.98	

25-Year, 10-Day Rainfall Event:	(inches)	12.2

Runoff Volume Determination (e):	(inches)	(ac-ft)
Pen Area:	11.0	0.00
Adjacent/Manure Composting Areas:	11.0	10.38
Paved/Roof Areas:	12.2	12.37
Settling Basin/Pond Areas:	12.2	8.51
Treatment Pond Area:	12.2	2.79
RCS #TD1 Surface Area:	12.2	10.51
Rainfall Volume:	(ac-ft)	44.56

TOTAL RCS VOLUME REQUIRED

Process Water Volume:	(ac-ft)	4.14
Rainfall Volume:	(ac-ft)	44.56
Additional from Water Balance:	(ac-ft)	14.47
Sludge Accumulation Volume (f):	(ac-ft)	0.14
Total Required RCS #TD1 Volume:	**(ac-ft)**	**63.30**

NOTES:
(a) Midwest Plan Service, 1983, Revised 1987 (Waste Management, pg. 702.11).
(b) Loading Rate taken from Figure 2, ASABE Standards (ASABE EP403.4 FEB2011).
(c) Sludge Accumulation Rate taken from Table 10-7, USDA, NRCS Agricultural Waste Management Field Handbook.
(d) Value includes wet manure production from the milking parlor.
(e) Using SCS method:

Where: S = (1000/CN) - 10
Q = ((I - 0.2S)^2)/(I + 0.8S)

S = Potential maximum retention after runoff begins in)
Q = Runoff (in)
I = 25-Year, 10-Day Rainfall (in)
CN = Curve Number from SCS 210-VI-TR-55, 2nd Edition, June 1986

(f) USDA Agricultural Field Waste Handbook, Kansas, Part 651.1082, Suggested procedures for sediment volume estimation (SC = 1.5% for 1 year).

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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REQUIRED STORAGE VOLUMES
for RETENTION CONTROL STRUCTURES
Table 2.2F
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO:	TMC Dairies Hico
LOCATION:	Erath County
DATE:	July-24

RCS #TH2 - RUNOFF POND REQUIREMENT

RAINFALL VOLUME

Drainage Areas:	CN	Area (ac)
Pen/Open Lot Areas:	90	15.98
Adjacent/Manure Composting Areas:	90	8.37
Paved/Roofed Areas:	100	2.00
RCS Surface Areas (a):	100	9.00
Total Area (acres):		35.35

25-Year, 10-Day Rainfall Event:	(inches)	12.2

Runoff Volume Determination (b):	(inches)	(ac-ft)
Pen/Open Lot Areas:	11.0	14.60
Adjacent/Manure Composting Areas:	11.0	7.65
Paved/Roofed Areas:	12.2	2.03
RCS Surface Areas (a):	12.2	9.15
Total Runoff (ac-ft):		33.43

TOTAL RCS VOLUME REQUIRED

	(ac-ft)
Required Volume for Rainfall Runoff:	33.43
Sludge Accumulation Volume (c):	0.58
Additional Required Volume from Water Balance:	6.27
Total Volume Required for RCS #TH2	**40.27**

NOTES:

(a) Includes surface area of TH Settling Basin, RCS #TH1, & RCS #TH2.
(b) Using SCS method:
Where:
S = (1000/CN) - 10
Q = ((P - 0.2S)^2)/(P + 0.8S)
S = Potential maximum retention after runoff begins in)
Q = Runoff (in)
P = 25-Year, 10-Day Rainfall (in)
CN = Curve Number from SCS 210-VI-TR-55, 2nd Edition, June 1986

(c) USDA Agricultural Field Waste Handbook, Kansas, Part 651.1082, Suggested procedures for sediment volume estimation (SC = 1.5% for 1 year).

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NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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REQUIRED STORAGE VOLUMES
for RETENTION CONTROL STRUCTURES
Table 2.2G
ENVIRO-AG ENGINEERING, INC.

NAME OF CAFO:	TMC Dairies Hico
LOCATION:	Erath County
DATE:	July-24

RCS #TS2 - RUNOFF POND REQUIREMENT

RAINFALL VOLUME

Drainage Areas:	CN	Area (ac)
Pen/Open Lot Areas:	90	0.00
Adjacent/Manure Composting Areas:	90	8.00
Paved/Roofed Areas:	100	0.75
RCS Surface Areas (a):	100	6.12
Total Area (acres):		14.87
25-Year, 10-Day Rainfall Event:	(inches)	12.2
Runoff Volume Determination (b):	(inches)	(ac-ft)
Pen/Open Lot Areas:	11.0	0.00
Adjacent/Manure Composting Areas:	11.0	7.31
Paved/Roofed Areas:	12.2	0.76
RCS Surface Areas (a):	12.2	6.22
Total Runoff (ac-ft):		14.29

TOTAL RCS VOLUME REQUIRED

	(ac-ft)
Required Volume for Rainfall Runoff:	14.29
Sludge Accumulation Volume (c):	0.10
Additional Required Volume from Water Balance:	2.16
Total Volume Required for RCS #TS2	**16.55**

NOTES:

(a) Includes surface area of TS Settling Basin & RCS #TS2.
(b) Using SCS method:
Where:

S = (1000/CN) - 10
Q = ((P - 0.2S)^2)/(P + 0.8S)
S = Potential maximum retention after runoff begins in)
Q = Runoff (in)
P = 25-Year, 10-Day Rainfall (in)
CN = Curve Number from SCS 210-VI-TR-55, 2nd Edition, June 1986

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(c) USDA Agricultural Field Waste Handbook, Kansas, Part 651.1082, Suggested procedures for sediment volume estimation (SC = 1.5% for 1 year).

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PHASE 1 PARLOR 1 DIGESTER
WATER BALANCE MODEL FOR ANEROBIC DIGESTER/RUNOFF RETENTION CONTROL STRUCTURES
IRRIGATION AND EVAPORATION for RCS #TS1
Table 2.3A
ENVIRO-AG ENGINEERING, INC.

NAME: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

HYDROLOGIC CHARACTERISTICS		
Pen Area (acres):	0.00	
Adjacent Areas (acres):	3.50	
Paved/Roof Area (acres):	0.15	
Total RCS Surface Area (acres):	8.50	
Minimum Irrigated Acres Needed (acres)(12):	490	490
Cropping scheme:	Coastal	Winter Wheat
Effective Evaporation Surface Area (acres):	7.23	

IRRIGATION CELL VOLUME SUMMARY DATA	
25-Year, 10-Day Rainfall Volume (ac-ft):	11.99
Process Generated Wastewater Volume (ac-ft):	18.18
Sludge Accumulation Volume (ac-ft):	14.39
Treatment Volume (ac-ft):	39.41
Additional Volume (ac-ft):	19.33
Total Required Capacity (ac-ft):	103.30

	RCS INFLOW CALCULATIONS					HYDRAULIC CROP DEMAND CALCULATIONS					RCS STORAGE SUMMARY			
MONTH	(1) (inches)	(2) (inches)	(2) (inches)	(3) (ac-ft)	(4) (ac-ft)	(5) (inches)	(6) (inches)	(6) (inches)	(7) (ac-ft)	(7) (ac-ft)	(8) (inches)	(9) (ac-ft)	(10) (ac-ft)	(11) (ac-ft)
													start value --->	14.39
JAN	1.54	0.00	0.23	18.78	19.96	1.54	2.10	2.74	22.87	49.00	2.37	1.43	18.53	14.39
FEB	1.89	0.00	0.39	17.57	19.05	1.89	2.46	3.11	23.28	49.82	2.69	1.62	17.43	14.39
MAR	2.14	0.00	0.53	18.78	20.48	2.14	4.06	4.97	78.48	115.63	4.28	2.58	17.90	14.39
APR	2.88	0.00	0.99	18.18	20.54	2.81	4.98	5.74	88.63	119.66	5.20	3.13	17.41	14.39
MAY	4.31	0.00	2.06	18.78	22.49	3.88	5.73	5.33	75.61	59.28	5.25	3.16	19.33	14.39
JUN	3.24	0.00	1.25	18.18	20.88	3.10	6.82	3.22	151.73	4.73	7.01	4.22	16.66	14.39
JUL	2.11	0.00	0.51	18.78	20.45	2.11	7.66	0.00	226.67	0.00	8.23	4.96	15.50	14.39
AUG	2.25	0.00	0.59	18.78	20.58	2.24	7.56	0.00	217.07	0.00	7.71	4.64	15.94	14.39
SEP	3.01	0.00	1.08	18.18	20.66	2.92	5.78	0.00	116.86	0.00	5.91	3.56	17.11	14.39
OCT	3.23	0.00	1.24	18.78	21.47	3.10	4.29	2.15	48.75	0.00	4.89	2.94	18.53	14.39
NOV	1.88	0.00	0.39	18.18	19.65	1.88	2.81	1.70	37.98	0.00	3.33	2.00	17.64	14.39
DEC	1.62	0.00	0.26	18.78	20.03	1.62	2.24	2.33	25.32	28.99	2.45	1.48	18.55	14.39
TOTALS	30.10	0.00	9.53	221.77	246.25	29.23	56.49	31.29	1113.24	427.12	59.32	35.72	210.53	

NOTES:

(1) AVERAGE PRECIPITATION - Average precipitation taken from the Texas Water Development Board, Erath County, Quad #509, Retrieved May 15, 2024.

(2) RUNOFF PENS AND ADJACENT AREA - Runoff from pens, adjacent areas calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Pen CN-77, Adj CN-77). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(3) INFLOW - Inflow is calculated from process generated wastewater, Table 2.2A.

(4) TOTAL INFLOW - Total inflow is calculated as that volume of rainfall that falls on the RCS and process water that enters the RCS.

(5) RAINFALL ON IRRIGATED AREA - Effective monthly rainfall on the irrigated area calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Irr. CN-50). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(6) CONSUMPTIVE USE values from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas, Dept. of Civil Engineering, Texas Tech University, Lubbock, Texas. Stephenville Station (Tables 16 & 25).

(7) NET CROP DEMAND - Net Crop Demand = ((Consumptive Use(6) - Effective Rainfall(5))/12) x Irrigated Area.

(8) MONTHLY LAKE SURFACE EVAPORATION - Average monthly lake surface evaporation taken from the Texas Water Development Board,Erath County, Quad #509, Retrieved May 15, 2024.

(9) NET POND EVAPORATION - Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap/12) x (RCS Surface Area).

(10) ACTUAL WITHDRAWAL - Actual Withdrawal from the irrigation cell not to exceed Net Crop Demand. (No consideration given for nutrient demand of crop)

(11) STORAGE AT END OF MONTH - Storage volume in the irrigation cell at the end of the month. The storage calculated in this column should not encroach in the volume reserved for the 25-Year, 10-Day Rainfall event.

(12) IRRIGATED ACRES included LMUs 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

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8/24/24

PHASE 2 PARLOR 1 DIGESTER

WATER BALANCE MODEL FOR ANEROBIC DIGESTER/RUNOFF RETENTION CONTROL STRUCTURES

IRRIGATION AND EVAPORATION for RCS #TS1

Table 2.3B

ENVIRO-AG ENGINEERING, INC.

NAME: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

HYDROLOGIC CHARACTERISTICS		
Pen Area (acres):	0.00	
Adjacent Areas (acres):	3.50	
Paved/Roof Area (acres):	0.15	
Total RCS Surface Area (acres)(12):	8.50	
Minimum Irrigated Acres Needed (acres):	490	490
Cropping scheme:	Coastal	Winter Wheat
Effective Evaporation Surface Area (acres):	7.23	

IRRIGATION CELL VOLUME SUMMARY DATA	
25-Year, 10-Day Rainfall Volume (ac-ft):	11.99
Process Generated Wastewater Volume (ac-ft):	23.50
Sludge Accumulation Volume (ac-ft):	23.46
Treatment Volume (ac-ft):	64.36
Additional Volume (ac-ft):	24.83
Total Required Capacity (ac-ft):	148.14

	RCS INFLOW CALCULATIONS					HYDRAULIC CROP DEMAND CALCULATIONS					RCS STORAGE SUMMARY			
MONTH	(1) (inches)	(2) (inches)	(2) (inches)	(3) (ac-ft)	(4) (ac-ft)	(5) (inches)	(6) (inches)	(6) (inches)	(7) (ac-ft)	(7) (ac-ft)	(8) (inches)	(9) (ac-ft)	(10) (ac-ft)	(11) (ac-ft)
													start value --->	23.46
JAN	1.54	0.00	0.23	24.28	25.46	1.54	2.10	2.74	22.87	49.00	2.37	1.43	24.03	23.46
FEB	1.89	0.00	0.39	22.71	24.19	1.89	2.46	3.11	23.28	49.82	2.69	1.62	22.57	23.46
MAR	2.14	0.00	0.53	24.28	25.98	2.14	4.06	4.97	78.48	115.63	4.28	2.58	23.40	23.46
APR	2.88	0.00	0.99	23.50	25.86	2.81	4.98	5.74	88.63	119.66	5.20	3.13	22.73	23.46
MAY	4.31	0.00	2.06	24.28	27.99	3.88	5.73	5.33	75.61	59.28	5.25	3.16	24.83	23.46
JUN	3.24	0.00	1.25	23.50	26.20	3.10	6.82	3.22	151.73	4.73	7.01	4.22	21.98	23.46
JUL	2.11	0.00	0.51	24.28	25.95	2.11	7.66	0.00	226.67	0.00	8.23	4.96	21.00	23.46
AUG	2.25	0.00	0.59	24.28	26.08	2.24	7.56	0.00	217.07	0.00	7.71	4.64	21.43	23.46
SEP	3.01	0.00	1.08	23.50	25.98	2.92	5.78	0.00	116.86	0.00	5.91	3.56	22.43	23.46
OCT	3.23	0.00	1.24	24.28	26.97	3.10	4.29	2.15	48.75	0.00	4.89	2.94	24.03	23.46
NOV	1.88	0.00	0.39	23.50	24.97	1.88	2.81	1.70	37.98	0.00	3.33	2.00	22.96	23.46
DEC	1.62	0.00	0.26	24.28	25.53	1.62	2.24	2.33	25.32	28.99	2.45	1.48	24.05	23.46
TOTALS	30.10	0.00	9.53	286.68	311.15	29.23	56.49	31.29	1113.24	427.12	59.32	35.72	275.44	

NOTES:

(1) AVERAGE PRECIPITATION - Average precipitation taken from the Texas Water Development Board, Erath County, Quad #509, Retrieved May 15, 2024.

(2) RUNOFF PENS AND ADJACENT AREA - Runoff from pens, adjacent areas calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Pen CN-77, Adj CN-77). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(3) INFLOW - Inflow is calculated from process generated wastewater, Table 2.2B.

(4) TOTAL INFLOW - Total Inflow is calculated as that volume of rainfall that falls on the RCS and process water that enters the RCS.

(5) RAINFALL ON IRRIGATED AREA - Effective monthly rainfall on the irrigated area calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Irr. CN-50). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(6) CONSUMPTIVE USE values from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas, Dept. of Civil Engineering, Texas Tech University, Lubbock, Texas. Stephenville Station (Tables 16 & 25).

(7) NET CROP DEMAND - Net Crop Demand = ((Consumptive Use(6) - Effective Rainfall(5))/12) x Irrigated Area.

(8) MONTHLY LAKE SURFACE EVAPORATION - Average monthly lake surface evaporation taken from the Texas Water Development Board,Erath County, Quad #509. Retrieved May 15, 2024.

(9) NET POND EVAPORATION - Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap/12) x (RCS Surface Area).

(10) ACTUAL WITHDRAWAL - Actual Withdrawal from the irrigation cell not to exceed Net Crop Demand. **(No consideration given for nutrient demand of crop)**

(11) STORAGE AT END OF MONTH - Storage volume in the irrigation cell at the end of the month. **The storage calculated in this column should not encroach in the volume reserved for the 25-Year, 10-Day Rainfall event.**

(12) IRRIGATED ACRES included LMUs 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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PHASE 1 & 2 PARLOR 1 BYPASS
WATER BALANCE MODEL FOR TREATMENT/RUNOFF RETENTION CONTROL STRUCTURES
IRRIGATION AND EVAPORATION for RCS #TS1
Table 2.3C
ENVIRO-AG ENGINEERING, INC.

NAME:	TMC Dairies Hico	HYDROLOGIC CHARACTERISTICS			
LOCATION:	Erath County	Pen Area (acres):	0.00		
DATE:	July-24	Adjacent Areas (acres):	3.50		
		Paved/Roof Area (acres):	0.15		
		Total RCS/TRT/SB Surface Areas (acres):	8.50		
		Minimum Irrigated Acres Needed (acres)(12):	490	490	
		Cropping scheme:	Coastal	Winter Wheat	
		Effective Evaporation Surface Area (acres):	7.23		

IRRIGATION CELL VOLUME SUMMARY DATA	
25-Year, 10-Day Rainfall Volume (ac-ft):	11.99
Process Generated Wastewater Volume (ac-ft):	9.67
Sludge Accumulation Volume (ac-ft):	1.85
Treatment Volume (ac-ft):	5.66
Additional Volume (ac-ft):	10.54
Total Required Capacity (ac-ft):	39.71

	RCS INFLOW CALCULATIONS					HYDRAULIC CROP DEMAND CALCULATIONS					RCS STORAGE SUMMARY			
MONTH	(1) (inches)	(2) (inches)	(2) (inches)	(3) (ac-ft)	(4) (ac-ft)	(5) (inches)	(6) (inches)	(6) (inches)	(7) (ac-ft)	(7) (ac-ft)	(8) (inches)	(9) (ac-ft)	(10) (ac-ft)	(11) (ac-ft)
													start value —>	1.85
JAN	1.54	0.00	0.23	9.99	11.17	1.54	2.10	2.74	22.87	49.00	2.37	1.43	9.74	1.85
FEB	1.89	0.00	0.39	9.02	10.50	1.89	2.46	3.11	23.28	49.82	2.69	1.62	8.88	1.85
MAR	2.14	0.00	0.53	9.99	11.69	2.14	4.06	4.97	78.48	115.63	4.28	2.58	9.11	1.85
APR	2.88	0.00	0.99	9.67	12.03	2.81	4.98	5.74	88.63	119.66	5.20	3.13	8.90	1.85
MAY	4.31	0.00	2.06	9.99	13.70	3.88	5.73	5.33	75.61	59.28	5.25	3.16	10.54	1.85
JUN	3.24	0.00	1.25	9.67	12.37	3.10	6.82	3.22	151.73	4.73	7.01	4.22	8.15	1.85
JUL	2.11	0.00	0.51	9.99	11.66	2.11	7.66	0.00	226.67	0.00	8.23	4.96	6.70	1.85
AUG	2.25	0.00	0.59	9.99	11.78	2.24	7.56	0.00	217.07	0.00	7.71	4.64	7.14	1.85
SEP	3.01	0.00	1.08	9.67	12.15	2.92	5.78	0.00	116.86	0.00	5.91	3.56	8.59	1.85
OCT	3.23	0.00	1.24	9.99	12.68	3.10	4.29	2.15	48.75	0.00	4.89	2.94	9.74	1.85
NOV	1.88	0.00	0.39	9.67	11.14	1.88	2.81	1.70	37.98	0.00	3.33	2.00	9.13	1.85
DEC	1.62	0.00	0.26	9.99	11.23	1.62	2.24	2.33	25.32	28.99	2.45	1.48	9.76	1.85
TOTALS	30.10	0.00	9.53	117.62	142.10	29.23	56.49	31.29	1113.24	427.12	59.32	35.72	106.38	

NOTES:

(1) AVERAGE PRECIPITATION - Average precipitation taken from the Texas Water Development Board, Erath County, Quad #509. Retrieved May 15, 2024.

(2) RUNOFF PENS AND ADJACENT AREA - Runoff from pens. adjacent areas calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Pen CN-77, Adj CN-77). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(3) INFLOW - Inflow is calculated from process generated wastewater. Table 2.2C.

(4) TOTAL INFLOW - Total Inflow is calculated as that volume of rainfall that falls on the RCS and process water that enters the RCS.

(5) RAINFALL ON IRRIGATED AREA - Effective monthly rainfall on the irrigated area calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Irr. CN-50). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(6) CONSUMPTIVE USE values from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas. Dept. of Civil Engineering, Texas Tech University, Lubbock, Texas. Stephenville Station (Tables 16 & 25).

(7) NET CROP DEMAND - Net Crop Demand = ((Consumptive Use(6) - Effective Rainfall(5))/12) x Irrigated Area.

(8) MONTHLY LAKE SURFACE EVAPORATION - Average monthly lake surface evaporation taken from the Texas Water Development Board,Erath County, Quad #509. Retrieved May 15, 2024.

(9) NET POND EVAPORATION - Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap/12) x (RCS Surface Area).

(10) ACTUAL WITHDRAWAL - Actual Withdrawal from the irrigation cell not to exceed Net Crop Demand. (No consideration given for nutrient demand of crop)

(11) STORAGE AT END OF MONTH - Storage volume in the irrigation cell at the end of the month. The storage calculated in this column should not encroach in the volume reserved for the 25-Year, 10-Day Rainfall event.
(12) IRRIGATED ACRES included LMUs 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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PHASE 1 PARLOR 2
WATER BALANCE MODEL
IRRIGATION AND EVAPORATION for RCS #TD1
Table 2.3D
ENVIRO-AG ENGINEERING, INC.

NAME: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

HYDROLOGIC CHARACTERISTICS

Pen Area (acres):	15.08	
Adjacent/Manure Composting Areas (acres):	12.15	
Paved/Roof Areas (acres):	5.84	
Total SB/SP/TRT & RCS #TD1 Surface Areas (acres):	21.45	
Total Irrigated Area (acres)(12):	490	490
Cropping scheme:	Bermudagrass	Winter Wheat
Effective Evaporation Surface Area (acres):	8.8	

IRRIGATION CELL VOLUME SUMMARY DATA

25-Year, 10-Day Rainfall Volume (ac-ft):	52.62
Process Generated Wastewater Volume (ac-ft):	1.38
Sludge Accumulation Volume (ac-ft):	0.65
Additional Volume (ac-ft):	12.07
Total Required Capacity (ac-ft):	66.71

MONTH	RCS INFLOW CALCULATIONS (1) (inches)	(2) (inches)	(3) (inches)	(3) (ac-ft)	(4) (ac-ft)	HYDRAULIC CROP DEMAND CALCULATIONS (5) (inches)	(6) (inches)	(6) (inches)	(7) (ac-ft)	(7) (ac-ft)	RCS STORAGE SUMMARY (8) (inches)	(9) (ac-ft)	(10) (ac-ft)	(11) (ac-ft)
													start value --->	0.65
JAN	1.54	0.23	0.23	1.43	5.45	1.54	2.10	2.74	22.87	49.00	2.37	1.74	3.71	0.65
FEB	1.89	0.39	0.39	1.34	6.53	1.88	2.46	3.11	23.54	50.08	2.69	1.97	4.55	0.65
MAR	2.14	0.53	0.53	1.43	7.49	2.11	4.06	4.97	79.49	116.65	4.28	3.13	4.36	0.65
APR	2.88	0.99	0.99	1.38	10.18	2.72	4.98	5.74	92.19	123.22	5.20	3.81	6.38	0.65
MAY	4.31	2.06	2.06	1.43	15.91	3.67	5.73	5.33	84.29	67.96	5.25	3.85	12.07	0.65
JUN	3.24	1.25	1.25	1.38	11.58	2.99	6.82	3.22	156.57	9.57	7.01	5.13	6.44	0.65
JUL	2.11	0.51	0.51	1.43	7.39	2.09	7.66	0.00	227.59	0.00	8.23	6.03	1.36	0.65
AUG	2.25	0.59	0.59	1.43	7.89	2.21	7.56	0.00	218.45	0.00	7.71	5.65	2.24	0.65
SEP	3.01	1.08	1.08	1.38	10.68	2.82	5.78	0.00	120.88	0.00	5.91	4.33	6.35	0.65
OCT	3.23	1.24	1.24	1.43	11.58	2.98	4.29	2.15	53.55	0.00	4.89	3.58	8.00	0.65
NOV	1.88	0.39	0.39	1.38	6.54	1.87	2.81	1.70	38.22	0.00	3.33	2.44	4.10	0.65
DEC	1.62	0.26	0.26	1.43	5.71	1.62	2.24	2.33	25.32	28.99	2.45	1.79	3.91	0.65
TOTALS	30.10	9.53	9.53	16.85	106.92	28.50	56.49	31.29	1142.96	445.48	59.32	43.45	63.47	

NOTES:
(1) AVERAGE PRECIPITATION - Average precipitation taken from the Texas Water Development Board, Erath County, Quad #509, Retrieved May 15, 2024.
(2) RUNOFF PENS AND ADJACENT AREA - Runoff from pens, adjacent areas calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Pen CN-77, Adj CN-77) (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).
(3) PROCESS INFLOW - Process Inflow is calculated from process generated wastewater, Table 2.2D.
(4) TOTAL INFLOW - Total Inflow is calculated as that volume of rainfall that falls on the RCS and process water that enters the RCS.
(5) RAINFALL ON IRRIGATED AREA - Effective monthly rainfall on the irrigated area is calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Irrigated CN-55) (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff)
(6) CONSUMPTIVE USE values from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas, Dept. of Civil Engineering, Texas Tech University, Lubbock, Texas (Tables 16 & 25).
(7) NET CROP DEMAND - Net Crop Demand = ((Consumptive Use(6) - Effective Rainfall(5))/12) x Irrigated Area.
(8) MONTHLY LAKE SURFACE EVAPORATION - Average monthly lake surface evaporation taken from the Texas Water Development Board,Erath County, Quad #509, Retrieved May 15, 2024.
(9) NET POND EVAPORATION - Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap/12) x (RCS Surface Area).
(10) ACTUAL WITHDRAWAL - Actual Withdrawal from the irrigation cell not to exceed Net Crop Demand. (No consideration given for nutrient demand of crop)
(11) STORAGE AT END OF MONTH - Storage volume in the irrigation cell at the end of the month. The storage calculated in this column should not encroach in the volume reserved for the 25-Year, 10-Day Rainfall event.
(12) IRRIGATED ACRES included LMUs 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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PHASE 2 PARLOR 2
WATER BALANCE MODEL
IRRIGATION AND EVAPORATION for RCS #TD1
Table 2.3E
ENVIRO-AG ENGINEERING, INC.

NAME: TMC Dairies Hico
LOCATION: Erath County
DATE: July-24

HYDROLOGIC CHARACTERISTICS

Pen Area (acres):	0.00	
Adjacent/Manure Composting Areas (acres):	11.36	
Paved/Roof Areas (acres):	12.17	
Total SB/SP/TRT & RCS #TD1 Surface Areas (acres):	21.45	
Total Irrigated Area (acres)(12):	490	490
Cropping scheme:	Bermudagrass	Winter Wheat
Effective Evaporation Surface Area (acres):	8.8	

IRRIGATION CELL VOLUME SUMMARY DATA

25-Year, 10-Day Rainfall Volume (ac-ft):	44.56
Process Generated Wastewater Volume (ac-ft):	4.14
Sludge Accumulation Volume (ac-ft):	0.14
Additional Volume (ac-ft):	14.47
Total Required Capacity (ac-ft):	63.30

	RCS INFLOW CALCULATIONS					HYDRAULIC CROP DEMAND CALCULATIONS					RCS STORAGE SUMMARY			
MONTH	(1) (inches)	(2) (inches)	(2) (inches)	(3) (ac-ft)	(4) (ac-ft)	(5) (inches)	(6) (inches)	(6) (inches)	(7) (ac-ft)	(7) (ac-ft)	(8) (inches)	(9) (ac-ft)	(10) (ac-ft)	(11) (ac-ft)
													start value --->	0.14
JAN	1.54	0.00	0.23	4.28	8.81	1.54	2.10	2.74	22.87	49.00	2.37	1.74	7.08	0.14
FEB	1.89	0.00	0.39	4.01	9.67	1.88	2.46	3.11	23.54	50.08	2.69	1.97	7.70	0.14
MAR	2.14	0.00	0.53	4.28	10.78	2.11	4.06	4.97	79.49	116.65	4.28	3.13	7.64	0.14
APR	2.88	0.00	0.99	4.14	13.15	2.72	4.98	5.74	92.19	123.22	5.20	3.81	9.34	0.14
MAY	4.31	0.00	2.06	4.28	18.31	3.67	5.73	5.33	84.29	67.96	5.25	3.85	14.47	0.14
JUN	3.24	0.00	1.25	4.14	14.40	2.99	6.82	3.22	156.57	9.57	7.01	5.13	9.27	0.14
JUL	2.11	0.00	0.51	4.28	10.68	2.09	7.66	0.00	227.59	0.00	8.23	6.03	4.65	0.14
AUG	2.25	0.00	0.59	4.28	11.15	2.21	7.56	0.00	218.45	0.00	7.71	5.65	5.50	0.14
SEP	3.01	0.00	1.08	4.14	13.60	2.82	5.78	0.00	120.88	0.00	5.91	4.33	9.27	0.14
OCT	3.23	0.00	1.24	4.28	14.50	2.98	4.29	2.15	53.55	0.00	4.89	3.58	10.92	0.14
NOV	1.88	0.00	0.39	4.14	9.78	1.87	2.81	1.70	38.22	0.00	3.33	2.44	7.34	0.14
DEC	1.62	0.00	0.26	4.28	9.07	1.62	2.24	2.33	25.32	28.99	2.45	1.79	7.27	0.14
TOTALS	30.10	0.00	9.53	50.55	143.90	28.50	56.49	31.29	1142.96	445.48	59.32	43.45	100.45	

NOTES:

(1) AVERAGE PRECIPITATION - Average precipitation taken from the Texas Water Development Board, Erath County, Quad #509, Retrieved May 15, 2024.
(2) RUNOFF PENS AND ADJACENT AREA - Runoff from pens, adjacent areas calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Pen CN-77, Adj CN-77). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff)
(3) PROCESS INFLOW - Process Inflow is calculated from process generated wastewater, Table 2.2E
(4) TOTAL INFLOW - Total Inflow is calculated as that volume of rainfall that falls on the RCS and process water that enters the RCS.
(5) RAINFALL ON IRRIGATED AREA - Effective monthly rainfall on the irrigated area is calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Irrigated CN-55). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff)
(6) CONSUMPTIVE USE values from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas, Dept. of Civil Engineering, Texas Tech University, Lubbock, Texas (Tables 16 & 25)
(7) NET CROP DEMAND - Net Crop Demand = ((Consumptive Use(6) - Effective Rainfall(5))/12) x Irrigated Area
(8) MONTHLY LAKE SURFACE EVAPORATION - Average monthly lake surface evaporation taken from the Texas Water Development Board,Erath County, Quad #509, Retrieved May 15, 2024
(9) NET POND EVAPORATION - Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap/12) x (RCS Surface Area)
(10) ACTUAL WITHDRAWAL - Actual Withdrawal from the irrigation cell not to exceed Net Crop Demand. (No consideration given for nutrient demand of crop)
(11) STORAGE AT END OF MONTH - Storage volume in the irrigation cell at the end of the month. The storage calculated in this column should not encroach in the volume reserved for the 25-Year, 10-Day Rainfall event.
(12) IRRIGATED ACRES included LMUs 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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WATER BALANCE MODEL
IRRIGATION AND EVAPORATION for RCS #TH2
Table 2.3F
ENVIRO-AG ENGINEERING, INC.

NAME:	TMC Dairies Hico	HYDROLOGIC CHARACTERISTICS			IRRIGATION CELL VOLUME SUMMARY DATA	
LOCATION:	Erath County	Pen Area (acres):	15.98		25-Year, 10-Day Rainfall Volume (ac-ft):	33.43
DATE:	July-24	Adjacent/ManureComposting Areas (acres):	8.37		Process Generated Wastewater Volume (ac-ft):	0.00
		Paved/Roof Area (acres):	2.00		Sludge Accumulation Volume (ac-ft):	0.58
		Total RCS Surface Area (acres):	9.00		Additional Volume (ac-ft):	6.27
		Total Irrigated Area (acres)(12):	490	490	Total Required Capacity (ac-ft):	40.27
		Cropping scheme:	Bermudagrass	Winter Wheat		
		Effective Evaporation Surface Area (acres):	4.28			

	RCS INFLOW CALCULATIONS					HYDRAULIC CROP DEMAND CALCULATIONS					RCS STORAGE SUMMARY			
	(1)	(2)	(2)	(3)	(4)	(5)	(6)	(6)	(7)	(7)	(8)	(9)	(10)	(11)
MONTH	(inches)	(inches)	(inches)	(ac-ft)	(ac-ft)	(inches)	(inches)	(inches)	(ac-ft)	(ac-ft)	(inches)	(ac-ft)	(ac-ft)	(ac-ft)
													start value ---->	0.58
JAN	1.54	0.23	0.23	0.00	1.87	1.54	2.10	2.74	22.87	49.00	2.37	0.84	1.03	0.58
FEB	1.89	0.39	0.39	0.00	2.53	1.88	2.46	3.11	23.54	50.08	2.69	0.96	1.57	0.58
MAR	2.14	0.53	0.53	0.00	3.03	2.11	4.06	4.97	79.49	116.65	4.28	1.52	1.51	0.58
APR	2.88	0.99	0.99	0.00	4.66	2.72	4.98	5.74	92.19	123.22	5.20	1.85	2.80	0.58
MAY	4.31	2.06	2.06	0.00	8.14	3.67	5.73	5.33	84.29	67.96	5.25	1.87	6.27	0.58
JUN	3.24	1.25	1.25	0.00	5.50	2.99	6.82	3.22	156.57	9.57	7.01	2.50	3.00	0.58
JUL	2.11	0.51	0.51	0.00	2.97	2.09	7.66	0.00	227.59	0.00	8.23	2.93	0.04	0.58
AUG	2.25	0.59	0.59	0.00	3.26	2.21	7.56	0.00	218.45	0.00	7.71	2.75	0.52	0.58
SEP	3.01	1.08	1.08	0.00	4.96	2.82	5.78	0.00	120.88	0.00	5.91	2.11	2.85	0.58
OCT	3.23	1.24	1.24	0.00	5.47	2.98	4.29	2.15	53.55	0.00	4.89	1.74	3.73	0.58
NOV	1.88	0.39	0.39	0.00	2.51	1.87	2.81	1.70	38.22	0.00	3.33	1.19	1.32	0.58
DEC	1.62	0.26	0.26	0.00	2.02	1.62	2.24	2.33	25.32	28.99	2.45	0.87	1.15	0.58
TOTALS	30.10	9.53	9.53	0.00	46.92	28.50	56.49	31.29	1142.96	445.48	59.32	21.14	25.79	

NOTES:

(1) AVERAGE PRECIPITATION - Average precipitation taken from the Texas Water Development Board, Erath County. Quad #509, Retrieved May 15, 2024.

(2) RUNOFF PENS AND ADJACENT AREA - Runoff from pens, adjacent areas calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Pen CN-77, Adj CN-77). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(3) PROCESS INFLOW - No Process Inflow.

(4) TOTAL INFLOW - Total Inflow is calculated as that volume of rainfall that falls on the RCS and process water that enters the RCS.

(5) RAINFALL ON IRRIGATED AREA - Effective monthly rainfall on the irrigated area is calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Irrigated CN-55). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff)

(6) CONSUMPTIVE USE values from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas. Dept. of Civil Engineering, Texas Tech University. Lubbock, Texas (Tables 16 & 25).

(7) NET CROP DEMAND - Net Crop Demand = ((Consumptive Use(6) - Effective Rainfall(5))/12) x Irrigated Area.

(8) MONTHLY LAKE SURFACE EVAPORATION - Average monthly lake surface evaporation taken from the Texas Water Development Board,Erath County, Quad #509, Retrieved May 15, 2024.

(9) NET POND EVAPORATION - Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap/12) x (RCS Surface Area).

(10) ACTUAL WITHDRAWAL - Actual Withdrawal from the irrigation cell not to exceed Net Crop Demand. (No consideration given for nutrient demand of crop)

(11) STORAGE AT END OF MONTH - Storage volume in the irrigation cell at the end of the month. The storage calculated in this column should not encroach in the volume reserved for the 25-Year, 10-Day rainfall event.
(12) IRRIGATED ACRES included LMUs 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

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WATER BALANCE MODEL
IRRIGATION AND EVAPORATION for RCS #TH2
Table 2.3G
ENVIRO-AG ENGINEERING, INC.

NAME:	TMC Dairies Hico	HYDROLOGIC CHARACTERISTICS			IRRIGATION CELL VOLUME SUMMARY DATA	
LOCATION:	Erath County	Pen Area (acres):	0.00		25-Year, 10-Day Rainfall Volume (ac-ft):	14.29
DATE:	July-24	Adjacent/ManureComposting Areas (acres):	8.00		Process Generated Wastewater Volume (ac-ft):	0.00
		Paved/Roof Area (acres):	0.75		Sludge Accumulation Volume (ac-ft):	0.10
		Total RCS Surface Area (acres):	6.12		Additional Volume (ac-ft):	2.16
		Total Irrigated Area (acres)(12):	490	490	Total Required Capacity (ac-ft):	16.55
		Cropping scheme:	Bermudagrass	Winter Wheat		
		Effective Evaporation Surface Area (acres):	3.84			

	RCS INFLOW CALCULATIONS					HYDRAULIC CROP DEMAND CALCULATIONS					RCS STORAGE SUMMARY			
MONTH	(1) (inches)	(2) (inches)	(2) (inches)	(3) (ac-ft)	(4) (ac-ft)	(5) (inches)	(6) (inches)	(6) (inches)	(7) (ac-ft)	(7) (ac-ft)	(8) (inches)	(9) (ac-ft)	(10) (ac-ft)	(11) (ac-ft)
													start value --->	0.10
JAN	1.54	0.00	0.23	0.00	1.03	1.54	2.10	2.74	22.87	49.00	2.37	0.76	0.27	0.10
FEB	1.89	0.00	0.39	0.00	1.34	1.88	2.46	3.11	23.54	50.08	2.69	0.86	0.48	0.10
MAR	2.14	0.00	0.53	0.00	1.58	2.11	4.06	4.97	79.49	116.65	4.28	1.37	0.21	0.10
APR	2.88	0.00	0.99	0.00	2.31	2.72	4.98	5.74	92.19	123.22	5.20	1.66	0.65	0.10
MAY	4.31	0.00	2.06	0.00	3.84	3.67	5.73	5.33	84.29	67.96	5.25	1.68	2.16	0.10
JUN	3.24	0.00	1.25	0.00	2.69	2.99	6.82	3.22	156.57	9.57	7.01	2.24	0.44	0.10
JUL	2.11	0.00	0.51	0.00	1.55	2.09	7.66	0.00	227.59	0.00	8.23	1.55	0.00	0.10
AUG	2.25	0.00	0.59	0.00	1.68	2.21	7.56	0.00	218.45	0.00	7.71	1.68	0.00	0.10
SEP	3.01	0.00	1.08	0.00	2.44	2.82	5.78	0.00	120.88	0.00	5.91	1.89	0.55	0.10
OCT	3.23	0.00	1.24	0.00	2.67	2.98	4.29	2.15	53.55	0.00	4.89	1.57	1.11	0.10
NOV	1.88	0.00	0.39	0.00	1.33	1.87	2.81	1.70	38.22	0.00	3.33	1.07	0.27	0.10
DEC	1.62	0.00	0.26	0.00	1.10	1.62	2.24	2.33	25.32	28.99	2.45	0.78	0.32	0.10
TOTALS	30.10	0.00	9.53	0.00	23.58	28.50	56.49	31.29	1142.96	445.48	59.32	17.12	6.46	

NOTES:

(1) AVERAGE PRECIPITATION - Average precipitation taken from the Texas Water Development Board, Erath County, Quad #509, Retrieved May 15, 2024.

(2) RUNOFF PENS AND ADJACENT AREA - Runoff from pens, adjacent areas calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Pen CN-77, Adj CN-77). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff).

(3) PROCESS INFLOW - No Process Inflow.

(4) TOTAL INFLOW - Total Inflow is calculated as that volume of rainfall that falls on the RCS and process water that enters the RCS.

(5) RAINFALL ON IRRIGATED AREA - Effective monthly rainfall on the irrigated area is calculated using SCS Curve Number Method adjusted from 1 to 30-day Curve Number (Irrigated CN-55). (Ref. NRCS Animal Waste Management Software Help File-Program Documentation for Runoff)

(6) CONSUMPTIVE USE values from Borrelli, et al., 1998. Mean Crop Consumptive Use and Free-Water Evaporation for Texas, Dept. of Civil Engineering, Texas Tech University, Lubbock, Texas (Tables 16 & 25).

(7) NET CROP DEMAND - Net Crop Demand = ((Consumptive Use(6) - Effective Rainfall(5))/12) x Irrigated Area.

(8) MONTHLY LAKE SURFACE EVAPORATION - Average monthly lake surface evaporation taken from the Texas Water Development Board,Erath County, Quad #509, Retrieved May 15, 2024.

(9) NET POND EVAPORATION - Net Evaporation from the water surface is taken as (Monthly Lake Surface Evap/12) x (RCS Surface Area).

(10) ACTUAL WITHDRAWAL - Actual Withdrawal from the irrigation cell not to exceed Net Crop Demand. (No consideration given for nutrient demand of crop)

(11) STORAGE AT END OF MONTH - Storage volume in the irrigation cell at the end of the month. The storage calculated in this column should not encroach in the volume reserved for the 25-Year, 10-Day rainfall event.

(12) IRRIGATED ACRES included LMUs 1, 2, 4, 5, 7, 8, 9, 10, 11, 12

NOTE: Calculations were performed in Microsoft Excel using floating point arithmetic in order to maintain the accuracy of the data. Any inconsistencies in rounding of the displayed values are not to be construed as errors in the calculation. For more information, please refer to http://support.microsoft.com/kb/42980.

STATE OF TEXAS
NORMAN H. MULLIN
66107
LICENSED
PROFESSIONAL ENGINEER

8/26/24

Firm No. F-2507

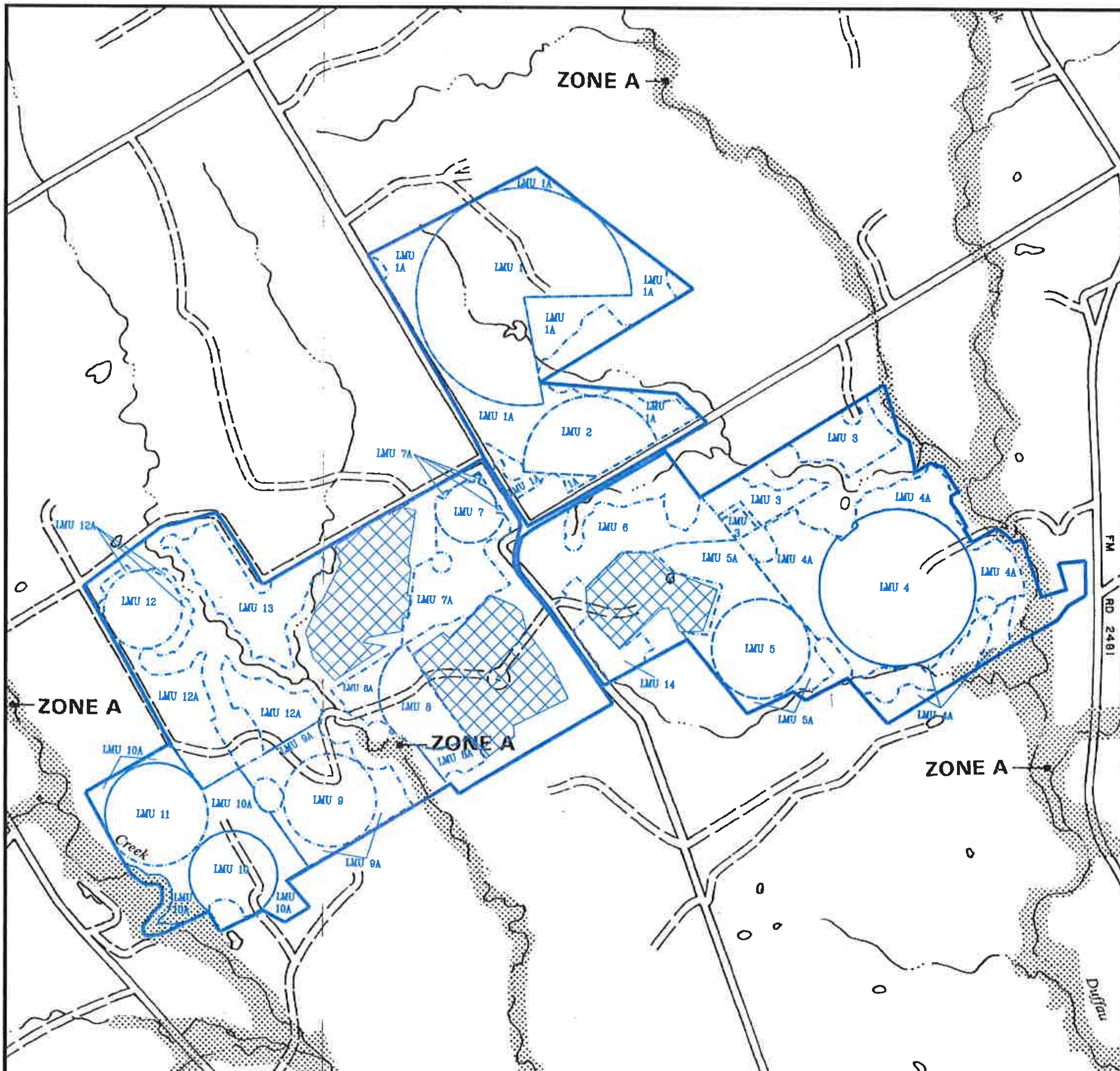
3.0 FACILITY INFORMATION

3.1 Required Certifications

TD Treatment Pond, TD1, TD Settling Pond #1, TD Settling Pond #2, TS1, TS2, TS Settling Pond, TH1, TH2, TH Settling Basin and the Slurry Pit have been certified by a licensed Texas professional engineer as meeting the liner requirements of the TCEQ. Existing liner and capacity certifications are attached.

3.2 100-Year Flood Plain Evaluation

The location of this facility is overlain on a FEMA 100-year flood plain map (Figure 3.1). The production area is not located within a 100-year flood plain.



Map Revised 8/2/2024

LEGEND:
- Denotes Property Boundary
- Denotes LMU Boundary
- Denotes Production Area

N
W E
S

NO SCALE

Source: FEMA, Flood Plain Maps

TMC Dairies Hico Hico, TX Erath County	FEMA Flood Map Figure 3.1 Page 31	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

TD1

ENVIRO-AG ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
RCS #1 Capacity Certification

The survey capacity performed on March 4, 2010 by Enviro-Ag Engineering, Inc. for retention control structure (RCS) #1 with two vertical feet of dry freeboard is calculated as:

RCS #1 Capacity:	74.95 ac-ft
RCS #1 Surface Area:	10.34 surface acres @ High Water Level

Prepared by:

4/30/10

Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

(Supporting Documentation Attached)

TΔ1

ENVIRO-AG ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
RCS #1 Liner Certification

Two 3-inch Shelby tube core samples were collected from RCS #1 to document that the liner meets the requirements of the TCEQ for soil liner. The liner thickness was documented to be at least 18 inches.

The hydraulic conductivity of the clay liner is documented as follows:

- RCS #1 West End (Lab #1849) — 8.6×10^{-8} cm/sec
- RCS #1 East End (Lab #1850) — 6.8×10^{-8} cm/sec

Based on the above documentation the liner in RSC #1 is determined to be in accordance with TCEQ requirements for soil liners. The test locations were backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water sources.

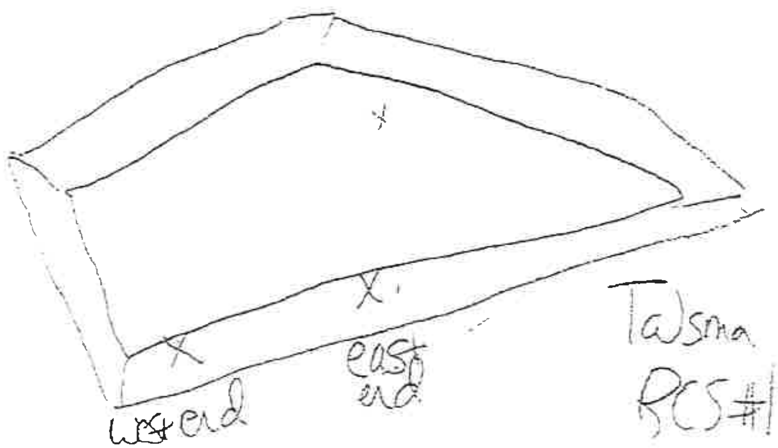
NORMAN F. MULLIN
66107
REGISTERED
PROFESSIONAL ENGINEER

Norman Mullin 12/21/2010

Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

(Supporting Documentation Attached)

TRIAXIAL PERMEABILITY CHAIN of CUSTODY



STRUCTURE	PERM REPORT I.D.	LAB LOG
RCS#1 WEST END		1849
RCS#1 EAST END		1850

Facility Name: Talsma Dairy

Project Engineer: Norman Mullin

Sampled by: Rafael Santos

Date Sampled: 10/11/10

Date to Lab: 10/15/10 Received: Vick Baker

EAE
302 Morgan Mill Road
Bldg C
Stephenville, TX 76401
(254) 965-3500
Fax: (254) 965-8000

Enviro-Ag Engineering, Inc.

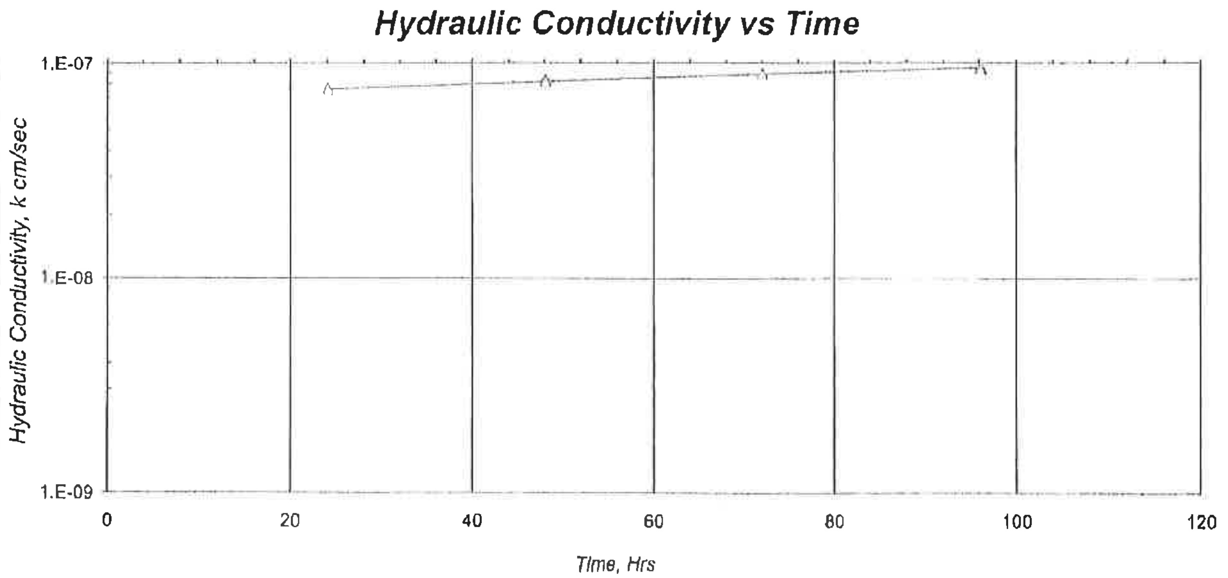
3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name	Project No:	Lab Sample Number:
Tasma Dairy	10-10-11	1849
Sample ID:	**Sample Location:**	**Report Date:**
1	RCS #1 -West End	November 1, 2010



SPECIMEN DATA

SAMPLE ID:	1	
DESCRIPTION:	RCS #1 -West End	
	INITIAL	FINAL
HEIGHT, in.	3.8	3.9
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	10.8	22.4
DRY DENSITY, pcf	107	105
SATURATION, %	51	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	7.7E-08
2	48.2	8.2E-08
3	72.1	8.9E-08
4	96.3	9.5E-08

AVERAGE LAST 4 : **8.6E-08**

2 Soils Lab\Perms \1910 \ 10-10-11 \ 1849	Print Date:	Reviewed By:	LSN:
DCN: EAE-QC-GRAPH (rev. 11/10/04)	11/01/10	Micah Mullin	1849

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LABORATORY SERVICES

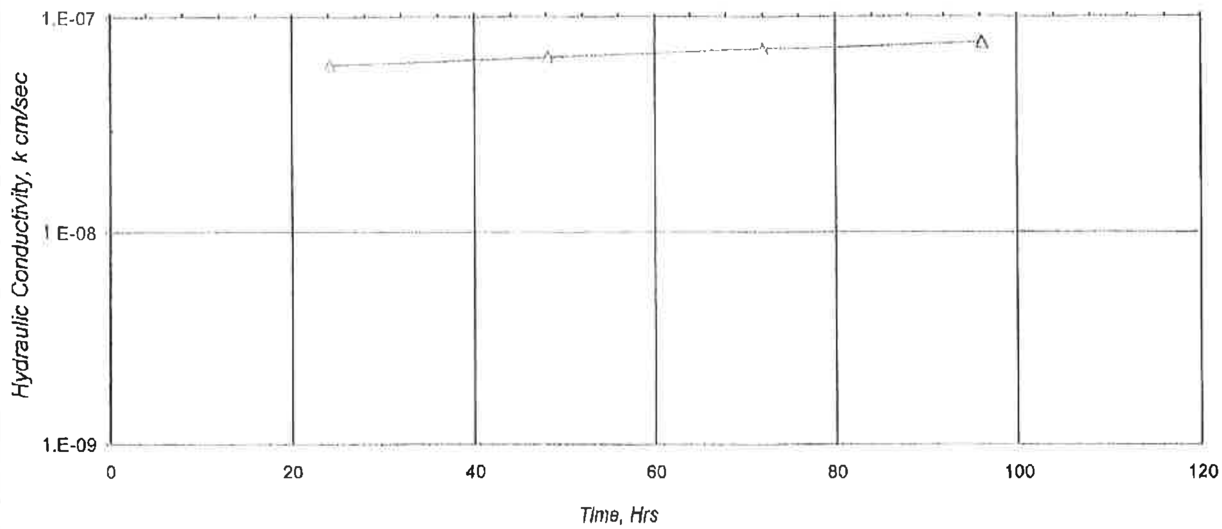
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number
Tasma Dairy	10-10-11	1850
Sample ID	**Sample Location**	**Report Date**
2	RCS #1 -East End	November 1, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	2	
DESCRIPTION:	RCS #1 -East End	
	INITIAL	FINAL
HEIGHT, in.	2.7	2.7
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	13.1	33.1
DRY DENSITY, pcf	92	88
SATURATION, %	42	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 4
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	6.0E-08
2	48.2	6.5E-08
3	72.1	7.1E-08
4	96.3	7.6E-08

AVERAGE LAST 4 : **6.8E-08**

COMMENTS:

Tap water used as permeant.

7D1

ENVIRO-AG
EAE
ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
RCS #1 Liner Certification

Three three-inch Shelby tube core samples were collected from RCS #1 to document that the liner meets the requirements of the TCEQ requirements for soil liner. The liner thickness was documented to be at least 18 inches.

The hydraulic conductivity of the soil liner is documented as follows:

• RCS #1-1 (#850)	4.5 x 10-8 cm/sec
• RCS #1-2 (#851)	5.9 x 10-8 cm/sec
• RCS #1-3 (#852)	7.1 x 10-8 cm/sec

Based on the above documentation the liner in RCS #1 is determined to be in accordance with TCEQ requirements for soil liners. The test locations were backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water resources.

Norman Mullin
9/12/08

Norman Mullin, P.E.
Enviro-Ag Engineering, Inc.

(Supporting Documentation Attached)

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

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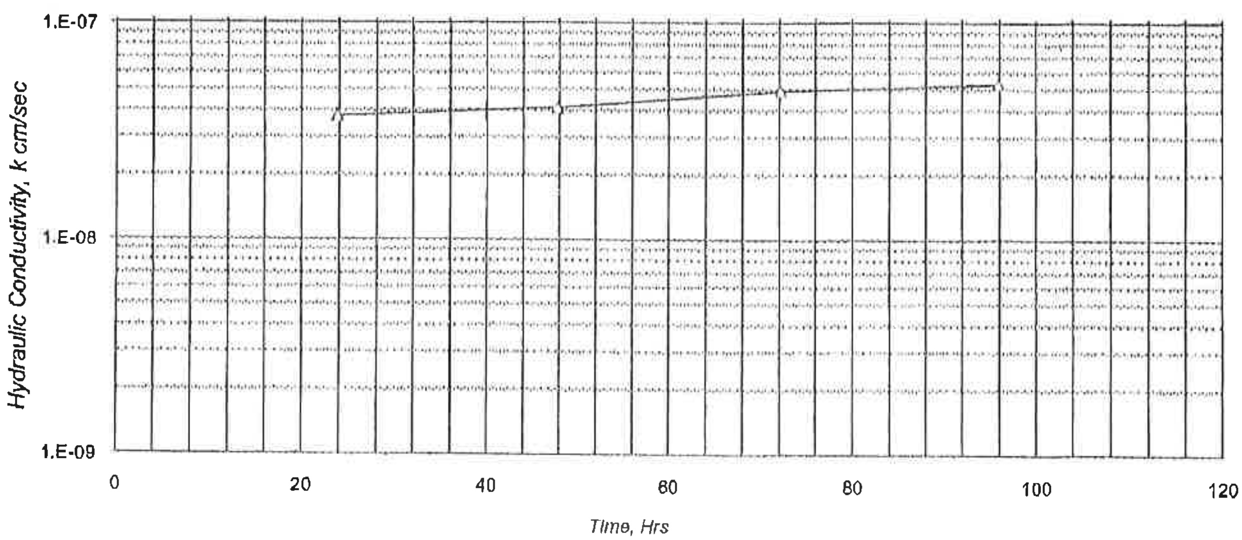
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Talsma Dairy	08-07-09	850
Sample ID:	**Sample Location:**	**Report Date:**
1	RCS #1 - 1	August 25, 2008

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	1	
DESCRIPTION:	RCS #1 - 1	
	INITIAL	FINAL
HEIGHT, in.	3.0	3.0
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	22.9	30.5
DRY DENSITY, pcf	91	93
SATURATION, %	73	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 4
IN / OUT RATIO:	1.03

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	23.8	3.8E-08
2	47.8	4.1E-08
3	72.2	4.9E-08
4	96.0	5.3E-08

AVERAGE LAST 4 : **4.5E-08**

Z : Soils LabForms \2008 \ 08-07-09 \ 850

Print Date: 08/25/08

Reviewed By: Micah Mullin

LSN: 850

DCN: EAE-QC-GRAPH (rev. 11/10/04)

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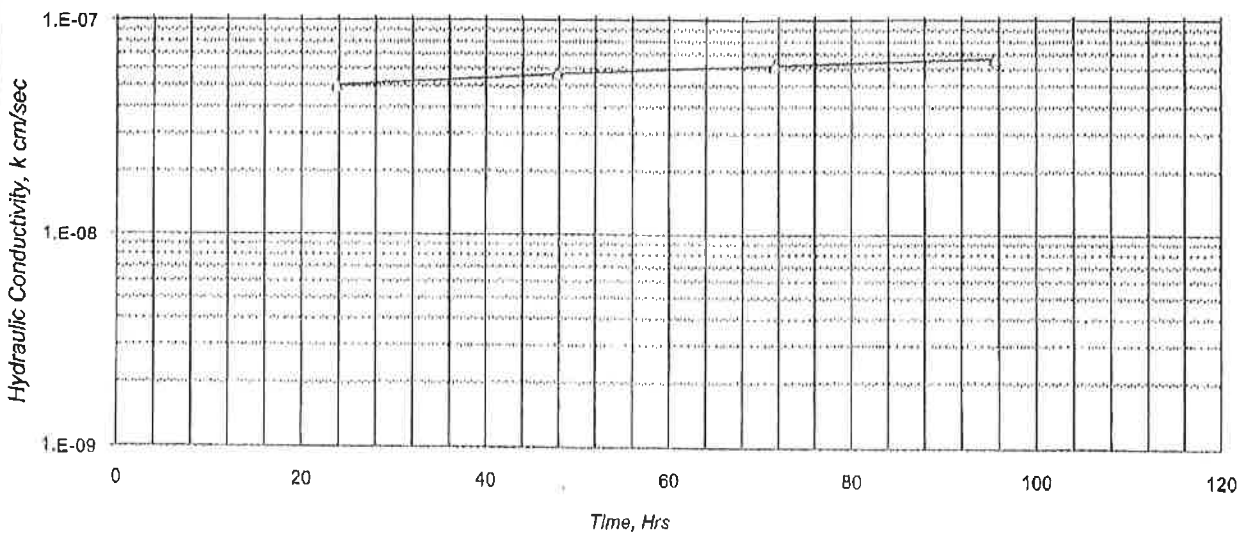
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Talsma Dairy	08-07-09	851
Sample ID:	**Sample Location:**	**Report Date:**
2	RCS #1 - 2	August 25, 2008

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	2	
DESCRIPTION:	RCS #1 - 2	
	INITIAL	FINAL
HEIGHT, In.	2.3	2.3
DIAMETER, In.	2.8	2.8
WATER CONTENT, %	14.8	19.2
DRY DENSITY, pcf	114	111
SATURATION, %	83	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 4
IN / OUT RATIO:	0.97

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	23.8	5.0E-08
2	47.9	5.7E-08
3	71.6	6.2E-08
4	95.7	6.7E-08

AVERAGE LAST 4 : **5.9E-08**

COMMENTS:
Tap water used as permeant.

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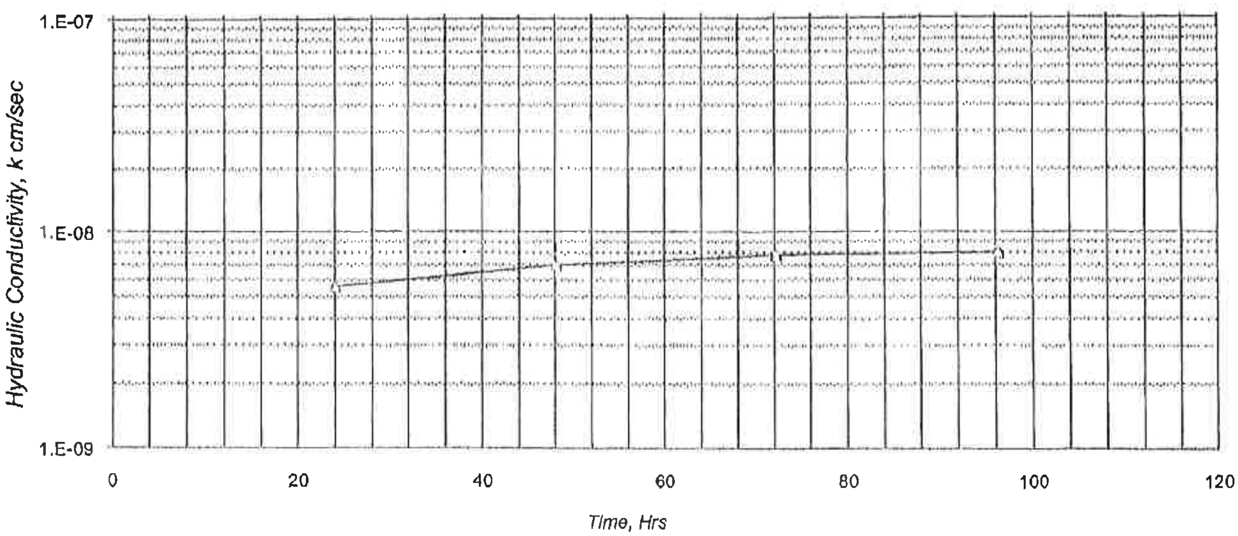
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number
Talsma Dairy	08-07-09	852
Sample ID:	**Sample Location:**	**Report Date:**
3	RCS #1 - 3	August 25, 2008

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	3	
DESCRIPTION:	RCS #1 - 3	
	INITIAL	FINAL
HEIGHT, in.	2.3	2.3
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	29.2	34.5
DRY DENSITY, pcf	87	87
SATURATION, %	84	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	4 - 4
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	5.6E-09
2	48.2	7.0E-09
3	72.3	7.8E-09
4	96.4	8.0E-09

AVERAGE LAST 4 : **7.1E-09**

TD Treatment Pond

ENVIRO-AG
ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
Treatment Lagoon Capacity Certification

The survey capacity performed on March 4, 2010 by Enviro-Ag Engineering, Inc. for the Treatment Lagoon is calculated as:

Treatment Lagoon Capacity:	12.22 ac-ft
Treatment Lagoon Surface Area:	2.74 surface acres @ High Water Level

Prepared by:

Norman Mullin
NORMAN H. MULLIN
66107
4/30/10

Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

(Supporting Documentation Attached)

TD Treatment Pond

ENVIRO-AG ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
Treatment Pond Liner Certification

A three-inch Shelby tube core sample was collected from the Treatment Pond to document that the liner meets the requirements of the TCEQ requirements for soil liner. The liner thickness was documented to be at least 18 inches.

The hydraulic conductivity of the soil liner is documented as follows:

- Treatment Pond #2 (#853) 1.1 x 10-8 cm/sec

Based on the above documentation the liner in the Treatment Pond is determined to be in accordance with TCEQ requirements for soil liners. The test location was backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water resources.

Norman Mullin
NORMAN MULLIN
9/12/08

Norman Mullin, P.E.
Enviro-Ag Engineering, Inc.

(Supporting Documentation Attached)

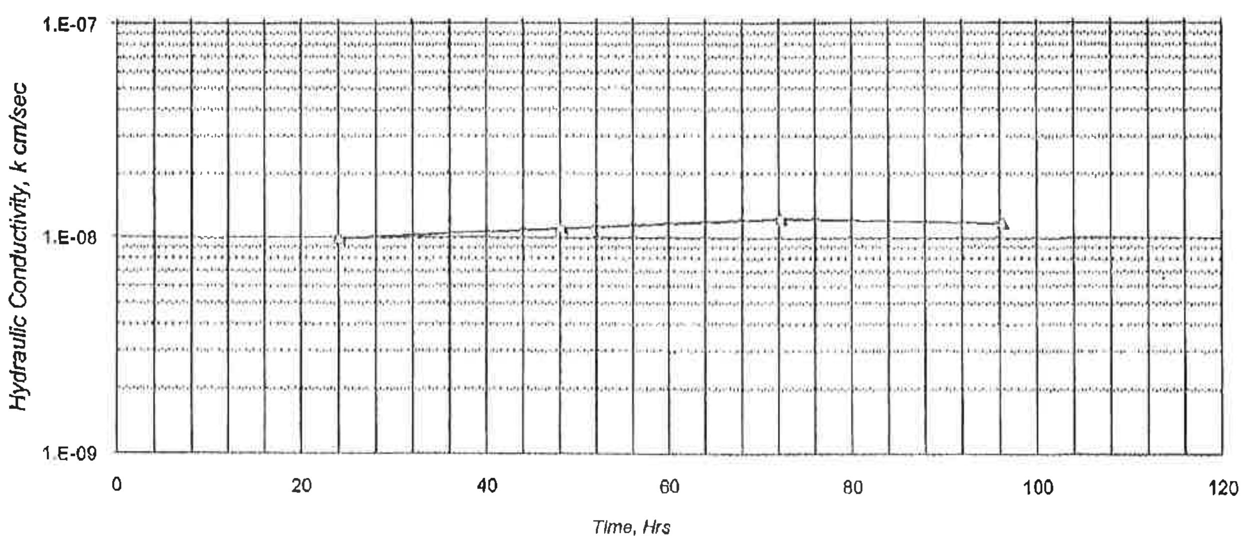
Enviro-Ag Engineering, Inc.
3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123
LABORATORY SERVICES
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Talsma Dairy	08-07-09	853
Sample ID:	**Sample Location:**	**Report Date:**
4	Treatment Pond	August 25, 2008

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	4	
DESCRIPTION:	Treatment Pond	
	INITIAL	FINAL
HEIGHT, in.	3.4	3.4
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	13.2	18.7
DRY DENSITY, pcf	113	112
SATURATION, %	74	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 3
IN / OUT RATIO:	1.01

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	9.9E-09
2	48.2	1.1E-08
3	72.3	1.2E-08
4	96.4	1.2E-08

AVERAGE LAST 4 : **1.1E-08**

Print Date: 08/25/08

Reviewed By: Micah Mullin

LSN: 853

TD Settling Pond #1

ENVIRO-AG
EAE
ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
Settling Pond #1 Liner Certification

Two three-inch Shelby tube core samples were collected from Settling Pond #1 to document that the liner meets the requirements of the TCEQ requirements for soil liner. The liner thickness was documented to be at least 18 inches.

The hydraulic conductivity of the soil liner is documented as follows:

- Settling Pond #1-1 (#855) 1.9 x 10-8 cm/sec
- Settling Pond #1-2 (#856) 8.7 x 10-9 cm/sec

Based on the above documentation the liner in Settling Pond #1 is determined to be in accordance with TCEQ requirements for soil liners. The test locations were backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water resources.

Norman Mullin
9/12/08

Norman Mullin, P.E.
Enviro-Ag Engineering, Inc.

(Supporting Documentation Attached)

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

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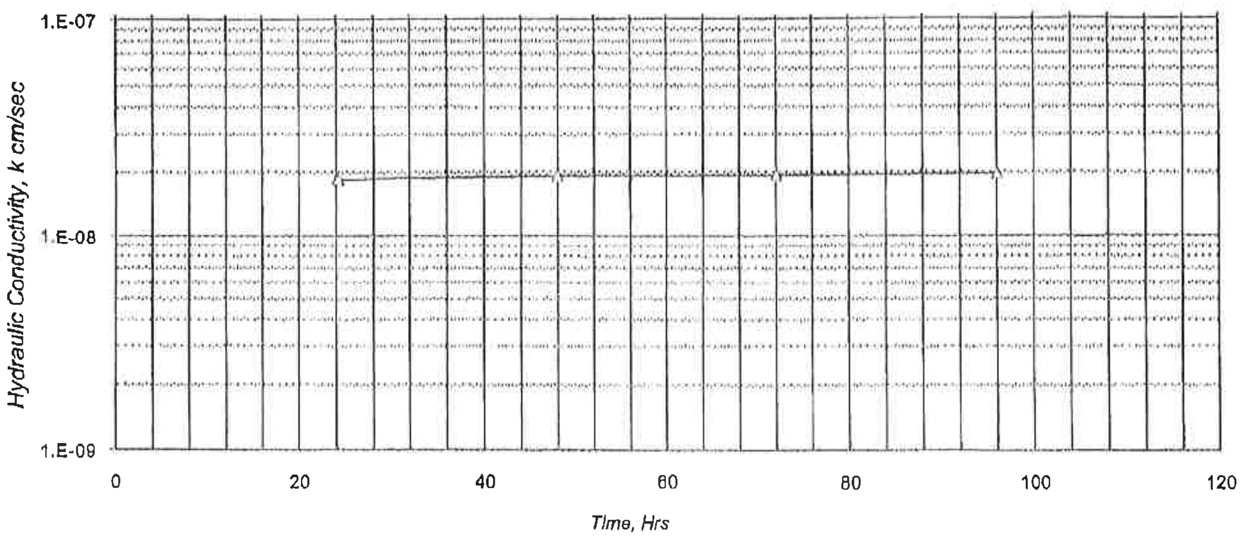
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Talsma Dairy	08-07-09	855
Sample ID:	**Sample Location:**	**Report Date:**
6	Settling Pond #1 - 1	August 25, 2008

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	6	
DESCRIPTION:	Settling Pond #1 - 1	
	INITIAL	FINAL
HEIGHT, in.	3.4	3.3
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	30.5	30.8
DRY DENSITY, pcf	86	92
SATURATION, %	85	99
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	1.9E-08
2	48.0	1.9E-08
3	72.0	1.9E-08
4	96.0	2.0E-08

AVERAGE LAST 4 : **1.9E-08**

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123
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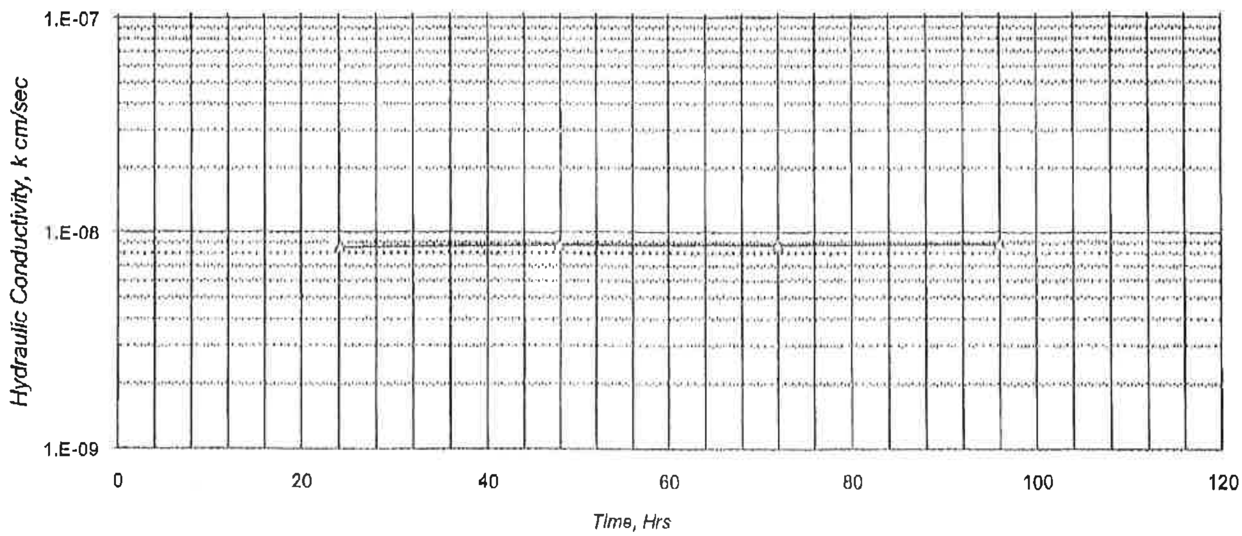
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Talsma Dairy	08-07-09	856
Sample ID:	**Sample Location:**	**Report Date:**
7	Settling Pond #1 - 2	August 25, 2008

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	7	
DESCRIPTION:	Settling Pond #1 - 2	
	INITIAL	FINAL
HEIGHT, in.	3.2	3.1
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	33.1	32.9
DRY DENSITY, pcf	84	90
SATURATION, %	89	101
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	8.5E-09
2	48.0	8.7E-09
3	72.0	8.7E-09
4	96.0	8.8E-09

AVERAGE LAST 4 : **8.7E-09**

TD Settling Pond #2

ENVIRO-AG ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
Settling Pond #2 Liner Certification

A three-inch Shelby tube core sample was collected from Settling Pond #2 to document that the liner meets the requirements of the TCEQ requirements for soil liner. The liner thickness was documented to be at least 18 inches.

The hydraulic conductivity of the soil liner is documented as follows:

- Settling Pond #2 (#854) 1.4×10^{-8} cm/sec

Based on the above documentation the liner in Settling Pond #2 is determined to be in accordance with TCEQ requirements for soil liners. The test location was backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water resources.

Norman Mullin

9/12/08

Norman Mullin, P.E.
Enviro-Ag Engineering, Inc.

(Supporting Documentation Attached)

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www.enviroag.com

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LABORATORY SERVICES

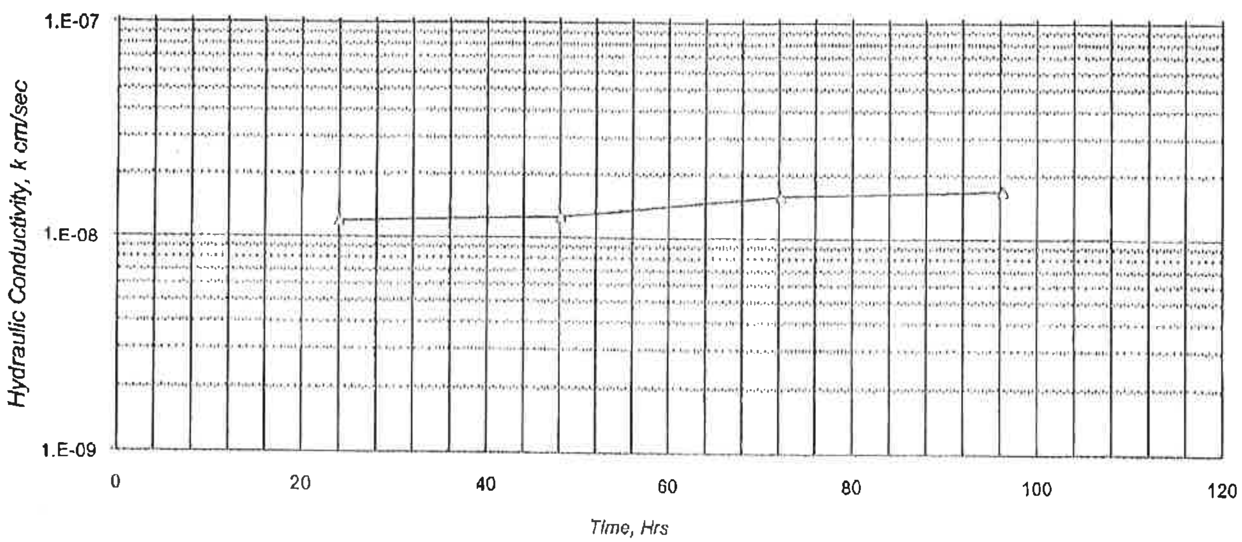
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Talsma Dairy	08-07-09	854
Sample ID:	**Sample Location:**	**Report Date:**
5	Settling Pond #2 - 1	August 25, 2008

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	5	
DESCRIPTION:	Settling Pond #2 - 1	
	INITIAL	FINAL
HEIGHT, in.	2.2	2.2
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	16.8	23.8
DRY DENSITY, pcf	101	102
SATURATION, %	67	99
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	4 - 5
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	1.2E-08
2	48.2	1.3E-08
3	72.3	1.6E-08
4	96.4	1.7E-08

AVERAGE LAST 4 : **1.4E-08**

Slurry Pit

ENVIRO-AG
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ENGINEERING, INC.

Talsma Dairy
Erath County, Texas
Slurry Pond Liner Certification

A three-inch Shelby tube core sample was collected from the Slurry Pond to document that the liner meets the requirements of the TCEQ requirements for soil liner. The liner thickness was documented to be at least 18 inches.

The hydraulic conductivity of the soil liner is documented as follows:

- Slurry Pond (#842) 4.5 x 10-8 cm/sec

Based on the above documentation the liner in the Slurry Pond is determined to be in accordance with TCEQ requirements for soil liners. The test location was backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water resources.

Norman Mullin
68107
9/12/08

Norman Mullin, P.E.
Enviro-Ag Engineering, Inc.

(Supporting Documentation Attached)

Enviro-Ag Engineering, Inc.

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LABORATORY SERVICES

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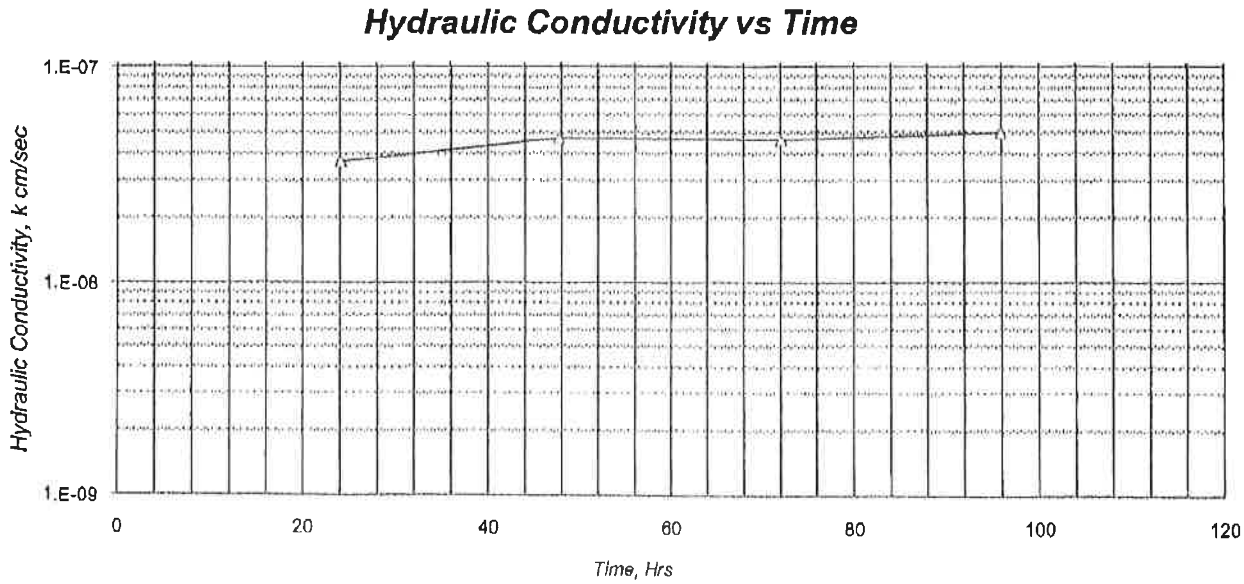
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Talsma Dairy	08-07-01	842
Sample ID:	**Sample Location:**	**Report Date:**
1	Slurry Pond	August 25, 2008



SPECIMEN DATA

SAMPLE ID:	1	
DESCRIPTION:	Slurry Pond	
	INITIAL	FINAL
HEIGHT, in.	2.4	2.4
DIAMETER, in.	2.7	2.8
WATER CONTENT, %	11.0	14.4
DRY DENSITY, pcf	123	121
SATURATION, %	79	99
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Yellow	
SAMPLE CONSISTENCY	Clay	

COMMENTS:
Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	4 - 4
IN / OUT RATIO:	0.96

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	3.7E-08
2	47.8	4.7E-08
3	72.1	4.6E-08
4	96.0	5.0E-08

AVERAGE LAST 4 : **4.5E-08**

Print Date: 08/25/08

Reviewed By: Micah Mullin

LSN: 842

TS1

ENVIRO-AG
EAE
ENGINEERING, INC.

Two Sisters Dairy
Erath County, Texas
RCS #1 Capacity Certification

The survey capacity performed on July 26, 2010 by Enviro-Ag Engineering, Inc. for retention control structure (RCS) #1 with two vertical feet of dry freeboard is calculated as:

RCS #1 Capacity:	49.97 ac-ft
RCS #1 Surface Area:	5.28 surface acres @ High Water Level

Prepared by:

Norman Mullin
NORMAN R. MULLIN
66107
LICENSED
08/16/2010

Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

(Supporting Documentation Attached)

7S1

ENVIRO-AG
EAE
ENGINEERING, INC.

Two Sisters Dairy
Erath County, Texas
RCS #1 Liner Certification

Nine 3-inch Shelby tube core samples were collected from RCS #1 to document the clay liner meets the requirements of the TCEQ for soil liner. The sample locations were backfilled with bentonite clay chips for sealing. The liner thickness was documented to be a minimum of 18 inches.

The hydraulic conductivity of the clay liner is documented as follows:

- RCS #1-1 (Lab #1734) — 9.3×10^{-9} cm/sec
- RCS #1-2 (Lab #1735) — 8.1×10^{-9} cm/sec
- RCS #1-3 (Lab #1736) — 4.8×10^{-8} cm/sec
- RCS #1-4 (Lab #1737) — 3.9×10^{-8} cm/sec
- RCS #1-5 (Lab #1738) — 3.9×10^{-8} cm/sec
- RCS #1-N.S. (Lab #1744) — 3.9×10^{-8} cm/sec
- RCS #1-W.S. (Lab #1745) — 3.9×10^{-8} cm/sec
- RCS #1-E.S. (Lab #1746) — 3.9×10^{-8} cm/sec
- RCS #1-S.S. (Lab #1747) — 3.9×10^{-8} cm/sec

The clay liner present in RCS #1 is determined to be in accordance with TCEQ specific discharge requirements of 1.1×10^{-6} cm/sec. The observed hydraulic conductivity from RCS #1 is considered protective of ground and surface water resources.

Supporting moisture and density laboratory results indicate the embankment and liners were installed at 95% maximum dry density and within the moisture range of minus 1% to plus 3% of optimum moisture content (see attached moisture/density test results). The liner present in RCS #1 is determined to be constructed in accordance with TCEQ requirements for soil liners

I certify that RCS #1 at Two Sistes Dairy meets the construction requirements of NRCS Practice Codes 313 (Waste Storage Ponds), 378 (Pond Embankment) and 521D (Pond Sealing or Lining, Compacted Clay Treatment). Erosion protection and emergency spillway are in place and the staff gauge is installed and calibrated.

Prepared by:

Norman Mullin

NORMAN H. MULLIN

66107

08/16/10

Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

(Supporting Documentation Attached)

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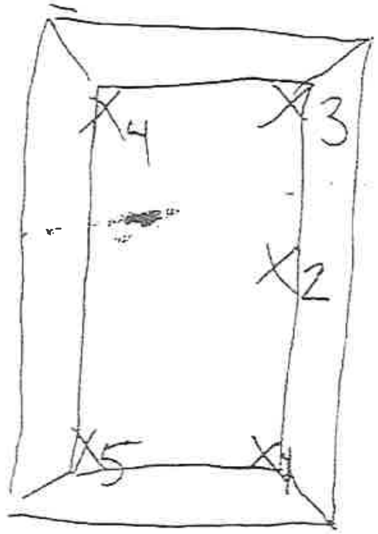
TRIAXIAL PERMEABILITY CHAIN of CUSTODY



Bottom Samples

STRUCTURE	PERM REPORT I.D.	LAB LOG
	#1	1734
	#2	1735
	#3	1736
	#4	1737
	#5	1738

Facility Name: Two Sisters Dairy

Project Engineer: Norman Mullin

Sampled by: Corey Mullin + Roeland Sisters

Date Sampled: 7/26/10

Date to Lab: 7/27/10 via Fed EX

Received: [signature]

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LABORATORY SERVICES

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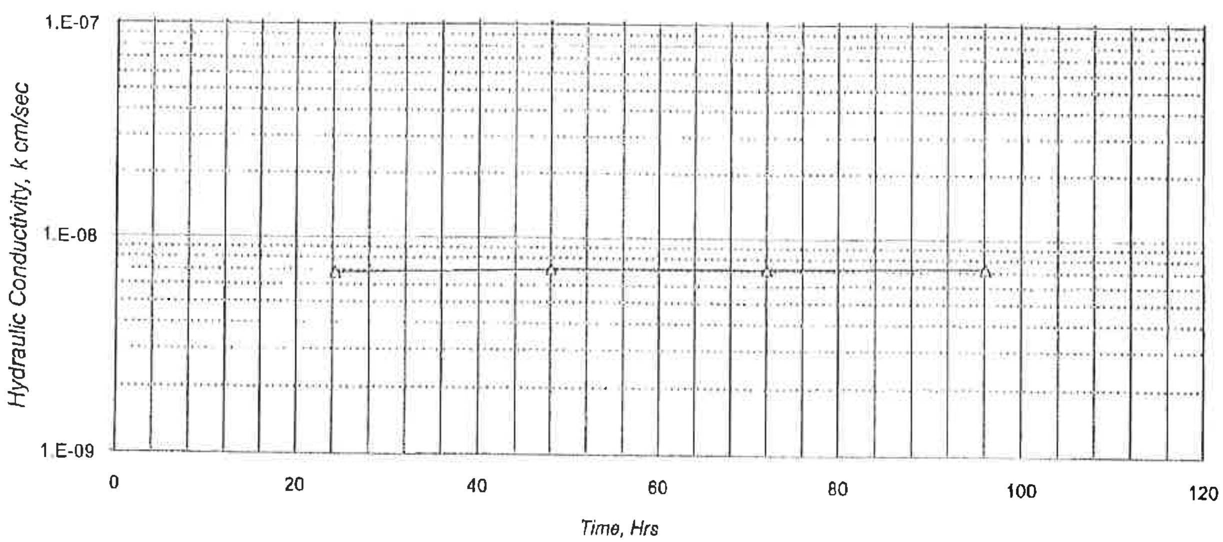
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Two Sisters Dairy	10-07-26	1734
Sample ID:	**Sample Location:**	**Report Date:**
1	#1	August 10, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID: 1
DESCRIPTION: #1

	INITIAL	FINAL
HEIGHT, in.	3.3	3.3
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	15.6	23.1
DRY DENSITY, pcf	105	103
SATURATION, %	70	98

(Specific Gravity assumed as 2.7)

SAMPLE COLOR: Brown

SAMPLE CONSISTENCY: Clay

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi
GRADIENT RANGE: 3 - 3
IN / OUT RATIO: 1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.3	6.8E-09
2	48.1	7.1E-09
3	72.1	7.2E-09
4	96.1	7.3E-09

AVERAGE LAST 4 : **7.1E-09**

COMMENTS:
Tap water used as permeant.

Print Date: 08/10/10

Reviewed By: Micah Mullin

LSN: 1734

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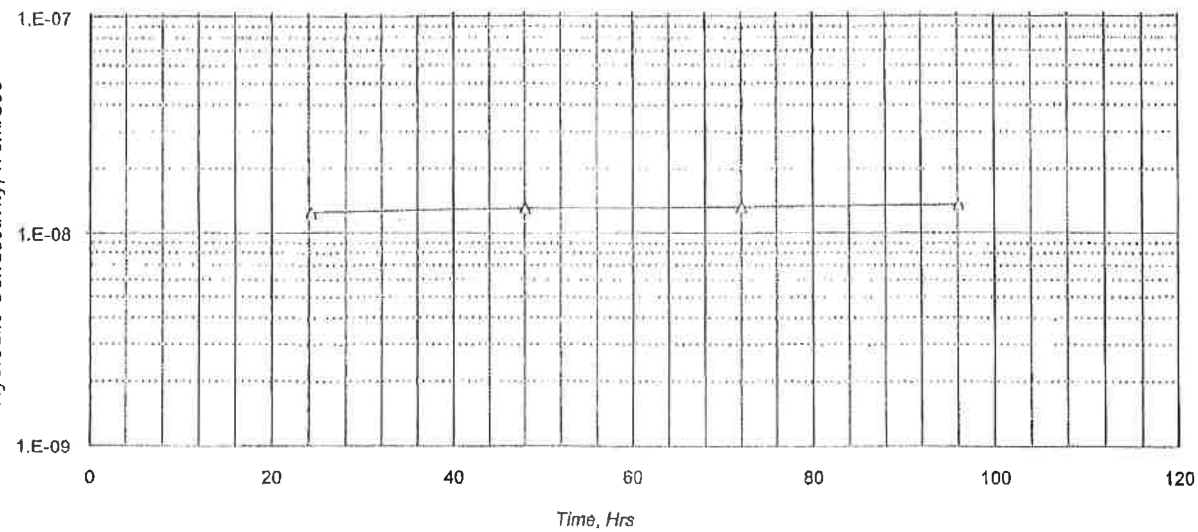
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Two Sisters Dairy	10-07-26	1735
Sample ID:	**Sample Location:**	**Report Date:**
2	#2	August 10, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	2	
DESCRIPTION:	#2	
	INITIAL	FINAL
HEIGHT, in.	4.2	4.2
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	18.1	23.4
DRY DENSITY, pcf	105	103
SATURATION, %	80	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Gray	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 2
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.3	1.2E-08
2	48.1	1.3E-08
3	72.1	1.3E-08
4	96.1	1.4E-08

AVERAGE LAST 4 : **1.3E-08**

COMMENTS:

Tap water used as permeant.

Print Date: 08/10/10

Reviewed By: Micah Mullin

LSN: 1735

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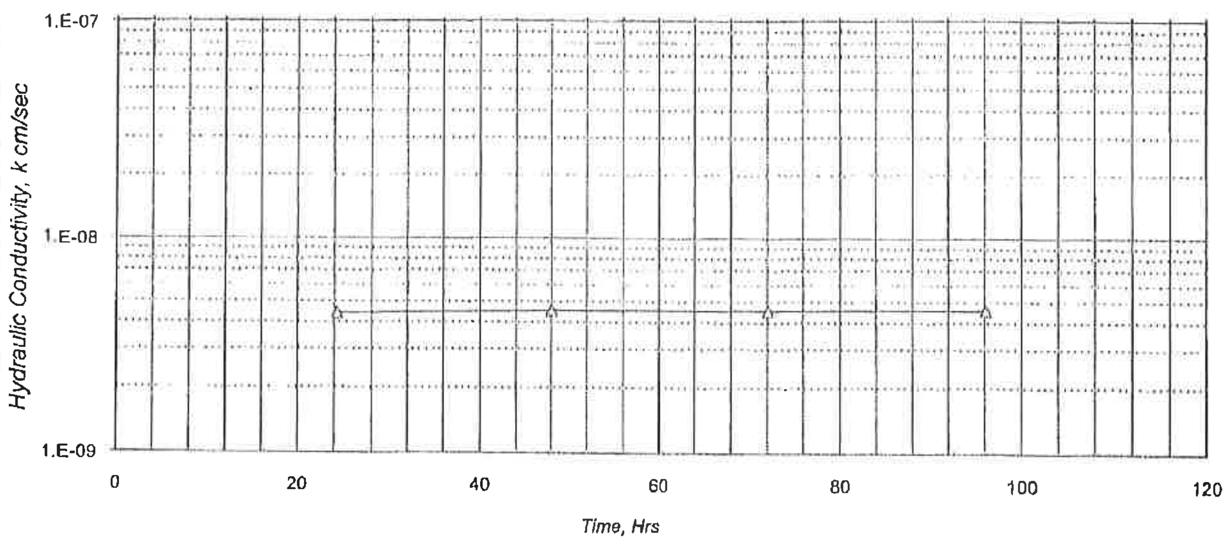
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number
Two Sisters Dairy	10-07-26	1736
Sample ID	**Sample Location:**	**Report Date:**
3	#3	August 10, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	3	
DESCRIPTION:	#3	
	INITIAL	FINAL
HEIGHT, in.	4.2	4.2
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	16.9	21.7
DRY DENSITY, pcf	107	106
SATURATION, %	80	99
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 2
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.3	4.4E-09
2	48.1	4.5E-09
3	72.1	4.5E-09
4	96.1	4.6E-09

AVERAGE LAST 4 : **4.5E-09**

COMMENTS:

Tap water used as permeant.

Z : Soils Lab\Parms \1910 \ 10-07-26 \ 1736	Print Date:	Reviewed By:	LSN:
DCN: EAE-QC-GRAPH (rev. 11/10/04)	08/10/10	Micah Mullin	1736

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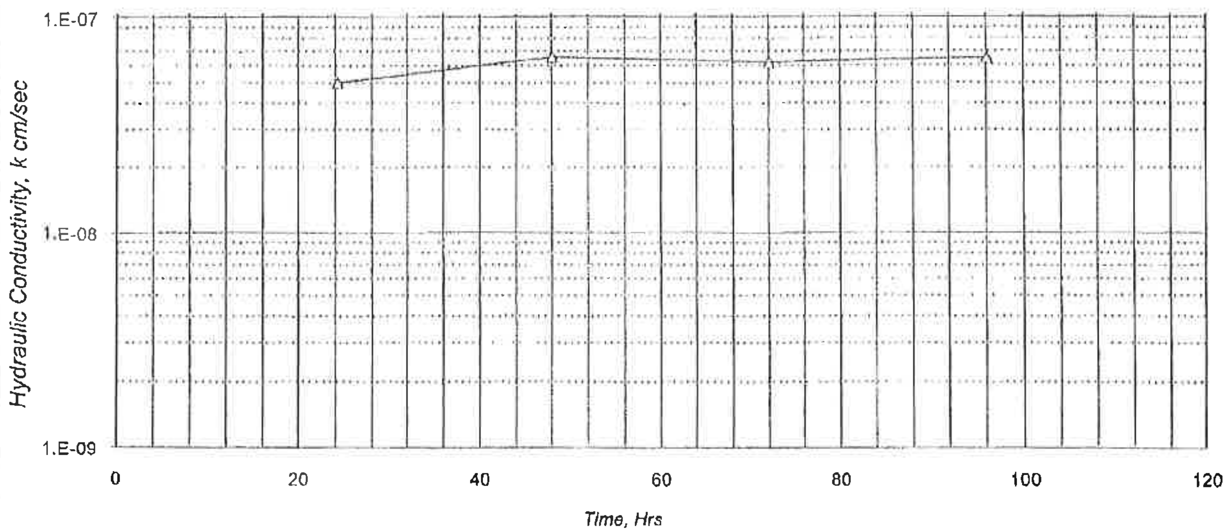
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Two Sisters Dairy	10-07-26	1737
Sample ID:	**Sample Location:**	**Report Date:**
4	#4	August 10, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	4	
DESCRIPTION:	#4	
	INITIAL	FINAL
HEIGHT, in.	4.0	4.0
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	18.9	23.5
DRY DENSITY, pcf	104	102
SATURATION, %	82	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:
Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 3
IN / OUT RATIO:	1.02

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.3	5.0E-08
2	48.1	6.6E-08
3	72.1	6.2E-08
4	96.1	6.5E-08

AVERAGE LAST 4 : **6.1E-08**

Z : Soils Lab\Perms \1910 \ 10-07-26 \ 1737

Print Date: 08/10/10

Reviewed By: Micah Mullin

LSN: 1737

DCN: EAE-QC-GRAPH (rev. 11/10/04)

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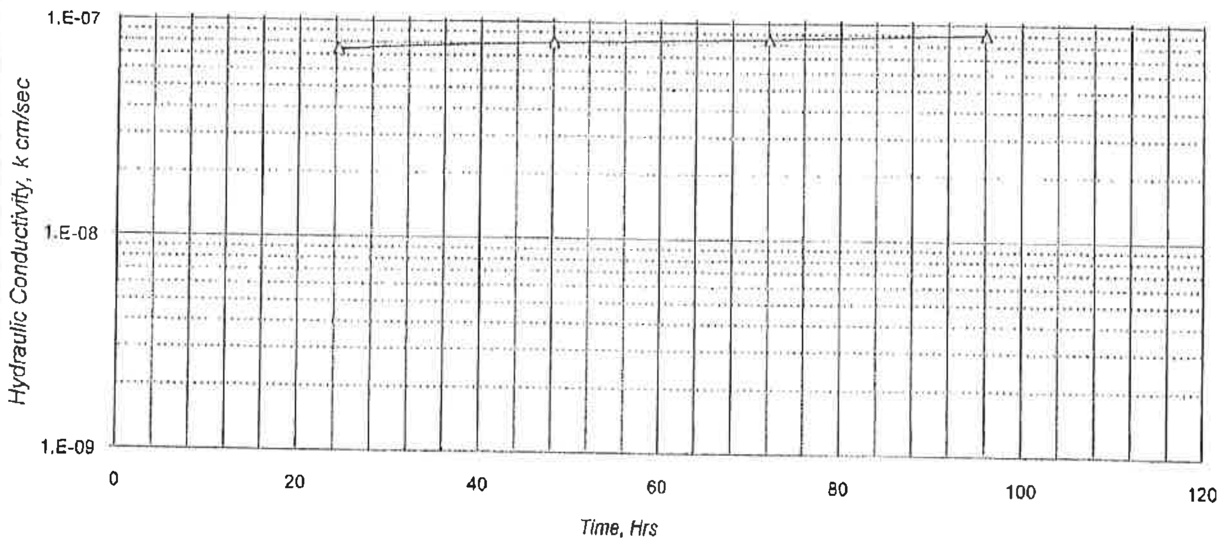
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Two Sisters Dairy	10-07-26	1738
Sample ID:	**Sample Location:**	**Report Date:**
5	#5	August 10, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	5	
DESCRIPTION:	#5	
	INITIAL	FINAL
HEIGHT, in.	4.3	4.3
DIAMETER, in.	2.7	2.8
WATER CONTENT, %	17.1	26.3
DRY DENSITY, pcf	105	98
SATURATION, %	76	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

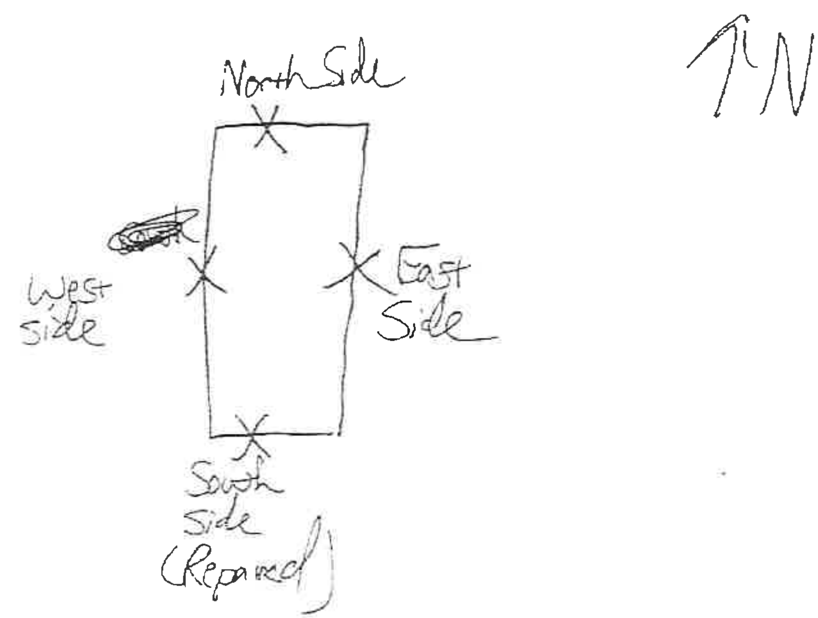
ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 2
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.3	7.5E-08
2	48.1	8.1E-08
3	72.1	8.5E-08
4	96.1	9.0E-08

AVERAGE LAST 4 : **8.3E-08**

TRIAXIAL PERMEABILITY CHAIN of CUSTODY



STRUCTURE	PERM REPORT I.D.	LAB LOG
NORTH SIDE		1744
WEST SIDE		1745
EAST SIDE		1746
SOUTH SIDE - (REPAIRED)		1747

Facility Name: Two Sisters Dairy

Project Engineer: Norman Mullin

Sampled by: Rodal Stokes

Date Sampled: 7-23-10

Date to Lab: 7/27/10

Received: [signature]

VIA FedEX

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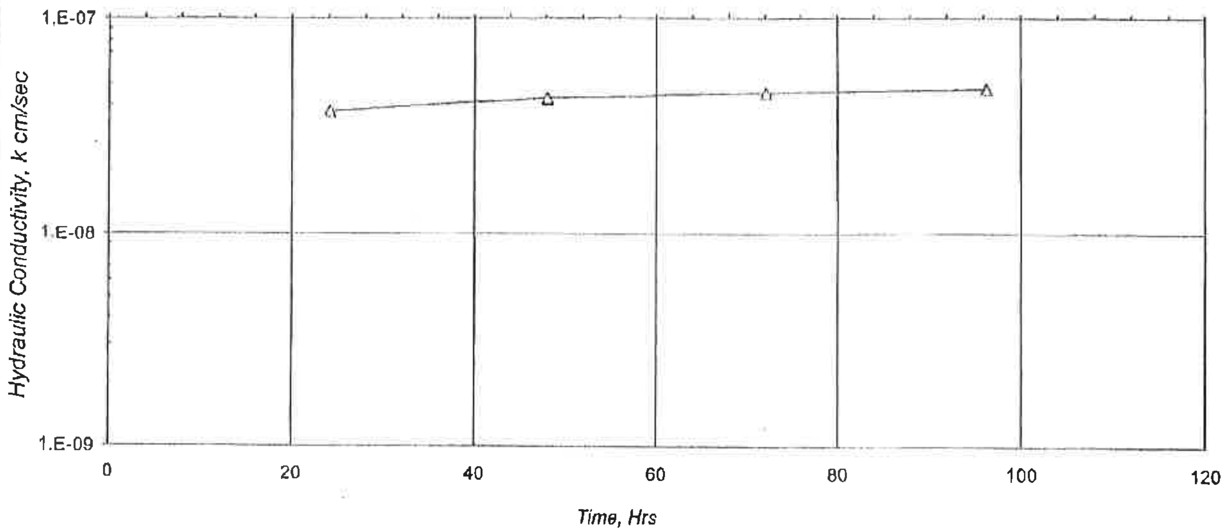
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Two Sisters Dairy	10-07-23	1744
Sample ID:	**Sample Location:**	**Report Date:**
1	North Side	August 11, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	1	
DESCRIPTION:	North Side	
	INITIAL	FINAL
HEIGHT, in.	2.8	2.8
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	23.5	29.0
DRY DENSITY, pcf	97	94
SATURATION, %	86	99
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi
GRADIENT RANGE: 3 - 4
IN / OUT RATIO: 0.95

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	3.7E-08
2	48.1	4.4E-08
3	72.1	4.6E-08
4	96.3	4.8E-08

AVERAGE LAST 4 : **4.4E-08**

	Print Date:	Reviewed By:	LSN:
DCN: EAE-QC-GRAPH (rev. 11/10/04)	08/11/10	Micah Mullin	1744

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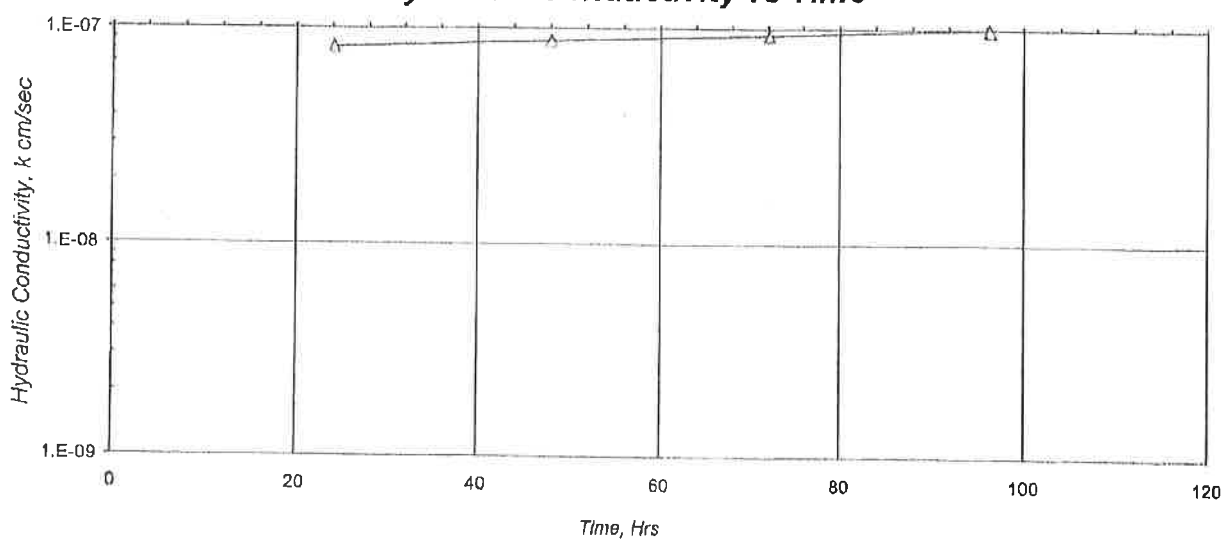
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name: Two Sisters Dairy
Project No: 10-07-23
Lab Sample Number: 1745
Sample ID: 2
Sample Location: West Side
Report Date: August 11, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	2	
DESCRIPTION:	West Side	
	INITIAL	FINAL
HEIGHT, in.	4.0	4.1
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	20.5	25.7
DRY DENSITY, pcf	102	99
SATURATION, %	85	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:
Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi
GRADIENT RANGE: 2 - 3
IN / OUT RATIO: 1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	8.2E-08
2	48.1	8.7E-08
3	72.1	9.3E-08
4	96.3	1.0E-07

AVERAGE LAST 4 : **9.1E-08**

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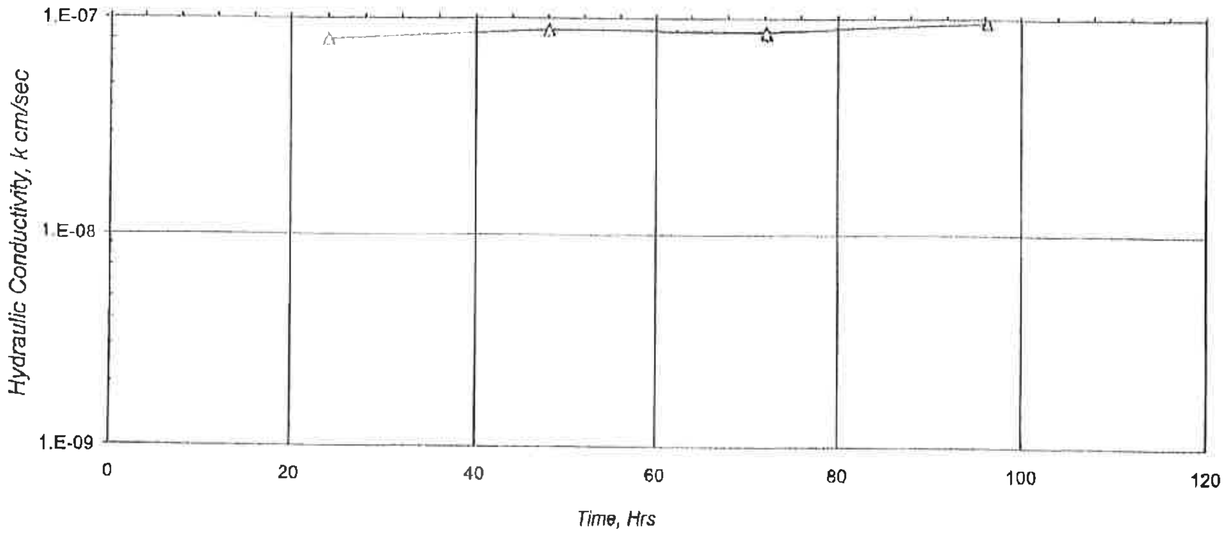
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Two Sisters Dairy	10-07-23	1746
Sample ID:	**Sample Location:**	**Report Date:**
3	East Side	August 11, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	3	
DESCRIPTION:	East Side	
	INITIAL	FINAL
HEIGHT, in.	2.7	2.8
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	15.2	22.9
DRY DENSITY, pcf	105	104
SATURATION, %	68	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Light Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:
Tap water used as permeant.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 4
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	8.1E-08
2	48.1	8.8E-08
3	72.1	8.7E-08
4	96.3	9.6E-08

AVERAGE LAST 4 : **8.8E-08**

Z : Soils Lab\Perms \1910 \ 10-07-23 \ 1746

DCN. EAE-QC-GRAPH (rev. 11/10/04)	Print Date:	Reviewed By:	LSN:
	08/11/10	Micah Mullin	1746

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LABORATORY SERVICES

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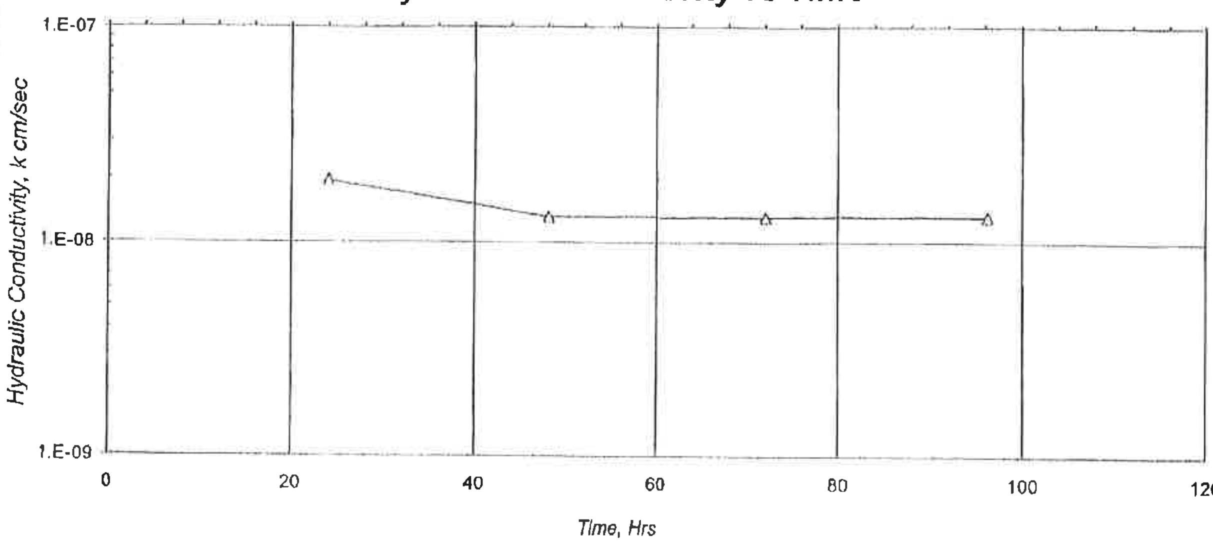
HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Two Sisters Dairy	10-07-23	1747
Sample ID:	**Sample Location:**	**Report Date:**
4	South Side - Repaired	August 11, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID: 4

DESCRIPTION: South Side - Repaired

	INITIAL	FINAL
HEIGHT, in.	4.4	4.5
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	12.2	18.2
DRY DENSITY, pcf	116	113
SATURATION, %	72	100

(Specific Gravity assumed as 2.7)

SAMPLE COLOR: Reddish Brown

SAMPLE CONSISTENCY: Clay

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi

GRADIENT RANGE: 2 - 2

IN / OUT RATIO: 0.87

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.1	2.0E-08
2	48.1	1.3E-08
3	72.1	1.3E-08
4	96.3	1.3E-08

AVERAGE LAST 4 : **1.5E-08**

COMMENTS:

Tap water used as permeant.

Z : Soils Lab\Perms \1910 \ 10-07-23 \ 1747

Print Date: 08/11/10

Reviewed By: Micah Mullin

LSN: 1747

DCN: EAE-QC-GRAPH (rev. 11/10/04)

TS2

ENVIRO-AG
ENGINEERING, INC.

Two Sisters Dairy
Erath County, Texas
RCS #2 Capacity Certification

The survey capacity performed on July 26, 2010 by Enviro-Ag Engineering, Inc. for retention control structure (RCS) #2 with two vertical feet of dry freeboard is calculated as:

RCS #2 Capacity:	24.69 ac-ft
RCS #2 Surface Area:	4.52 surface acres @ High Water Level

Prepared by:

STATE OF TEXAS
NORMAN H. MULLIN
66107
LICENSED

08/16/2010
Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

(Supporting Documentation Attached)

752

ENVIRO-AG ENGINEERING, INC.
EAE
AMARILLO · STEPHENVILLE · ARTESIA

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3404 AIRWAY BLVD
AMARILLO, TEXAS 79118
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STEPHENVILLE OFFICE
9855 FM 847
DUBLIN, TEXAS 76446
800.753.6525

ARTESIA OFFICE
203 EAST MAIN STREET
ARTESIA, NEW MEXICO 88210
800.753.6525

www.enviroag.com

Two Sisters Dairy
Erath County, Texas

Soil Liner Certification for RCS #2

Two Shelby tube core samples of the soil liner in RCS #2 at Two Sisters Dairy were collected and analyzed for permeability to document that the soil liner meets the requirements of TCEQ. Results of the permeability analysis are shown below:

2.2×10^{-8} cm/sec (West Wall)
1.2×10^{-8} cm/sec (South Wall)

Based on the above documentation, the liner in RCS #2 is determined to be in accordance with TCEQ requirements for soil liners. The test locations were backfilled with bentonite chips. The test results meet the requirements of the TCEQ for hydraulic conductivity considered protective of ground and surface water sources.

Respectfully Submitted,

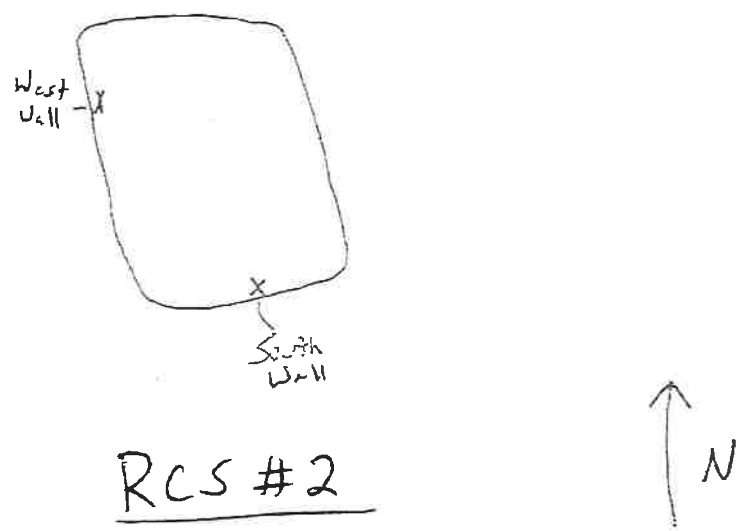
STATE OF TEXAS
NORMAN H. MULLIN
66107
REGISTERED
PROFESSIONAL ENGINEER

Norman Mullin 6/7/16

Norman Mullin, P.E.
Enviro-Ag Engineering, Inc.

Attachments: Enviro-Ag Engineering, Inc. Reports

TRIAXIAL PERMEABILITY CHAIN of CUSTODY



STRUCTURE	PERM REPORT I.D.	LAB LOG
RCS#2 WEST WALL		3964
RCS#2 SOUTH WALL		3965

Facility Name: Two-Sister's Dairy

Project Engineer:

Sampled by: Richard George

Date Sampled: 5-11-16

Date to Lab: 5/19/16 Received: [illegible signature]

ENVIRO-AG
EAE
ENGINEERING, INC.
9855 FM 847
Dublin, TX 76446
(254) 965-3500
Fax: (254) 965-8000

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3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name: Two Sisters Dairy

Project No: 16-05-11

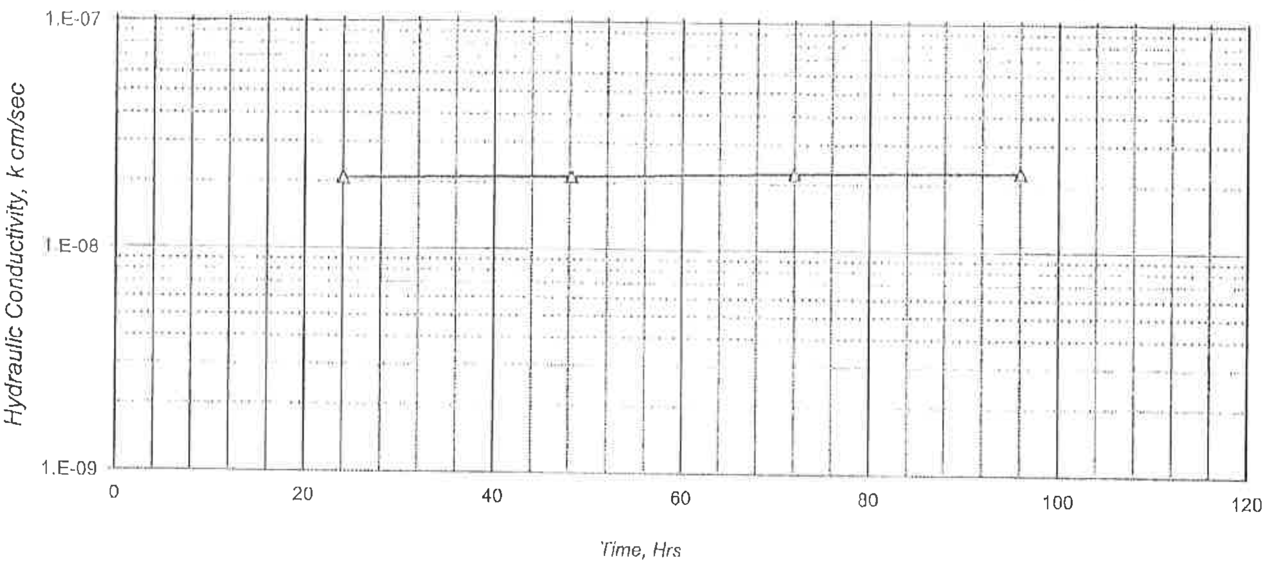
Lab Sample Number: 3964

Sample ID: 1

Sample Location: RCS #2 - West Wall

Report Date: June 1, 2016

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID: 1

DESCRIPTION: RCS #2 - West Wall

	INITIAL	FINAL
HEIGHT, in.	2.5	2.5
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	27.6	33.7
DRY DENSITY, pcf	91	87
SATURATION, %	87	98

(Specific Gravity assumed as 2.7)

SAMPLE COLOR: Dark Brown

SAMPLE CONSISTENCY: Clay

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi

GRADIENT RANGE: 4 - 4

IN / OUT RATIO: 1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	2.1E-08
2	48.2	2.1E-08
3	72.0	2.2E-08
4	96.0	2.3E-08

AVERAGE LAST 4 : **2.2E-08**

COMMENTS:

Tap water used as permeant.

Z : Soils Lab\Perms \1916 \ 16-05-11 \ 3964

DCN: EAE-QC-GRAPH (rev. 11/10/04)

Print Date: 06/02/16

Reviewed By: Micah Mullin

LSN: 3964

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

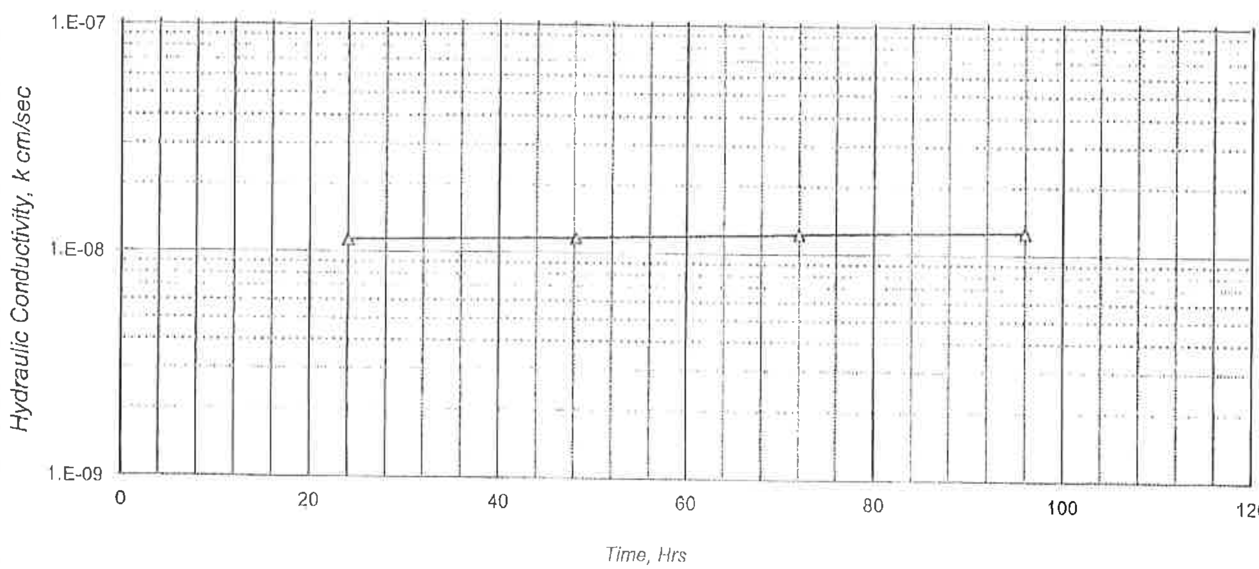
LABORATORY SERVICES

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name: Two Sisters Dairy	Project No. 16-05-11	Lab Sample Number 3965
Sample ID: 2	Sample Location RCS #2 - South Wall	Report Date June 1, 2016

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	2	
DESCRIPTION:	RCS #2 - South Wall	
	INITIAL	FINAL
HEIGHT, in.	2.6	2.6
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	17.1	23.2
DRY DENSITY, pcf	108	104
SATURATION, %	82	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 4
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs	HYDRAULIC CONDUCTIVITY cm / sec
1	24.0	1.1E-08
2	48.2	1.2E-08
3	72.0	1.2E-08
4	96.0	1.3E-08

AVERAGE LAST 4 : **1.2E-08**

Print Date: 06/07/16

Reviewed By: Micah Mullin

LSN: 3965

..sten:-
ICS #3
Liner

TS
Settling Pond

LINER CERTIFICATION

A.C. Lowther
Cert. Professional Soil Scientist
3310 Santa Monica
Abilene, Texas 79605

January 2, 1997

Texas Natural Resource Conservation Commission
Applications and Enforcement Section
Agriculture and Rural Assistance Division
P.O. Box 13067
Austin, Texas 78711-3087

Re:Gerald Oosten Dairy

A.C. Lowther has completed sampling and testing of the soil liner for the Waste Storage Pond number 3 on the Gerald Oosten Dairy, Erath County, Texas. The test results including sample thickness, Atterberg limits, permeability and percent passing the number 200 sieve are tabulated on the attached report. Our findings indicate the soils meet the criteria established by the TNRCC.

Sincerely,

A. C. Lowther

A.C. Lowther, CPSS

Submitted By: Gerald Oosten

Signed By:

Date:

STATE OF TEXAS
JERRY E. HOLLIGAN
29146
REGISTERED PROFESSIONAL ENGINEER

Jerry E. Holligan
2304 Hancock Drive
Suite 1 A
Austin, Texas 78756

R.C.S#3

LINER CERTIFICATION

A.C. Lowther
Cert. Professional Soil Scientist
3310 Santa Monica
Abilene, Texas 79605

Name: Gerald Oosten Dairy
G & P Holsteins
Stephenville, Texas 76401

Pond No. 3 Date Sampled 12-28-96 Sampled By: A.C. Lowther

Test Location	No. 1	No.2	No.3	No.4	Minimum Req.
Soil Description					
Color (Munsell)	Reddish Brown	Reddish Brown	Grayish Brown	Grayish Brown	
Texture (ASTM D-422)	Clay	Clay Loam	Clay	Clay Loam	
Unified	CL	CL	CL	CL	
Sample Depth	18	18	18	18	18
Atterberg Limits (ASTM D-423					
Liquid Limit %	42.3	38.6	44.1	35.9	30
Plastic Limit %	18.2	17.8	22.4	19.4	
Plasticity Index %	24.1	20.8	21.7	16.9	15
Passing No. 200 Seive %	53	55	69	65	30
Permeability (ASTM-D-2434)	3.4 X 10 - 8				1 X 10 - 7

In-Place Density
(ASTM D-1556)

Sample No.	Field Moilsture %	Optimum Moisture %	Field Density (#/Cu.Ft.)	Maximum Density (#/Cu.Ft.)	Density (% Maximum)
1	15.7	18.2	101.9	102.9	99.0
2	12.9	17.9	104.8	107.4	97.5
3	12.1	22.6	94.5	98.6	95.8
4	14.1	22.0	103.4	106.0	97.5

RCS#3

LINER CERTIFICATION

A.C. Lowther
Cert. Professional Soil Scientist
3310 Santa Monica
Abilene, Texas 79605

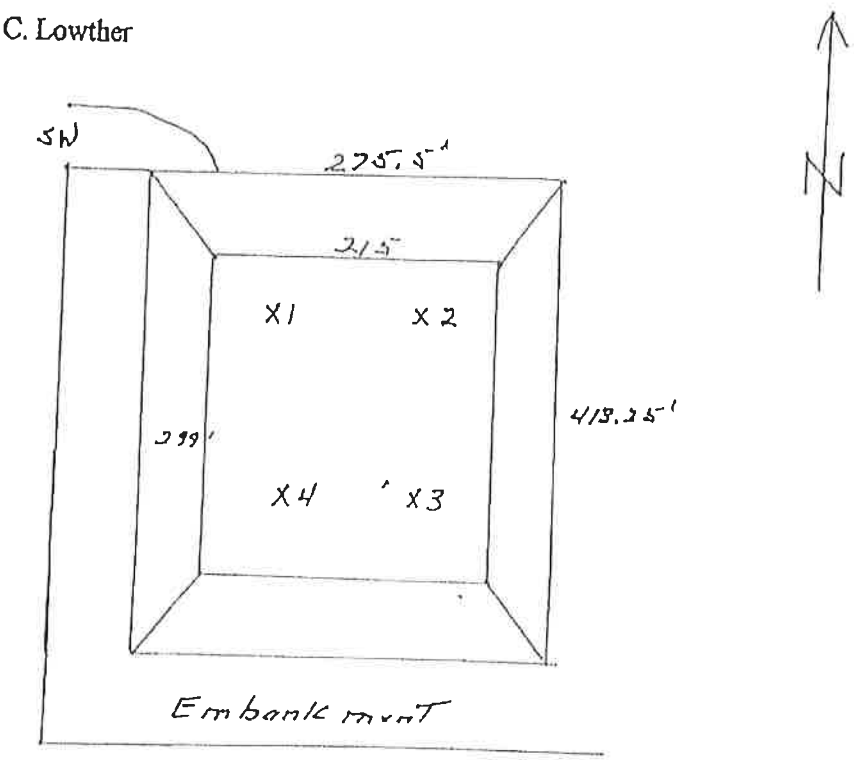
January 2, 1997

Name: Gerald Oosten Dairy

SOIL SAMPLE LOCATIONS

Depth of Samples (BGL): 10 Feet

Sampled By: A.C. Lowther



RCS # TH 1

ENVIRO-AG ENGINEERING, INC.

Wyly #2 Dairy
Erath County, Texas
RCS #1 Capacity Certification

The survey capacity performed on November 5, 2010 by Enviro-Ag Engineering, Inc. for retention control structure (RCS) #1 at the spillway is calculated as:

RCS #1 Capacity: 15.83 ac-ft
RCS #1 Surface Area: 2.66 surface acres @ Spillway

Prepared by:

66107

Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

(Supporting Documentation Attached)

TH2

PPP

ENVIRO-AG
EAE
ENGINEERING, INC.

Wyly #2 Dairy
Erath County, Texas
RCS #1 Capacity Certification

The survey capacity performed on November 5, 2010 by Enviro-Ag Engineering, Inc. for retention control structure (RCS) #1 at the spillway is calculated as:

RCS #1 Capacity:	65.13 ac-ft
RCS #1 Surface Area:	5.03 surface acres @ Spillway

Prepared by:

STATE OF TEXAS
NORMAN H. MULLIN
66107
LICENSED
PROFESSIONAL ENGINEER

Norman Mullin
12/01/2010
Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

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REGION 4 - STE

(Supporting Documentation Attached)

TH2

ENVIRO-AG
EAE
ENGINEERING, INC.

Wyly #2 Dairy
Erath County, Texas
RCS #1 Liner Certification

Eight 3-inch Shelby tube core samples were collected from RCS #1 to document the clay liner meets the requirements of the TCEQ for soil liner. The sample locations were backfilled with bentonite clay chips for sealing. The liner thickness was documented to be a minimum of 18 inches.

The hydraulic conductivity of the clay liner is documented as follows:

- RCS #1-1 (Lab #1910) 9.9×10^{-8} cm/sec
- RCS #1-2 (Lab #1911) 1.9×10^{-8} cm/sec
- RCS #1-3 (Lab #1912) 6.1×10^{-8} cm/sec
- RCS #1-4 (Lab #1913) 8.6×10^{-8} cm/sec
- RCS #1-5 (Lab #1914) 1.1×10^{-8} cm/sec
- RCS #1-6 (Lab #1915) 7.2×10^{-9} cm/sec
- RCS #1-7 (Lab #1916) 8.4×10^{-9} cm/sec
- RCS #1-8 (Lab #1917) 3.9×10^{-8} cm/sec

The clay liner present in RCS #1 is determined to be in accordance with TCEQ specific discharge requirements of 1.1×10^{-6} cm/sec. The observed hydraulic conductivity from RCS #1 is considered protective of ground and surface water resources.

Supporting moisture and density laboratory results indicate the embankment and liners were installed at 95% maximum dry density and within the moisture range of minus 1% to plus 3% of optimum moisture content (see attached moisture/density test results). The liner present in RCS #1 is determined to be constructed in accordance with TCEQ requirements for soil liners

I certify that RCS #1 at Wyly #2 Dairy meets the construction requirements of NRCS Practice Codes 313 (Waste Storage Ponds), 378 (Pond Embankment) and 521D (Pond Sealing or Lining, Compacted Clay Treatment). Erosion protection and emergency spillway are in place and the staff gauge is installed and calibrated.

Prepared by:

STATE OF TEXAS
NORMAN H. MULLIN
66107
LICENSED

12/01/2010

Norman Mullin, P.E. # 66107
Enviro-Ag Engineering, Inc.
TBPE Firm # 2507

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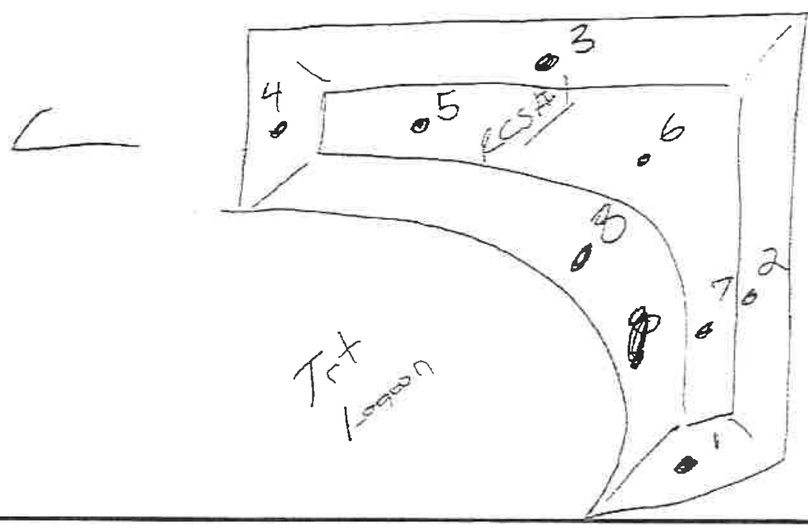
(Supporting Documentation Attached)

TRIAXIAL PERMEABILITY CHAIN of CUSTODY

Wyly #2



STRUCTURE	PERM REPORT I.D.	LAB LOG
RCS# 1-1		1910
" -2		1911
" -3		1912
" -4		1913
" -5		1914
" -6		1915
" -7		1916
" -8		1917

Facility Name: Wyly #2

Project Engineer: Nolm

Sampled by: Corey

Date Sampled: 11/1/10

Date to Lab: ~~11/3/10~~ RB 11/5/10 VIA USPS

Received: Rick Baker

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DEC 22 2010
TCEQ
REGION 4 - STE

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302 Morgan Mill Road
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Fax: (254) 965-8000

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

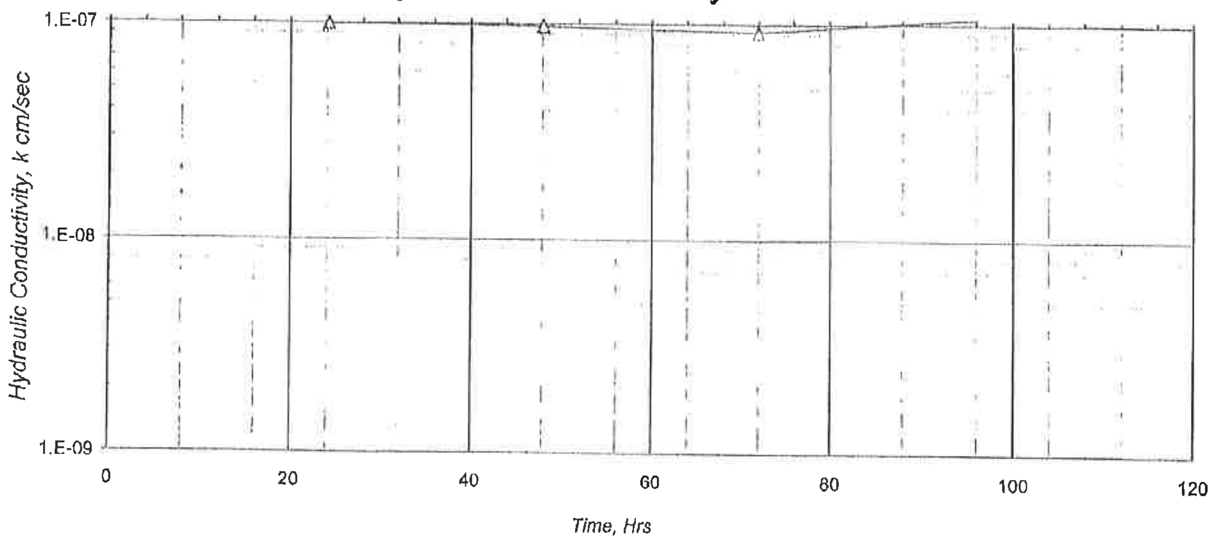
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Wyly #2	10-11-01	1910
Sample ID:	**Sample Location:**	**Report Date:**
1	RCS #1 - 1	November 29, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	1	
DESCRIPTION:	RCS #1 - 1	
	INITIAL	FINAL
HEIGHT, in.	3.4	3.4
DIAMETER, in.	2.7	2.8
WATER CONTENT, %	15.7	18.5
DRY DENSITY, pcf	114	112
SATURATION, %	89	99
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Reddish Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 3
IN / OUT RATIO:	1.04

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	9.9E-08
2	48.1	9.7E-08
3	72.0	9.2E-08
4	96.1	1.1E-07

AVERAGE LAST 4 : **9.9E-08**

COMMENTS:

Tap water used as permeant.

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DEC 22 2010

TCEQ

REGION 1

Print Date: 11/29/10

Reviewed By: Micah Mullin

LSN: 1910

Enviro-Ag Engineering, Inc.
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LABORATORY SERVICES

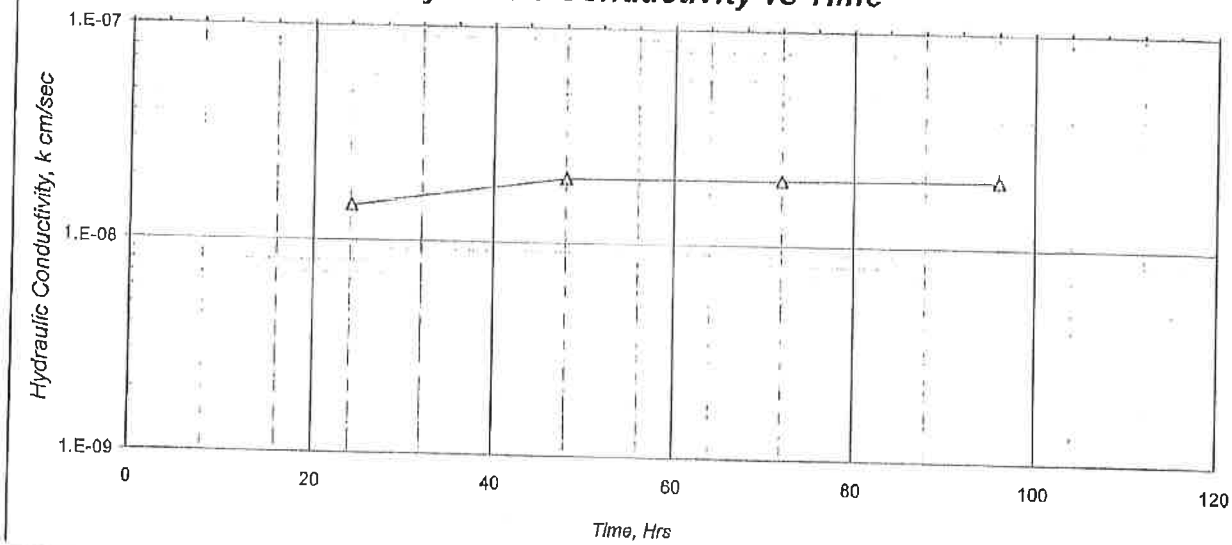
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name: Wyly #2	Project No: 10-11-01	Lab Sample Number: 1911
Sample ID: 2	Sample Location: RCS #1 - 2	Report Date: November 29, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	2	
DESCRIPTION:	RCS #1 - 2	
	INITIAL	FINAL
HEIGHT, in.	3.5	3.5
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	18.7	23.1
DRY DENSITY, pcf	106	104
SATURATION, %	85	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Dark Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

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DEC 2 2 2010
TCEQ
REGION 4 - OFF.

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 3
IN / OUT RATIO:	1.25

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	1.5E-08
2	48.1	2.0E-08
3	72.0	2.0E-08
4	96.1	2.1E-08

AVERAGE LAST 4 : **1.9E-08**

Z : Soils Lab\Perms \1010 \ 10-11-01 \ 1911

DCN: EAE-QC-GRAPH (rev. 11/10/04)

Print Date: 11/29/10

Reviewed By: Micah Mullin

LSN: 1911

Enviro-Ag Engineering, Inc.

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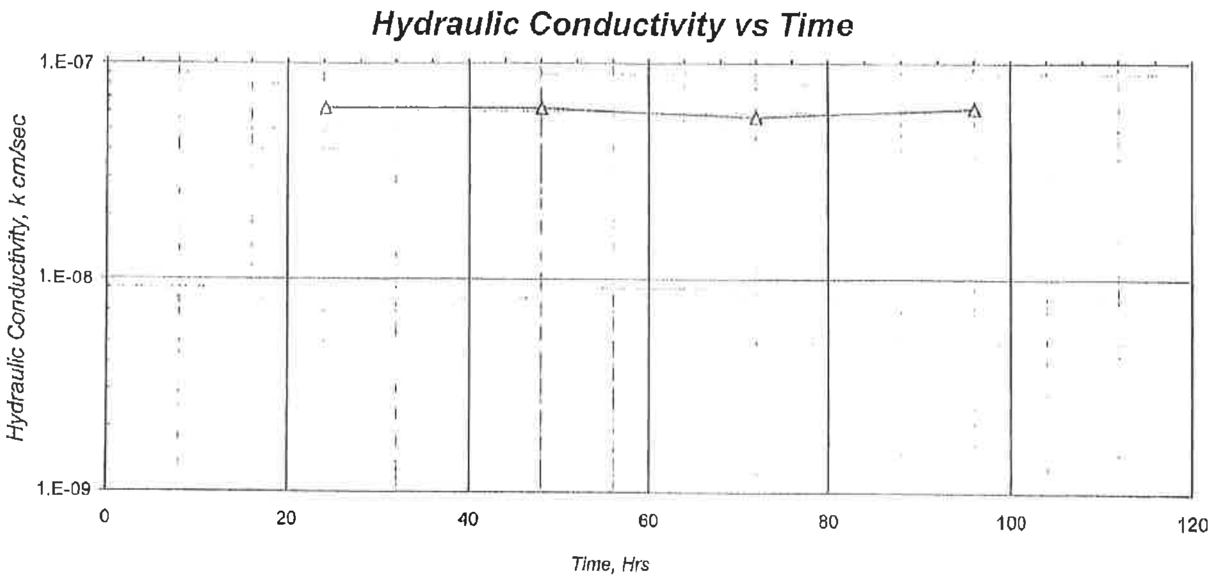
LABORATORY SERVICES

EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Wyly #2	10-11-01	1912
Sample ID:	**Sample Location**	**Report Date:**
3	RCS #1 - 3	November 29, 2010



SPECIMEN DATA

SAMPLE ID:	3	
DESCRIPTION:	RCS #1 - 3	
	INITIAL	FINAL
HEIGHT, in.	2.1	2.2
DIAMETER, in.	2.9	2.9
WATER CONTENT, %	8.8	25.1
DRY DENSITY, pcf	102	99
SATURATION, %	36	97
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

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REGION 4 - STE

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi
GRADIENT RANGE: 3 - 5
IN / OUT RATIO: 1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	6.2E-08
2	48.1	6.2E-08
3	72.0	5.7E-08
4	96.1	6.2E-08

AVERAGE LAST 4 : **6.1E-08**

Z : Soils Lab\Perms \1910 \ 10-11-01 \ 1912 | Print Date: 11/29/10 | Reviewed By: Micah Mullin | LSN: 1912

DCN: EAE-QC-GRAPH (rev. 11/10/04)

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

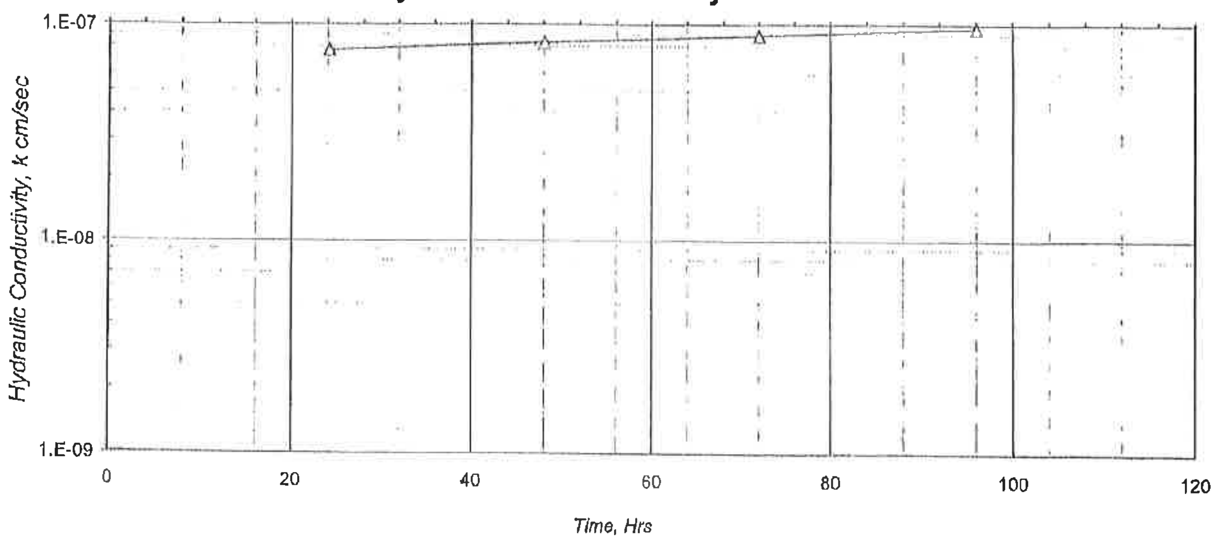
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name: Wyly #2	Project No: 10-11-01	Lab Sample Number: 1913
Sample ID: 4	Sample Location: RCS #1 - 4	Report Date: November 29, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	4	
DESCRIPTION:	RCS #1 - 4	
	INITIAL	FINAL
HEIGHT, in.	3.6	3.7
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	8.4	23.5
DRY DENSITY, pcf	105	102
SATURATION, %	37	98
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Reddish Brown	
SAMPLE CONSISTENCY	Clay	

COMMENTS:

Tap water used as permeant.

RECEIVED
DEC 22 2010
TCEQ
REGION 4 - STE

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	2 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	7.7E-08
2	48.1	8.3E-08
3	72.0	8.9E-08
4	96.1	9.6E-08

AVERAGE LAST 4 : **8.6E-08**

Z : Soils Lab\Perms \1910 \ 10-11-01 \ 1913

DCN: EAE-QC-GRAPH (rev. 11/10/04)	Print Date: 11/29/10	Reviewed By: Micah Mullin	LSN: 1913

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

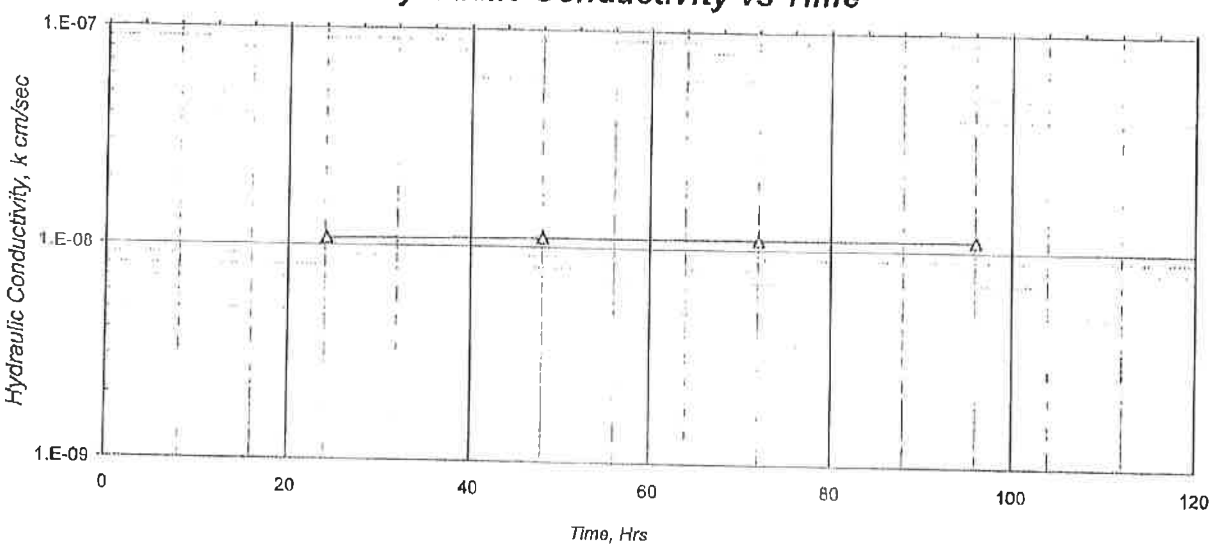
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Wyly #2	10-11-01	1914
Sample ID:	**Sample Location:**	**Report Date:**
5	RCS #1 - 5	November 29, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID: 5

DESCRIPTION: RCS #1 - 5

	INITIAL	FINAL
HEIGHT, in.	3.9	3.9
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	24.7	30.1
DRY DENSITY, pcf	93	91
SATURATION, %	83	96

(Specific Gravity assumed as 2.7)

SAMPLE COLOR: Brown

SAMPLE CONSISTENCY: Clay

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi

GRADIENT RANGE: 3 - 3

IN / OUT RATIO: 1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	1.1E-08
2	48.1	1.1E-08
3	72.0	1.1E-08
4	96.1	1.1E-08

AVERAGE LAST 4 : **1.1E-08**

COMMENTS:

Tap water used as permeant.

RECEIVED

DEC 22 2010

TCEQ REGION 4 - STE

Z : Soils Lab\Perms \1910 \ 10-11-01 \ 1914

DCN: EAE-QC-GRAPH (rev. 11/10/04)

Print Date: 11/29/10

Reviewed By: Micah Mullin

LSN: 1914

Enviro-Ag Engineering, Inc.
3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123
LABORATORY SERVICES

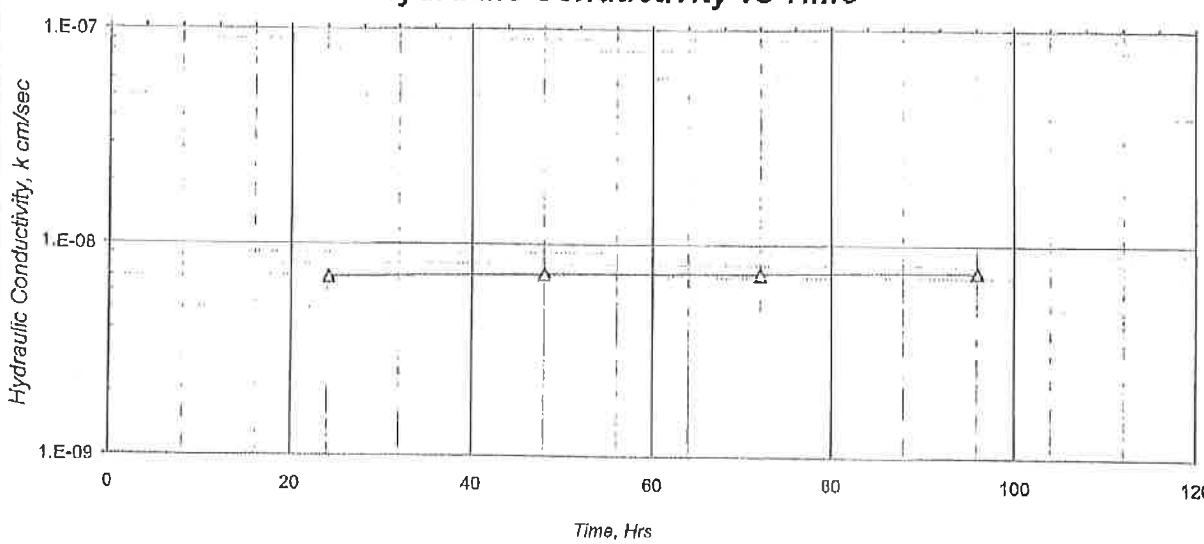
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name: Wyly #2	Project No: 10-11-01	Lab Sample Number: 1915
Sample ID: 6	Sample Location: RCS #1 - 6	Report Date: November 29, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	6	
DESCRIPTION:	RCS #1 - 6	
	INITIAL	FINAL
HEIGHT, in.	3.1	3.2
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	19.5	25.6
DRY DENSITY, pcf	104	100
SATURATION, %	84	100
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS: 5 psi
GRADIENT RANGE: 3 - 3
IN / OUT RATIO: 1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	6.9E-09
2	48.1	7.2E-09
3	72.0	7.3E-09
4	96.1	7.4E-09

AVERAGE LAST 4 : **7.2E-09**

COMMENTS:
Tap water used as permeant.

RECEIVED
DEC 2 2 2010
TCEQ
REGION 4

Z : Soils Lab\Perms \1910 \ 10-11-01 \ 1915
Print Date: 11/29/10
Reviewed By: Micah Mullin
LSN: 1915

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123
LABORATORY SERVICES

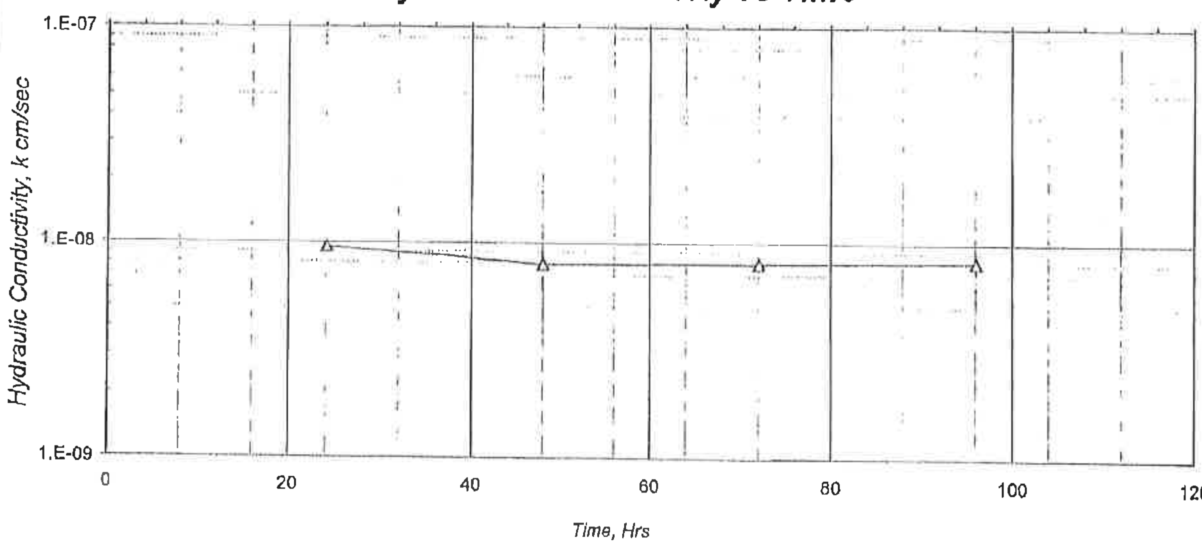
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Wyly #2	10-11-01	1916
Sample ID:	**Sample Location:**	**Report Date:**
7	RCS #1 - 7	November 29, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	7	
DESCRIPTION:	RCS #1 - 7	
	INITIAL	FINAL
HEIGHT, in.	3.7	3.7
DIAMETER, in.	2.8	2.9
WATER CONTENT, %	20.1	25.5
DRY DENSITY, pcf	102	100
SATURATION, %	83	99
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 3
IN / OUT RATIO:	0.92

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	9.5E-09
2	48.1	7.9E-09
3	72.0	8.0E-09
4	96.1	8.1E-09

AVERAGE LAST 4 : **8.4E-09**

COMMENTS:

Tap water used as permeant.

RECEIVED
DEC 22 2010
TCEQ

Z : Soils Lab\Perms \1010 \ 10-11-01 \ 1916

Print Date: 11/29/10

Reviewed By: Micah Mullin

LSN: 1916

DCN: EAE-QC-GRAPH (rev. 11/10/04)

Enviro-Ag Engineering, Inc.

3404 Airway Blvd., Amarillo, TX 79118 (806) 353-6123

LABORATORY SERVICES

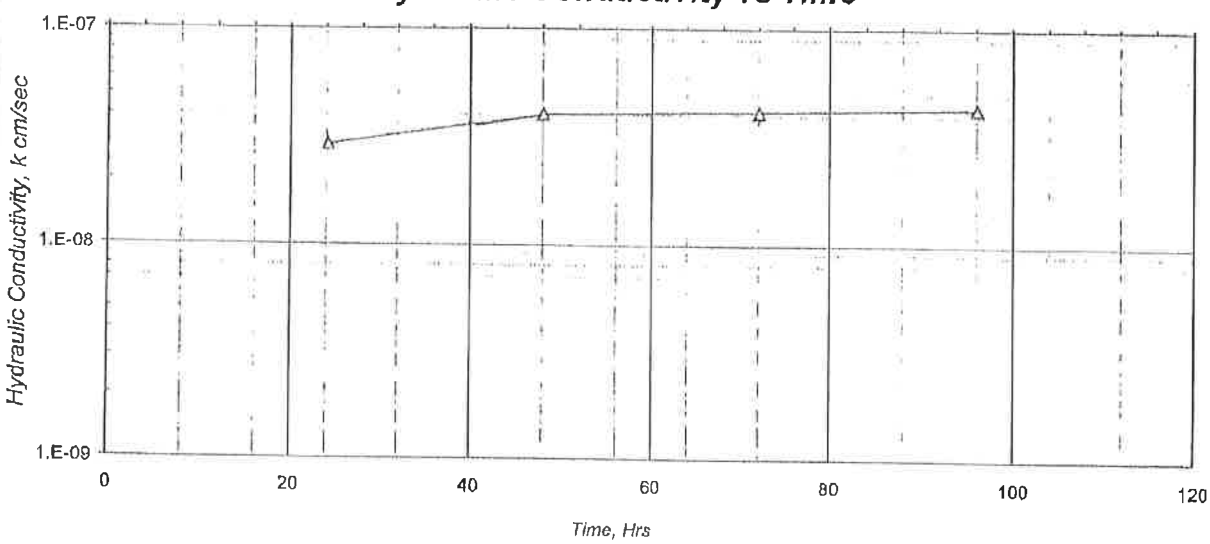
EAE

HYDRAULIC CONDUCTIVITY REPORT

ASTM D-5084, Method C

Client / Project Name:	Project No:	Lab Sample Number:
Wyly #2	10-11-01	1917
Sample ID:	**Sample Location:**	**Report Date:**
8	RCS #1 - 8	November 29, 2010

Hydraulic Conductivity vs Time



SPECIMEN DATA

SAMPLE ID:	8	
DESCRIPTION:	RCS #1 - 8	
	INITIAL	FINAL
HEIGHT, in.	3.4	3.4
DIAMETER, in.	2.8	2.8
WATER CONTENT, %	14.6	21.3
DRY DENSITY, pcf	108	105
SATURATION, %	70	96
(Specific Gravity assumed as 2.7)		
SAMPLE COLOR	Brown	
SAMPLE CONSISTENCY	Clay	

TEST DATA

ASTM D-5084, Method C

EFFECTIVE STRESS:	5 psi
GRADIENT RANGE:	3 - 3
IN / OUT RATIO:	1.00

TRIAL nos.	TIME hrs.	HYDRAULIC CONDUCTIVITY cm / sec
1	24.2	2.9E-08
2	48.1	4.1E-08
3	72.0	4.2E-08
4	96.1	4.4E-08

AVERAGE LAST 4 : **3.9E-08**

COMMENTS:

Tap water used as permeant.

RECEIVED
DEC 22 2010
TCEQ
REMEDIATION

Z : Soils Lab\Perms \1910 \ 10-11-01 \ 1917

DCN: EAE-QC-GRAPH (rev. 11/10/04)	Print Date: 11/29/10	Reviewed By: Micah Mullin	LSN: 1917

THI

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SOUTHWESTERN LABORATORIES

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
2200 Gravel Dr. • P.O. Box 1379 • Fort Worth, Texas 76101-1379 • 817/284-7755

May 09, 1990

Texas Water Commission
P.O. Box 13087 Capitol Station
Austin, Texas 78711-3087

Attn: Tom Haberle
Water Quality Division

Re: Steve Vandermeer Dairy
Erath County, Texas

Gentlemen:

Southwestern Laboratories has completed sampling and testing of the soils exposed in the wastewater retention pond number 2 at the Steve Vandermeer Dairy Farm in Erath County. The test results including sample thickness, Atterberg limits, and percent passing the number 200 sieve are tabulated on the attached report. Our findings indicate the soils meet the criteria established by the Texas Water Commission.

Very truly yours,

SOUTHWESTERN LABORATORIES

Kemp E. Akeman, P.E.
Materials Engineer

SEt

for Roland S. Jary, P.E.
Vice President

tj

STATE OF TEXAS
Kemp E. Akeman
64975
REGISTERED PROFESSIONAL ENGINEER

Submitted by: Steve Vandermeer Dairy

Signed by:

Date: 4-11-91

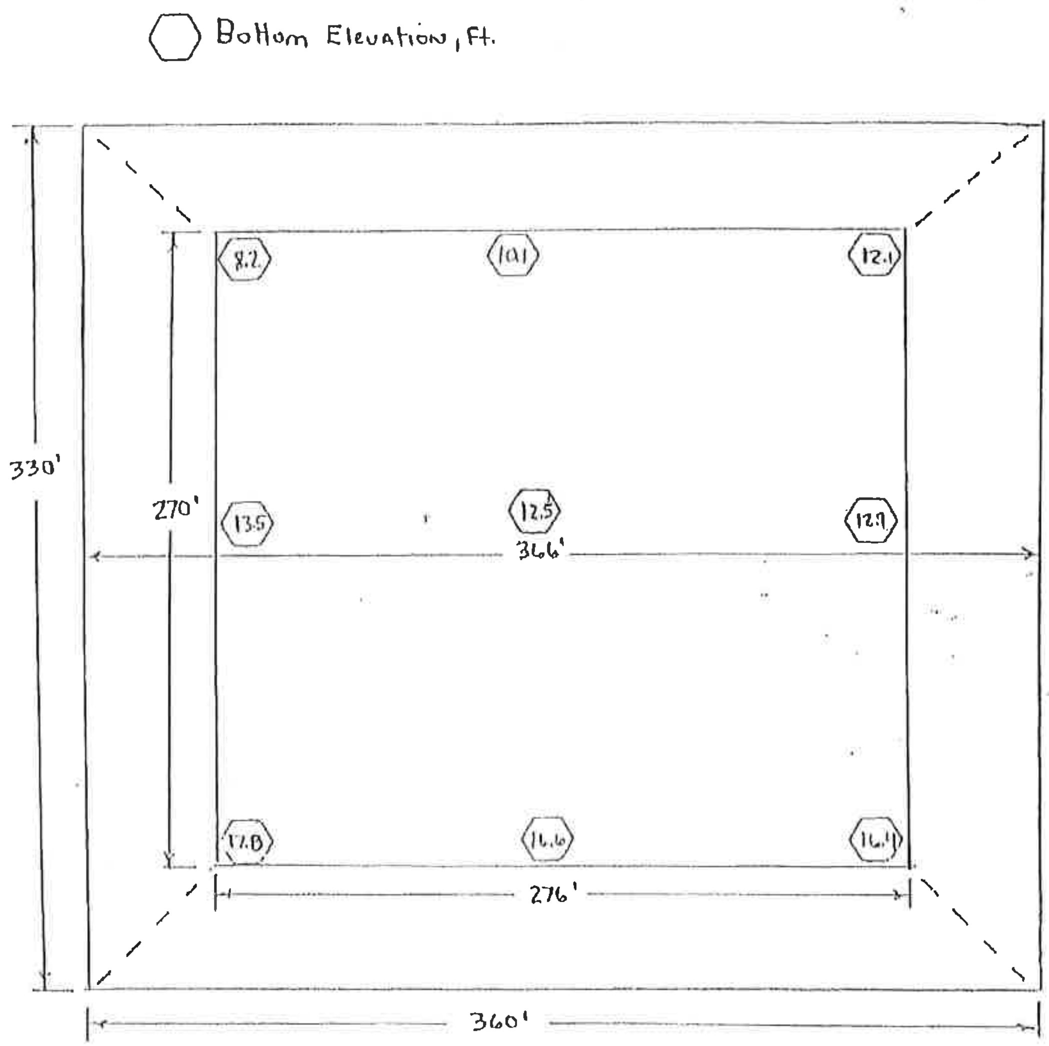
Vandermeer Dairy
Amendment Application
TNRCC No. 03190

HOUSTON • DALLAS • AUSTIN • BEAUMONT • COLLEGE • GALVESTON COUNTY • RIO GRANDE VALLEY • ALEXANDRIA

Pond Number 2 - Sampled March 20, 1990

Test Location	No. 1	No. 2	Minimum Requirement
Soil Description			
Color	Dark Brown	Gray	
Texture	Clay	Clay	
Unified Classification	CH	CH	
Sample Depth, Inches	12"+	12"+	12
Atterberg Limits			
Liquid Limit, (%)	51	52	30
Plastic Limit, (%)	23	24	
Plasticity Index	28	28	15
Passing No. 200 Sieve, (%)	56.9	78.9	30

SwL Report No. 001606



Steve Vandemear Dairy

Drawing Not To Scale

TH
Settling Basin

SWL **SOUTHWESTERN LABORATORIES**

Materials, environmental and geotechnical engineering, nondestructive, metallurgical and analytical services
2200 Gravel Dr. • P.O. Box 1379 • Fort Worth, Texas 76101-1379 • 817/284-7755

February 2, 1990

Texas Water Commission
P.O. Box 13087 Capitol Station
Austin, Texas 78711-3087

Attn: Tom Haberle
Water Quality Division

Re: Steve Vandermeer Dairy
Erath County, Texas

Gentlemen:

Southwestern Laboratories has completed sampling and testing of the soils exposed in the wastewater retention pond at the Steve Vandermeer Dairy Farm in Erath County. The test results including sample thickness, Atterberg limits, and percent passing the number 200 sieve are tabulated on the attached report. Our findings indicate the soils meet the criteria established by the Texas Water Commission.

Very truly yours,

SOUTHWESTERN LABORATORIES

Kemp E. Akeman

Kemp E. Akeman, P.E.
Materials Engineer

Roland S. Jary

Roland S. Jary, P.E.
Vice President

tj

STATE OF TEXAS
ROLAND S. JARY
35405
REGISTERED
PROFESSIONAL ENGINEER

Submitted by: Steve Vandermeer Dairy

Signed by: ______

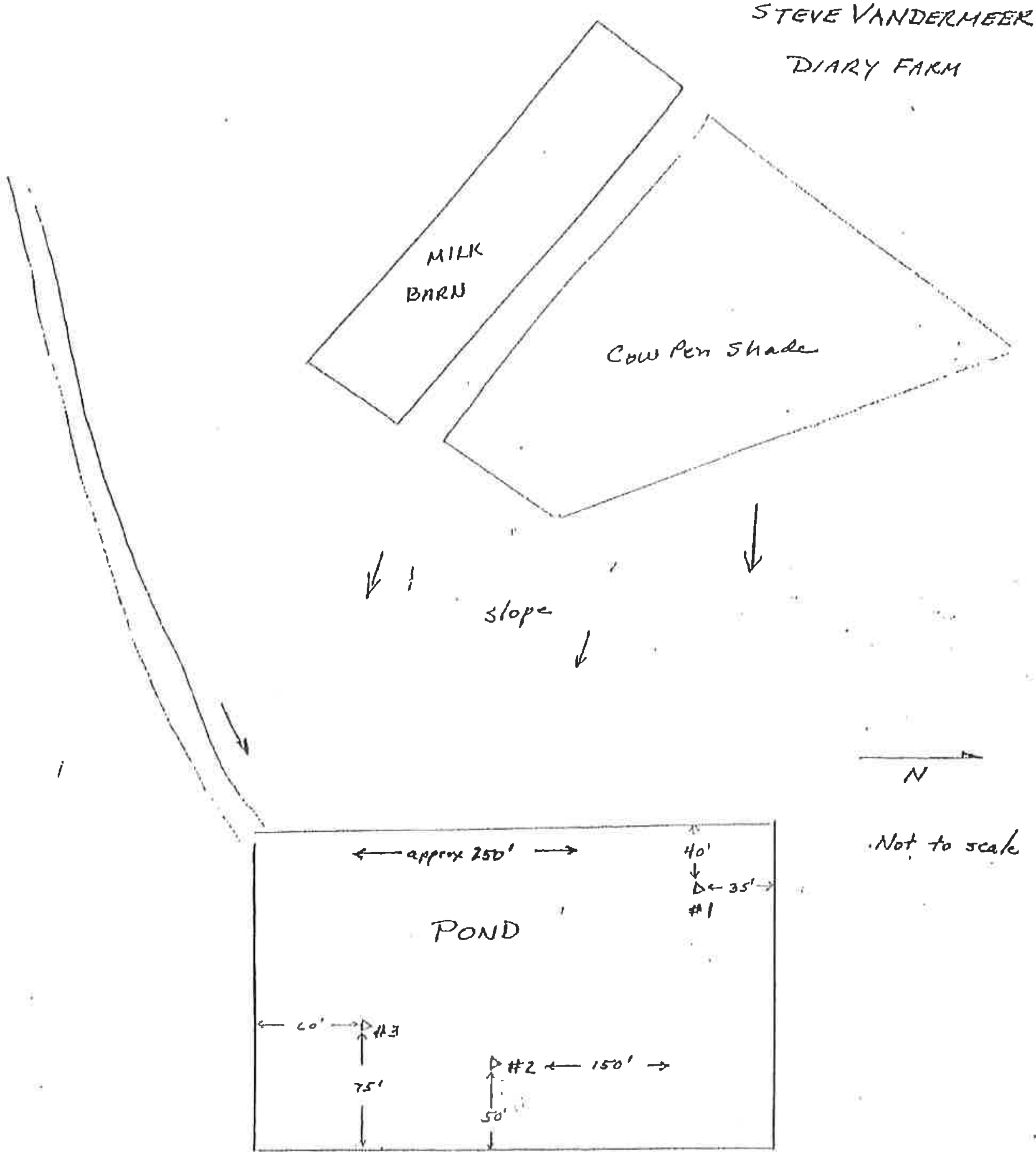
Date: 4-11-91

Pond Number 1 - Sampled January 26, 1990

Test Location	No. 1	No. 2	No. 3	Minimum Requirement
Soil Description				
Color / Texture	Gray & Yellow Clay	Yellow Clay	Red & Gray Clay	
Unified Classification	CH	CH	CL	
Sample Depth, Inches	12+	12+	12+	12
Atterberg Limits				
Liquid Limit, (%)	56	54	49	30
Plastic Limit, (%)	18	15	15	
Plasticity Index	38	39	34	15
Passing No. 200 Sieve, (%)	95.5	90.7	64.5	30

Report No. 000676

SOUTHWESTERN LABORATORIES



SwL Report No. 000676
Vandermeer Dairy
Amendment Application
TNRCC No. 03190

4.0 WASTE UTILIZATION & NUTRIENT MANAGEMENT PLAN

4.1 Nutrient Utilization

Agronomic application of dairy wastewater enhances soil productivity and provides the crop and forage growth with needed nutrients for optimum growth and vigor. Land application of wastewater will take place according to a Nutrient Utilization/Nutrient Management Plan (NUP/NMP) in accordance with NRCS Codes 590 and 633. The NUP/NMP for crop year 2024 is attached.

Per 30 TAC §321.42(j), existing dairy facilities located in a major sole-source impairment zone may request the TCEQ to allow the operator to provide manure, litter and wastewater to owners of third-party fields (areas not owned, operated, controlled, rented, or leased by the permittee) that have been identified in the PPP. Dancing Crane Dairy requests access to third-party fields to be operated in accordance with 30 TAC §321.42(j)(1)-(4). Third-party written contracts between the permittee and the third-party recipient will be maintained in the PPP. These contracts will confirm that the third party will allow manure, wastewater and slurry from the facility to be beneficially applied at agronomic rates based on the soil test phosphorus in accordance with applicable requirements of 30 TAC §321.36 and §321.40.

A Texas State Soil and Water Conservation Board (TSSWCB) certified Comprehensive Nutrient Management Plan (CNMP) has been developed.

4.2 Waste Handling Procedures

The dairy shall operate under the provisions of 30 TAC §321.42, which describes certain waste management and disposal requirements for individual water quality permits for dairy concentrated animal feeding operations (CAFOs) when an operation is located in a major sole-source impairment zone. Waste disposal options include:

- Beneficial use outside the watershed
- Disposed in permitted landfills outside the watershed
- Delivered to a composting facility approved by the Executive Director
- Other beneficial use approved by the Executive Director
- Applied on-site in accordance with a certified NRCS Code 590/633 NMP or NUP, as dictated by annual soil test results
- Provided to third parties as discussed above in Section 4.1

Waste Utilization and Nutrient Management Plan

TMC Dairies Hico
7469 CR 209
Hico, TX 76457

TCEQ Permit Number:
WQ0003190000

Owner
3T Martins Farm Hico, LLC
PO Box 599
Hico, TX 76457

Operator
TMC Dairies LLC
3105 Mesquite Rd
Dalhart, TX 79022-7635

Type of Organic Nutrient Management Plan:
Other AFO-CAFO Waste Plan
located in Erath County

Prepared By:

(Signature)
Richard George
Certified Nutrient Management Specialist
Certificate Number = TX201504
Expiration Date = December 31, 2024
Enviro-Ag Engineering
9855 FM 847
Dublin, TX 76446
(254) 233-9948

This plan is based on:
590 Organic Nutrient Management Plan V 5.0

8/12/24 3:41 PM

Executive Summary
Dancing Crane Dairy
WQ0003190000
Phase I NUP

LMU Summary:

All fields are established in coastal and small grains for perennial coverage.

Nutrient Summary:

The following is a summary of maximum allowed application rates.

LMU #	Max N Lb/ac Application Rates	Max P205 Lb/ac Application Rates	Planned N Lb/ac Application Rates	Planned P205 Lb/ac Application Rates
LMU 1	155	90	96	56
LMU 1A	298	90	149	45
LMU 2	155	90	77	45
LMU 3	298	90	149	45
LMU 4	400	234	400	234
LMU 4A	400	121	400	121
LMU 5	400	234	400	234
LMU 5A	298	90	149	45
LMU 6	298	90	149	45
LMU 7	155	90	77	45
LMU 7A	298	90	149	45
LMU 8	155	90	77	45
LMU 8A	298	90	149	45
LMU 9	155	90	77	45
LMU 9A	298	90	149	45
LMU 10	155	90	77	45
LMU 10A	400	121	400	121
LMU 11	400	234	400	234
LMU 12	155	90	77	45
LMU 12A	300	91	150	46
LMU 13	300	91	150	46
LMU 14	300	91	150	46

EAE recommends applying at the planned application rates shown above and in the tables of the NMP. Application at the maximum rates will result in a more rapid buildup of phosphorus than if applied at the lower rates.

This plan utilizes the Phase I Engineering Calcs. for 10,000 head and average live weight between the proposed headcounts of Jersey/Holstein cattle.

The most recent soil and waste analysis were used in this plan. 2022 soil sampling was conducted in March of 2023 by the TCEQ. The LMUs are reconfigured in this application and all LMU names have changed. A LMU & Soil Cross-Reference sheet is attached to this Executive Summary with the old/new LMU name as well as the soil analysis utilized for each LMU in this plan.

Although this plan illustrates that certain LMUs are designated for wastewater application, and others for manure application, it is not the intent of this document to limit application of wastewater and manure to specified LMUs. Any waste source may be applied to any permitted LMU as long as the maximum rates shown above are not exceeded during the plan year.

Any remaining manure is to be hauled off by a contract hauler for beneficial use. Offsite manure transfer activities will be in accordance with NRCS and TCEQ requirements for sampling, recordkeeping, and land application.

Supplemental nutrients will be necessary to achieve the desired yields. Commercial N application shall be split such that individual application events do not exceed 100 lbs/ac N.

Executive Summary Attachment

TMC Dairies Hico - LMU & Soil Cross-Reference

Existing LMU Name	Proposed LMU Name	Soil Sample Utilized in NMPs
TD1-144 Acres	LMU 1- 144 Ac.	TD1
TD2-56 Acres	Split into – LMU 7 (Pivot)-16 Ac. LMU 7A (Outside Pivot)- 33 Ac.	TD2 for both 7 & 7A
TD3-40	LMU 13 – 44 Ac.	TD3
TD4-86	Split into – LMU 12 (Pivot)-24 Ac. LMU 12A (Outside Pivot)-63 Ac.	TD4 for both 12 & 12A
TD6-131	Split into – LMU 2 (pivot)-39 Ac. LMU 1A (outside pivot)-93 Ac.	TD6 for both 2 & 1A
TD7-14	No longer a LMU.	------------------------------
TH1-39	LMU 5-39 Ac.	TH1
TH2-45	LMU 5A-35 Ac.	TH2
TH3-45	LMU 6-51 Ac.	TH3
TH4E-22 TH4W-14	Combined into: LMU 3 – 39 Ac.	*TH4W (utilized as a worst case due to higher P level)
TH5-80 TH6-81	Combined – LMU 4 (Pivot)-97 Ac. LMU 4A (Outside Pivot)-76 Ac.	*TH6 (utilized as a worst case due to higher P level)
TH7-13	LMU 14 – 12 Ac.	TH7
TH8-58	No longer a LMU.	------------------------------
TS1-28	LMU 10 – 29 Ac.	TS1
TS2-92	Split into LMU 11 (Pivot)-42 Ac. LMU 10A (Outside Pivots)-46 Ac.	TS2 for both 11 & 10A
TS4-62	Split into LMU 9 (Pivot)-34 Ac. LMU 9A (Outside Pivot)-28 Ac.	TS4 for both 9 & 9A
TS5-44	Split into LMU 8 (Pivot)-26 Ac. LMU 8A (Outside Pivot)-18 Ac.	TS5 for both 8 & 8A

* Where permitted fields were combined into new LMUs, the soil analysis with the highest P level was used in the NMP for the new fields. The soil analysis for the old fields with lower P levels were not utilized (TH4E & TH5.)

ENVIRO-AG ENGINEERING, INC.

Alternative Crop List
Dancing Crane Dairy
WQ0003190000

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Alfalfa Hay 10 Tons	530	532	180	101
Alfalfa Hay 12 Tons	640	638	180	121
Alfalfa Hay 2 Tons	120	106	35	20
Alfalfa Hay 4 Tons	210	213	80	40
Alfalfa Hay 6 Tons	300	319	130	60
Alfalfa Hay 8 Tons	420	426	180	81
Bahia 2 Cut Hay 7000 #	140	89	70	21
Bahia 3 Cut Hay 8000 #	210	102	80	24
Bahia 4 Cut Hay 9000 #	280	114	115	27
Bahia Grazing + 1 Hay	110	83	70	19
Bahia Grazing 1 AU/1 ac	260	114	70	27
Bahia Grazing 1 AU/2 ac	220	108	45	25
Bahia Grazing 1 AU/3 ac	180	102	45	24
Bahia Grazing 1 AU/4 ac	140	95	45	22
Bahia Grazing 1 AU/5 ac	100	79	45	18
Bahia Grazing 1 AU/6 ac	60	65	45	15
Cantaloupes 15-20 tons	120	88	105	82
Coastal 2 Cut + Graze	260	198	125	62
Coastal 2 Cut Hay	200	169	125	39
Coastal 3 Cut + Graze	360	257	125	80
Coastal 3 Cut Hay	300	238	125	74
Coastal 4 Cut Hay	400	257	170	80
Coastal 5-6 Cut Hay	500	297	170	93
Coastal Grazing + 1 Hay	160	145	70	34
Coastal Grazing 1 AU/0.5 ac	300	218	70	68
Coastal Grazing 1 AU/1 ac	240	198	70	62
Coastal Grazing 1 AU/2 ac	200	169	70	39
Coastal Grazing 1 AU/3 ac	160	145	70	34
Coastal Grazing 1 AU/4 ac	120	120	70	28
Coastal Grazing 1 AU/5 ac	90	103	70	24
Coastal Grazing 1 AU/6 ac	60	86	70	20
Coastal GC (30%DM) 21-23 Ton	400	345	170	95
Coastal GC (30%DM) 18-20 Ton	350	300	170	82
Coastal GC (30%DM) 15-17 Ton	300	255	125	70
Coastal GC (30%DM) 9-11 Ton	200	170	125	47
Common 2 Cut Hay 6000 #	140	113	80	26
Common 3 Cut Hay 7400 #	210	141	80	46
Common 4 Cut Hay 8000 #	280	152	80	49
Common 5-6 Cut Hay 9000 #	350	171	80	56
Common Grazing + 1 Hay	110	100	70	23
Common Grazing + 2 Hay	180	132	80	30
Common Grazing + 3 Hay	250	148	80	48
Common Grazing 1 AU/1ac	260	152	70	49
Common Grazing 1 AU/2 ac	220	143	45	46
Common Grazing 1 AU/3 ac	180	132	45	30
Common Grazing 1 AU/4 ac	140	113	45	26
Common Grazing 1 AU/5 ac	100	94	45	22
Common Grazing 1 AU/6 ac	60	79	45	18

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Corn 111 - 130 bu	144	117	105	47
Corn 131 - 150 bu	164	135	105	54
Corn 151 - 170 bu	180	153	130	61
Corn 171 - 190 bu	210	171	130	68
Corn 191 - 210 bu	250	189	130	75
Corn 211 - 230 bu	280	207	130	83
Corn 231 - 250 bu	300	225	130	90
Corn 250 - 275 bu	325	243	130	97
Corn 276 - 300 bu	350	261	130	104
Corn 301 - 350 bu	375	279	130	111
Corn 50 - 70 bu	70	63	80	25
Corn 71 - 90 bu	90	81	80	32
Corn 91 - 110 bu	120	99	105	39
Cotton 0.5 Bale	25	18	30	9
Cotton 1.0 Bale	50	36	55	18
Cotton 2.0 Bale	100	71	105	35
Cotton 3.0 Bale	150	107	105	53
Cotton 3.5 Bale	175	125	105	62
Cotton 4.0 Bale	200	142	105	71
Cotton 4.5 Bale	225	160	105	80
Cotton 5.0 Bale	250	178	105	89
Eastern gamagrass- 3000 #	80	57	40	21
Eastern gamagrass- 6000 #	120	114	60	41
Fescue, Tall Hay/Graze 7000#	150	140	80	42
Grain Sorg. 1000 #	20	17	30	8
Grain Sorg. 10000 #	200	167	130	82
Grain Sorg. 1500 #	30	25	30	12
Grain Sorg. 2000 #	40	33	30	16
Grain Sorg. 3000 #	60	50	55	25
Grain Sorg. 4000 #	80	67	55	33
Grain Sorg. 5000 #	100	84	80	41
Grain Sorg. 6000 #	120	100	80	49
Grain Sorg. 7000 #	140	117	130	58
Grain Sorg. 8000 #	160	134	130	66
Grain Sorg. 9000 #	180	150	130	74
Guar 3500 lbs	25	22	80	76
Johnsongrass Hay 6000 #	140	101	80	32
Klein 3 Cut Hay 7200 #	150	83	55	16
Klein 4 Cut Hay 7800 #	150	90	55	18
Klein Grazing + 1 Hay	80	69	55	14
Klein Grazing 1 AU/1.5 ac	150	90	80	18
Klein Grazing 1 AU/2.5 ac	80	69	55	14
Klein Grazing 1 AU/6 ac	40	58	55	11
Legume Overseeded	80	60	105	15
Legume w/ryegrass	160	94	160	38
Midland Bermuda 4000 #	120	75	80	17
Midland Bermuda 6000 #	150	113	105	26
Midland Bermuda 8000 #	200	150	105	35

Alternative Crop List
Dancing Crane Dairy
WQ0003190000

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Native Grazing or Hay 4000#	80	44	70	34
Native Grazing or Hay 3000#	40	33	55	25
Native Grazing or Hay 1500#	20	17	27	13
Native Grazing or Hay 750#	10	8	13	6
Oat Light Grazing	120	107	55	40
Oat Moderate Grazing	160	110	80	41
Oats Hay 2-3 tons	120	100	55	37
Oats Heavy Grazing plus Hay	200	117	80	43
Old World Bluestem- 3000 #	40	33	55	25
Old World Bluestem- 6000 #	80	66	55	51
Peanut Hay Dryland 1 Ton	50	47	70	11
Peanut Hay Dryland 2 Tons	100	93	70	22
Peanut Hay Irrigated 3 Tons	150	140	95	33
Peanuts Irrigated 4500 #	180	162	95	18
Rice Early 7500 #	195	104	45	41
Rice Late 7500 #	180	104	45	41
Rice plus Ratoon Early 10000 #	295	139	60	55
Rice plus Ratoon Late 10000 #	280	139	60	55
Rye Forage 5000 #	140	84	55	31
Rye Forage 7000 #	240	117	80	43
Ryegrass Hay 6000	140	100	55	37
Ryegrass Heavy Grazing	200	117	80	43
Ryegrass Moderate Grazing	140	84	55	31
SG Green Chop(25% DM) 8 to 9 tons	260	203	90	73
SG Green Chop(25% DM) 6 to 7 tons	200	158	80	57
SG Green Chop(25% DM) 4 to 5 tons	135	113	60	41
SG Green Chop(25% DM) 2 to 3 tons	75	68	40	24
SG Silage(35% DM) 12 to 14 tons	160	128	90	67
SG Silage(35% DM) 10 to 11 tons	120	101	70	53
SG Silage(35% DM) 8 to 9 tons	95	83	40	43
SG Silage(35% DM) 5 to 7 tons	70	64	30	34
Silage - Corn(35% DM) 11 - 15 Ton	140	119	80	58
Silage - Corn(35% DM) 16 - 20 Ton	240	183	100	77
Silage - Corn(35% DM) 21 - 25 Ton	350	263	105	96
Silage - Corn(35% DM) 26 - 30 Ton	420	315	135	115
Silage - Corn(35% DM) 7 - 10 Ton	85	79	60	38
Silage - Sorg(35% DM) 11 - 15 Ton	200	179	75	55
Silage - Sorg(35% DM) 16 - 20 Ton	280	238	95	74
Silage - Sorg(35% DM) 21 - 25 Ton	360	298	115	92
Silage - Sorg(35% DM) 26 - 30 Ton	380	315	130	111
Silage - Sorg(35% DM) 31 - 40 Ton	450	364	155	135
Silage - Sorg(35% DM) 41 - 50 Ton	580	455	190	168
Silage - Sorg(35% DM) 51 - 60 Ton	700	550	220	202
Silage - Sorg(35% DM) 7 - 10 Ton	125	119	60	37
Small Grain Heavy Grazing	240	112	105	41
Small Grain Light Grazing	60	75	80	28
Small Grain Moderate Grazing	160	97	105	36
Sorg. - Sudan Hay/Graze 11000 #	240	219	105	83

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Sorg. - Sudan Hay/Graze 7500 #	160	149	55	57
Sorg Forage Hay/Graze 11000 #	240	219	105	83
Sorg Forage Hay/Graze 7500 #	160	151	55	57
Soybean 30 bu	110	119	60	24
Soybean 50 bu	180	180	80	40
Sunflower 2000#	100	71	56	30
Sunflower 3000#	175	107	65	45
Triticale Graze or Hay 7000 #	160	117	105	43
Triticale Graze or Hay 9000 #	240	150	105	56
Watermelons 12 tons	80	53	55	49
Weeping Lovegrass 3500 #	70	39	55	30
Wheat Forage 2000 #	60	33	80	12
Wheat Forage 4000 #	160	67	105	25
Wheat Forage 6000 #	240	100	105	37
Wheat Grain 20 - 30 bu + Grazing	60	58	55	40
Wheat Grain 20 - 30 bu	45	37	55	26
Wheat Grain 31 - 40 bu + Grazing	80	71	75	48
Wheat Grain 31 - 40 bu	60	50	75	34
Wheat Grain 41 - 50 bu + Grazing	100	83	75	57
Wheat Grain 41 - 50 bu	75	62	75	43
Wheat Grain 51 - 60 bu + Grazing	120	96	90	65
Wheat Grain 51 - 60 bu	90	75	90	51
Wheat Grain 61 - 70 bu + Grazing	140	108	90	74
Wheat Grain 61 - 70 bu	105	87	90	60
Wheat Grain 71 - 80 bu + Grazing	160	121	95	82
Wheat Grain 71 - 80 bu	120	100	95	68
Wheat Grain 81 - 90 bu + Grazing	180	133	95	91
Wheat Grain 81 - 90 bu	135	112	95	77
Wheat Grain 91 - 100 bu + Grazing	200	146	95	99
Wheat Grain 91 - 100 bu	150	125	95	85
Wheat Heavy Grazing	240	114	105	42
Wheat Light Grazing	60	75	80	28
Wheat Moderate Grazing	160	97	105	36
Millet GC (25% DM) 18 - 24 Ton	180	140	60	46
Millet Hay/Graze 11000 #	150	95	45	40
Silage - Millet(35% DM) 15 - 18 Ton	190	139	60	46
Popcorn Shelled 3000 - 4000 #	80	74	80	27
Popcorn Shelled 4000 - 5000 #	100	92	80	33
Popcorn Shelled 5000 - 6000 #	120	110	80	40
Vetch Hay 1 Ton	70	60	105	14
Vetch Hay 2 Tons	140	120	105	28
Vetch Green chop(25%DM) 4 Tons	70	56	105	7
Vetch Green chop(25%DM) 8 Tons	140	112	105	14
Winter Pea Hay 5000#	140	137	105	35
Winter Pea Green chop(25%DM)8-9 Tons	140	123	105	32
Cowpea Hay 2 Tons	140	120	105	26
Cowpea GreenChop 8Tons(25%DM) Tons	140	120	105	26

Waste Utilization and Nutrient Management Plan

EXECUTIVE SUMMARY: Permit #: WQ0003190000

This Nutrient Management Plan has fields that meet NMP and/or NUP requirements.

See Attached Executive Summary

LOCATION AND PURPOSE OF THE PLAN

This animal operation is located in **Erath** County (see attached topo map and plan map for location.) The purpose of this plan is to outline the details of the land application of the effluent and solids produced by this operation. When the plan is fully implemented, it should minimize the effects of the land application of animal wastes on the soil, water, air, plant, and animal resources in and around the application area. This plan, when applied, will meet the requirements of the Natural Resources Conservation Service Waste Utilization Standard and Nutrient Management Standard.

The plan is for the year of **2024** and will remain in effect until revision based on new soil or manure analysis or crop change (yield or crop) result in a new P-Index rating or plan classification (NMP-NUP). The waste has been stored in a **Dairy Lagoon**. Approximately **10000** head will be confined with the average weight of **1180** pounds. The animals will be confined **24** hours per day for **365** days per year.

PI Index by Field

Printed on: 8/12/24 3:48 PM
Client Name: TMC Dairies Hico
Planner: Richard George

This plan is based on: Iutrient Management Plan V 5.0

Permit #: WQ0003190000
Date: 8/12/2024
Location: Erath
Rainfall: >25.0 inches

LMU or Fields	Crop	Slope	Runoff Curve	Soil Test P Level	Inorganic P_2O_5 Appl Rate	Organic P_2O_5 Appl Rate	Inorganic Method & Timing	Organic Method & Timing	Proximity of Appl to Named Stream	Runoff Class	Soil Erosion	Total Index Points	P Runoff Potential	Soil Test Date:
1	Coastal graze 1 AU/1 ac, SG mod graze	4.2%	80	8	0	6	0	0.5	0	4	0	18.5	Medium	3/27/23
1A	Coastal graze 1 AU/1 ac, SG mod graze	4.7%	80	8	0	6	0	4	0	4	0	22	Medium	3/7/23
2	Coastal graze 1 AU/1 ac, SG mod graze	4.7%	61	8	0	6	0	0.5	0	2	0	16.5	Medium	3/7/23
3	Coastal graze 1 AU/1 ac, SG mod graze	3.3%	61	8	0	6	0	4	1.25	1	0	20.25	Medium	3/7/23
4	Coastal graze 1 AU/1 ac, SG mod graze	3.1%	74	8	0	6	0	0.5	5	2	0	21.5	Medium	3/7/23
4A	Coastal graze 1 AU/1 ac, SG mod graze	3.1%	39	8	0	6	0	4	5	0	0	23	High	3/7/23
5	Coastal graze 1 AU/1 ac, SG mod graze	1.5%	74	8	0	6	0	0.5	0	1	0	15.5	Medium	3/7/23
5A	Coastal graze 1 AU/1 ac, SG mod graze	1.5%	61	8	0	6	0	4	0	1	0	19	Medium	3/7/23
6	Coastal graze 1 AU/1 ac, SG mod graze	2.9%	80	8	0	6	0	4	0	2	0	20	Medium	3/7/23
7	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	0	2	0	16.5	Medium	3/27/23
7A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	0	2	0	20	Medium	3/27/23
8	Coastal graze 1 AU/1 ac, SG mod graze	3.4%	74	8	0	6	0	0.5	0	2	0	16.5	Medium	3/8/23
8A	Coastal graze 1 AU/1 ac, SG mod graze	3.4%	74	8	0	6	0	4	0	2	0	20	Medium	3/8/23
9	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	0	2	0	16.5	Medium	3/8/23
9A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	1.25	2	0	21.25	Medium	3/8/23
10	Coastal graze 1 AU/1 ac, SG mod graze	2.5%	80	8	0	6	0	0.5	5	2	0	21.5	Medium	3/8/23
10A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	61	8	0	6	0	4	5	1	0	24	High	3/8/23
11	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	5	2	0	21.5	Medium	3/8/23
12	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	1.25	2	0	17.75	Medium	3/8/23
12A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	1.25	2	0	21.25	Medium	3/8/23
13	Coastal graze 1 AU/1 ac, SG mod graze	4.4%	61	8	0	6	0	4	0	2	0	20	Medium	3/8/23
14	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	0	2	0	20	Medium	3/7/23

Values in Table 1 may be based on actual analysis or "book" values during the initial planning to determine land application rates for the initial plan. When "book" values are used, they will be from NRCS, Texas Cooperative Extension or averages from other TX testing lab sources. Site specific data will be used as soon as feasible after production begins. Manure and/or effluent will be tested at least annually or in the year of application if it is stored for more than one year. If the actual values are more than 10% higher or lower than the estimated values, this plan will need to be revised accordingly.

Application of waste products may be made up to the Maximum Rate given in Table 2 or 2a as applicable. Table 2 applies to those that are subject to Nutrient Management Plan (NMP) requirements while Table 2a applies when subject to Nutrient Utilization Plan (NUP) requirements. Current requirements for both the NMP and NUP are given in the headers of the tables. Table 2a has a criteria involving the distance to a named stream when the Soil Test P Level is above 200 ppm in arid areas as well as special requirements when the site is in a TMDL watershed designated by TCEQ. For various P Index Ratings, the maximum rates in Table 2 are based on crop requirements, whereas the maximum rates in Table 2a are based on crop removal rates. County avg. rainfall information can be found in the TX Agronomy Technical Note 15, Phosphorus Assessment Tool for Texas, located in the eFOTG at the address given in the section entitled **"Collecting Soil Samples for Analyses"**.

CROP REMOVAL RATES:

Crop Removal Rates of nitrogen (N), phosphorus (P), and potassium (K) in pounds per acre are given in Table 3 for the crop and yield planned for each field. This Table is included for information only, and should be used during the planning process to compare planned or maximum application rates to crop removal. Crop removal rates may be based on actual analysis of harvested material or default values in the database. P build-up will occur at higher rates when crop removal rates are exceeded..

SOLIDS APPLICATION:

The maximum solids application rates are given in Table 4 along with the current soil test P level, maximum P_2O_5 application rate, maximum tons per acre of solids and the total tons of solids per field that can be applied to each field. The maximum tons of solids that can be utilized on the fields planned is indicated in the box near the lower left corner of Table 4. When the total application acres of the fields are adequate to allow all of the solids to be applied, "Adequate" will be indicated below the tonnage in this box. If "Not Adequate" is indicated, then the lower box will indicate the tons of solids that must be utilized off-site unless more fields/acres are added. This plan is valid only if the application of waste to the crops listed does not exceed the per acre rates by more than 10%. If the yield of a crop does not meet the expected goal, the application rate should be adjusted the following year.

The estimated amounts of N, P_2O_5, and K_2O contained in the solids are provided in Table 5 for the maximum application rate. Supplemental N and K_2O will be applied to achieve the yield goals in Table 4 when recommended by the soil test and the maximum rate of the solids does not meet the crop needs. When the maximum application rate is applied and Table 5 indicates additional commercial nutrients, they **<u>must</u>** be applied to fields as indicated. **NOTE:** If additional nitrogen is recommended, the producer should consider collecting soil samples from the 6 - 36 inch layer to see if there is any additional deep nitrogen available. Additional deep nitrogen within the root zone of the crop can be substituted for supplemental commercial nitrogen, and should be included in the soil test N ppm entry.

SOLIDS APPLICATION: (cont) Permit #: WQ0003190000

In situations where more land is available than is needed to utilize the maximum application rate on each field, the application rates in Table 6 have been reduced to the level that does not exceed the amount of solids produced. Table 7 indicates the amount of nutrients provided and, if needed, the supplemental nutrients which **must** be applied when the application is based on these rates. The amounts of supplemental nutrients in Table 7 are based on the actual amount of waste available rather than the **maximum** rate that **"could"** be applied.

The second line from the bottom of Table 6 on the right has a box that will be **"YES"** or **"NO"**. When the reduced rates use all solids to be produced in a year, this box will be **"Yes"**. If the percentages are too low, it will be **"No"**. If **"No"**, either more acreage is needed on which to apply the solids or the solids will need to be transported off-site. The amount is located on the bottom line on the extreme right of the page.

Actual application will be based on the quantities produced, as well as, current manure analyses. **Application at the MAXIMUM rates shown in Table 4 will result in a more rapid build-up of phosphorus than if applied at lower rates. A different percentage may be used as long as the rate does not exceed the maximum shown in Table 4 for the field and the proper amount of supplemental nutrients are applied. Applying a lower rate to the fields with higher soil test P levels will slow down the P buildup and extend their land application life. Phosphorus will also build up more rapidly on pastureland than on hayland or cropland, since very few nutrients are actually removed by grazing animals.**

The solids may be applied to the same acreage every year according to Table 2 or 2a. The annual rates in both Table 4 and 6 may be doubled not to exceed the 2X the annual nitrogen requirement or nitrogen removal rate, as applicable. When the full biennial rate has been used, no additional phosphorus fertilizer or animal wastes may be applied in the alternate year. A column in both tables indicates whether the rates given are Annual Rates (A) or Biennial Rates (B). Rates given are based on Table 2 or 2a as applicable. Annual application rate for fields in a TMDL area with a Soil Test P level equal to or greater than 500 ppm or any field in a TMDL area with P Index Rating of Very High is 0.5 annual crop removal rate.

EFFLUENT APPLICATION:

The maximum effluent application rates are given in Table 8 for each field. This table provides the current soil test P level, maximum P_2O_5 application rate, effluent either in gallons per acre or acre inches per acre and the amount of effluent that can be applied per field. The maximum amount of effluent that can be utilized on the fields planned is indicated in a box near the lower left corner of Table 8. When the total application acres are adequate to allow all of the effluent to be applied, "Adequate" will be indicated below this box. If "Not Adequate" is indicated, then the lower box will indicate the amount of effluent that must be utilized off-site unless more field acres are added.

The estimated amounts of N, P, and K contained in the effluent are provided in Table 9 for the maximum application rate indicated in Table 8. Supplemental N and K_2O will be applied to achieve the yield goals when recommended by the soil test and the maximum rates of the effluent do not meet the crop requirements. **NOTE:** If additional nitrogen is recommended, the producer should consider collecting soil samples from the 6 - 36 inch layer to see if there is any additional deep nitrogen available. Additional deep nitrogen within the root zone of the crop can be substituted for supplemental commercial nitrogen.

In situations where more land is available than is needed to utilize the maximum application rate on each field, the application rates in Table 10 have been reduced to the level that does not exceed the amount of effluent produced. Table 11 indicates the amount of nutrients provided and, if needed, the supplemental nutrients which **must** be applied when application is made based on the rates in Table 10. These amounts of supplemental nutrients in Table 11 are based on the planned amount of effluent available rather than the **maximum** rate that **"could"** be applied.

The bottom line on the right of Table 10 has a box that will be "**YES**" or "**NO**". When the reduced rates uses all effluent to be produced in a year, this box will be **"Yes"**. If the percentages are too low, it will be **"No"**. If **"No"** is indicated, either more acreage is needed on which to apply the effluent or the effluent will need to be transported off-site.

Actual application will be based on the quantities produced, as well as, current manure analyses. **Application at the MAXIMUM rates shown in Table 8 will result in a more rapid build-up of phosphorus than if applied at lower rates. A different percentage may be used as long as the rate does not exceed the maximum shown in Table 8 for the field and the proper amount of supplemental nutrients are applied. Applying a lower rate to fields with higher soil test P levels will slow down the P buildup and extend their land application life. Phosphorus will also build up more rapidly on pastureland than on hayland or cropland, since very few nutrients are actually removed by grazing animals.**

The effluent may be applied to the same acreage every year according to Table 2 or 2a. The annual rates in both Table 8 and 10 may be doubled not to exceed the 2X the annual nitrogen requirement or nitrogen removal rate, as applicable, when the full biennial rate has been used, no additional phosphorus fertilizer or animal wastes may be applied in the alternate year. A column in both tables indicates whether the rates given are Annual Rates (A) or Biennial Rates (B). Rates given are based on Table 2 or 2a as applicable. Annual application rate for fields in a TMDL area with a Soil Test P level equal to or greater than 500 ppm or any field in a TMDL area with P Index Rating of Very High is 0.5 annual crop removal rate.

Maximum Hourly Application Rate - The maximum hourly application rate is determined by the texture of the soil layer with the lowest permeability within the upper 24 inches of the of the predominant soil in each field. The hourly application rate must be low enough to avoid runoff and/or ponding. For effluent with 0.5% solids or less, **DO NOT** exceed the rates shown in Table 1 of the attached Job Sheet titled, *"Waste Utilization, Determining Effluent Application Rates"*. If the effluent contains more than 0.5% solids, those values must be reduced by the appropriate amount shown in Table 2 of the attached *"Waste Utilization, Determining Effluent Application Rates"* Job Sheet.

Maximum One-Time Application Rate - The maximum amount of effluent that can be applied to a given field at any one-time is the amount that will bring the top 24 inches of the soil to 100% field capacity. This amount is determined by subtracting the amount of water stored in the soil (estimated by feel and appearance method) from the available water holding capacity (AWC) of the soil. The available water holding capacity of the top 24 inches of the predominant soil of each field receiving effluent and the texture of the most restrictive layer in the upper 24 inches are given in Table 12.

To determine any one-time application amount, the current percent of field capacity (FC) of the upper 24 inches of the predominant soil in the field should be estimated using the guidance in Table 3 of the attached Job Sheet, *"Waste Utilization, Determining Effluent Application Rates, rev 4/06"*. Additional information on estimating soil moisture can be found in the NRCS Program Aid 1619, *"Estimating Soil Moisture by Feel and Appearance"*, or from the University of Nebraska Extension publication No. G84-690-A by the same name. Both of these publications have pictures of various soils at different percentages of field capacity to be used as a guide to estimating soil moisture. Once the current percent of FC is estimated, it is subtracted from the AWC amount in Table 12 for the given field and the difference is the maximum application for those soil conditions on that day. Remember, the maximum hourly application and the maximum one time application rates are only estimates to be used as a guide.

Solids/Effluent Land Application: - Land application of solids and/or effluent should be made at appropriate times to meet crop needs, but can be made at any time as long as the total annual (or biennial) rate, maximum hourly rate, and the maximum one time application rates are not exceeded. Effluent should be surface applied uniformly. No runoff or ponding should occur during application thus frequent observations should be made. Neither effluent or solids will be applied to slopes >8% with a runoff curve >80, or steeper than 16% slope with a runoff curve of 70 or greater, unless the application is part of an erosion control plan. Waste will not be spread at night, during rainfall events, or on frozen or saturated soils if a potential risk for runoff exists. Waste will not be applied to frequently flooded soils during months when the soils typically flood. If frequently flooded soil occur on any potential application field see attached, "Water Features Table", for months when flooding is expected. Solids should be applied with a manure spreader as uniformly as feasible. Surface applications with trucks should only be made when soil conditions are favorable in order to minimize soil compaction.

Managing Runoff -
A minimum 100 ft. setback or vegetated buffer (Filter Strip, Field Border, Riparian Forested Buffer, etc.) will be established and maintained between the application area and all surface water bodies, sink holes, and watercourses as designated on Soil Survey sheets or USGS topographic maps. A minimum application distance from private and public will be 150 ft. and 500 ft. respectively. A minimum application distance from water wells used exclusively for agricultural irrigation will be 100 ft. Table 9 provides a summary of the setbacks and out areas of each field.

Managing Leaching -
When soils with sandy, loamy sand, or gravelly surface textures have a Nitrogen Leaching Index score of >2 appropriate measures will be used to minimize the potential of leaching. These measures will include, split applications of waste, and may include double cropping, or cover crops, and irrigation water management (on fields that receive supplemental or full irrigation).

MORTALITY MANAGEMENT:
All mortality will be disposed of properly within 3 days according to the Texas Commission on Environmental Quality (TCEQ) rules. The preferred method for disposal of routine mortality is by a rendering plant. Before planning this method, contact the facility or its representative to be informed of special handling procedures, equipment needs, scheduling requirements, etc. Maintain a list of contact phone numbers so information will be readily available following a catastrophic die-off. Verify that local companies which have previously picked up and/or rendered dead animals are still doing so. A number of rendering companies across the state have stopped dead animal pick up service, and others have raised their fees significantly. Periodically review the availability and cost of rendering so that the plan can be modified if necessary. This can be an excellent option if mortality can be loaded and transported while still fresh or the mortality can be refrigerated until loaded and transported.

Disposal in a landfill may be an option in some locations. Before planning this option, the closest commercial, regional, county, or municipal landfill should be contacted to determine if the landfill has a permit which would allow acceptance of dead animals (swine, sheep, cattle, etc.). Also ask if there are any restrictions on type and volume of animal mortality that will be accepted at the facility. Landfill fees and transport, offloading, and handling procedures should be discussed with landfill managers and documented for reference when needed. The landfill is not a viable option if the producer does not own or have access to a vehicle capable of transporting mortality quickly in an emergency situation. After a catastrophic die-off is not a good time to find out that a driver and truck to transport mortality will not be available for several weeks **(MAKE ARRANGEMENTS NOW, NOT AFTER THE ANIMALS ARE DEAD).**

On-farm disposal of catastrophic mortality may be considered if site conditions permit. On-farm methods include burial, composting, and incineration. Incinerators and composters are excellent options for routine mortality but usually do not have the capacity to handle mortality volumes associated with catastrophic events. Composting and incineration should not be relied on for catastrophic mortality handling without a documented evaluation of worst anticipated mortality condition (number, type, and weight of animals), and the anticipated capacity of the system (i.e., lb./hr. incineration rate, hrs/day of operation). NRCS Mortality Facility Standard 316 will be used for all mortality management.

See the attached soil interpretation, ENG - Animal Mortality Disposal (Catastrophic) Trench, to make a preliminary assessment of the limitations of the soils on this farm for burial of catastrophic mortality. The attached TX NRCS Technical Guidance, Catastrophic Animal Mortality Management (Burial Method) should be used as a guide to overcome minor limitations and as design criteria for the construction of burial pits for catastrophic mortality. Mortality burial sites shall be located outside the 100 -year floodplain. Mortality burial will not be less than 200 feet from a well, spring, or water course. A FIELD INVESTIGATION BY A QUALIFIED PROFESSIONAL SHOULD BE MADE BEFORE AN AREA IS USED FOR A BURIAL SITE FOR CATASTROPHIC MORTALITY EVENTS. **The TCEQ Industrial and Hazardous Waste Permits Section, MC-130, must be contacted before burial of catastrophic mortality.**

TCEQ
Industrial and Hazardous Waste Permits Section, MC-130
PO Box 13087
Austin, TX 78711-3087
Phone: 512-239-2334 Fax: 512-239-6383

Air Quality:

The following steps should be taken when spreading effluent or solids to reduce problems associated with odor.

1. Avoid spreading effluent or solids when wind will blow odors toward populated areas.
2. Avoid spreading effluent or solids immediately before weekends or holidays, if people are likely to be engaged in nearby outdoor activities.
3. Avoid spreading effluent or solids near heavily traveled highways.
4. Make applications in the morning when the air is warming, rather than in the late afternoon.
5. All materials will be handled in a manner to minimize the generation of particulate matter, odors, and greenhouse gas emissions.

EFFLUENT AND SOLIDS STORAGE & TESTING: Permit #: WQ0003190000

Effluent and solids will be stored in facilities designed, constructed, and maintained according to USDA NRCS Standards and specifications.

Effluent and solids sampling is needed to get a better idea of the nutrients actually being applied. Effluent and/or solids samples will be collected at least annually, or in the year of its use if waste is typically stored for more than 1 year. The samples will be submitted immediately to a lab for testing. If sent to Texas A&M soil lab or SFASU Soil Testing Lab for analysis, use the "plant and forage analysis" form and note the type of operation. Request that the manure be analyzed for percent dry matter, solids, total nitrogen, total phosphorus, and total potassium. Further information on collecting effluent and manure samples for analysis can be found in the TCE publication No. L-5175, *"Managing Crop Nutrients Through Soil, Manure and Effluent Testing"*. **TCEQ sampling rules and testing requirements will be followed on permitted sites.**

COLLECTING SOIL SAMPLES FOR ANALYSIS:

Collect a composite sample for each field (or area of similar soils and management not more than 40 acres in size) comprised of 10 - 15 randomly selected cores. Each core should represent 0 - 6 inches below the surface except for when injection has been done over 6" in depth, then the core should represent the 3-9" layer. Thoroughly mix each set of core samples, and select about a pint of the mixture as the sample for analysis. Label each sample for the field that it represents. Request that the samples be analyzed for nitrate nitrogen, plant-available phosphorus, potassium, sodium, magnesium, calcium, sulfur, boron, conductivity; and pH. Also note on the samples that they are from an effluent or solids application area. **TCEQ sampling rules and testing requirements will be followed on permitted sites.** A weighted average of 0-2 and 2-6 inch layers will be used for calculations on permitted sites.

Further information on collecting soil samples can be found on the TCE Form D-494, p 2, TCE Publication No. L-1793, and TCEQ RG-408. Additional NRCS guidance and requirements can be found in the Nutrient Management (590) standard located in the Texas electronic Field Office Technical Guide (eFOTG) at:

http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=TX

Click the county desired.
Click Section IV in the left column under eFOTG
Type: 590 in the Search Menu above eFOTG and click: **GO**
Click on the desired item under Nutrient Management in the left column

SOIL ANALYSIS:

A soil analysis will be completed for all areas to be used for all effluent or solids application areas. The soil test analysis method will be **Mehlich III with inductively coupled plasma (ICP)**. The area will be tested and analyzed at least annually to monitor P build up.

Waste Utilization and Nutrient Management Plan

RECORD KEEPING: Permit #: WQ0003190000

Detailed records should be maintained by the producer for all application of animal waste to land owned and operated by the producer. Records should include date, time, location, amount of application, weather conditions, estimated wind speed and direction, etc. A rain gauge should be in place at the application site and accurate records of rainfall should be maintained at the site. All records must be kept for at least 5 years. **TCEQ requirements will be followed on permitted sites.**

Records should also be kept showing amounts of litter given or sold to others. **A copy of the effluent analysis and/or solids analysis and a Waste Utilization Guidelines Sheet should be given to anyone who will use either the effluent or solids off-site. If they routinely use animal wastes for fertilizer, they should be directed to the local Soil and Water Conservation District or NRCS office to develop a Waste Utilization and Nutrient Management Plan for their land.**

This portion may be completed by producer, if desired or recorded elsewhere.

Record of waste leaving the farm or used as feed. **Estimated Annual Excess** | |

Date	Amount	Hauler or Recipient
Excess Remaining		May be continued on additional sheets

Waste Utilization and Nutrient Management Plan

OPERATION AND MAINTENANCE: Permit #: WQ0003190000

Application equipment should be maintained in good working order and it should be calibrated annually so that the desired rate and amount of effluent and solids will be applied.

Information on calibrating manure spreaders can be found in the TCE publication No. L-5175, *"Managing Crop Nutrients Through Soil, Manure and Effluent Testing"*. Information on calibrating big gun sprinklers can be found in the Arkansas Extension publication, *"Calibrating Stationary Big Gun Sprinklers for Manure Application"*. For information on calibrating tank spreaders, traveling guns, and additional information on other manure spreading equipment, see Nebraska Extension publication No. G95-1267-A, *"Manure Applicator Calibration"*. Observe and follow manufacturer's recommended maintenance schedules for all equipment and facilities involved in the waste management system. For information on lagoon functions, refer to TCE publication E9, *"Proper Lagoon Management"*.

Any changes in this system should be discussed with the local Soil and Water Conservation District, USDA Natural Resources Conservation Service, or other qualified professional prior to their implementation.

Plan Prepared by:	**Richard George**	Date:	**8/12/2024**
Plan Approved by:	[signature]	Date:	8-12-24
Producer Signature:	Discussed w/ Producer	Date:	8-12-24

The producer's signature indicates that this plan has been discussed with him/her.
If this plan is not signed by the producer, indicate how the plan was provided to the producer.

Waste Utilization and Nutrient Management Plan

Table 1 - Estimated Effluent and Solids Quantities Produced Permit #: WQ0003190000

Avg. Number of Animals
10,000

Type of Waste
Dairy Lagoon
Other Solids

Contact the local Soil and Water Conservation District or USDA Natural Resources Conservation Service office if the total number of animals change by more than 10% so your plan can be revised.

Estimated Acre Inches of Effluent to be Available Annually* **3,675**

Estimated Tons Solids to be Land Applied Annually (on or off site)* **515,384.6**

*From engineering design.

Estimated Nutrient Availabilty
Effluent

	pounds/yr	Pounds / 1000 gal	Pounds / Acre Inch	
N	97,947	**0.98**	**26.7**	**
P2O5	57,219	**0.57**	**15.6**	
K2O	239,870	**2.40**	**65.3**	

**** Effluent Values Based on Analysis dated:** **June 4, 2024**

Estimated Nutrient Availabilty
Solids

	pounds / yr	pounds / ton	
N	**1,245,235**	**2.4**	**
P2O5	**378,052**	**0.7**	
K2O	**2,412,000**	**4.7**	

**** Solids Values Based on Analysis dated:** **June 4, 2024**

Default values were used on all fields for plant removal of nutrients and yield levels.

Waste Utilization and Nutrient Management Plan

TABLE 2. A Nutrient Management Plan (NMP) is required where Soil Test P Level [1/] is:

- **less than 200 ppm statewide or**
- **or < 350 ppm in arid areas 2/ with a named stream > one mile.**

P – Index Rating	Maximum TMDL Annual P Application Rate [5/]	Maximum Annual P Application	Maximum Biennial Application Rate
Very Low, Low	Annual Nitrogen (N) Requirement	Annual Nitrogen (N) Requirement	2.0 Times Annual N Requirement
Medium	2.0 Times Annual Crop P Requirement [3/]	2.0 Times Annual Crop P Requirement [3/]	2.0 Times Annual N Requirement
High [5]	1.5 Times Annual Crop P Requirement [3/]	1.5 Times Annual Crop P Requirement [3/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Requirement
Very High [5]	1.0 Times Annual Crop P Requirement [3/]	1.0 Times Annual Crop P Requirement [3/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Requirement

TABLE 2a. A Nutrient Utilization Plan (NUP) is required by TCEQ where Soil Test P Level [1/] is:

- **equal to or greater than 200 ppm in non-arid areas [2/] or**
- **equal to or greater than 350 ppm in arid areas [2/] with a named stream greater than one mile or**
- **equal to or greater than 200 ppm in arid areas [2/] with a named stream less than one mile.**

P – Index Rating	Maximum TMDL Annual P Application Rate [5/]	Maximum Annual P Application	Maximum Biennial Application Rate
Very Low, Low	1.0 Times Annual Crop P Removal [4/]	Annual N Crop Removal	2.0 Times Annual N Removal
Medium	1.0 Times Annual Crop P Removal [4/]	1.5 Times Annual Crop P Removal [4/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Crop Removal
High [5]	1.0 Times Annual Crop P Removal [4/]	1.0 Times Annual Crop P Removal [4/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Crop Removal
Very High [5]	0.5 Times Annual Crop P Removal [4/]	0.5 Times Annual Crop P Removal [4/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Crop Removal

Footnotes Applicable to both Tables

1/ Soil test P will be Mehlich III by inductively coupled plasma (ICP).

2/ Non-arid areas, counties receiving => 25 inches annual rainfall, will use the 200 ppm P level while arid areas, counties receiving < 25 inches of annual rainfall, will use the 350 ppm P level. See map in TX Agronomy Technical Note 15, Phosphorus Assessment Tool for Texas, for county designations.

3/ Not to exceed the annual nitrogen requirement rate.

4/ Not to exceed the annual nitrogen removal rate.

5/ When soil test phosphorus levels are ≥ 500 ppm, with a P-Index rating of "High" or "Very High", there will be no additional application of phosphorus to a CMU or field.

Waste Utilization and Nutrient Management Plan

Table 3 - Crop Removal Rates (For Information Only) Permit #: WQ0003190000

LMU or Field No.	Acres	Crop and P Index Level	TCEQ Plan Type	Actual Crop Analysis or Default	Total Est. N Removal lbs/Ac/Yr	Total Est. P_2O_5 Removal lbs/Ac/Yr	Total Est. K_2O Removal lbs/Ac/Yr
LMU 1	144.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 2	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 4	97.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
LMU 4A	76.0	Coastal graze 1 AU/1 ac, SG mod graze H	NMP	Default	300	90	267
LMU 5	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 7	16.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 8	26.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 9	34.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 10	29.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 10A	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	NMP	Default	300	90	267
LMU 11	42.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
LMU 12	24.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 12A	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267

NOTE: When crops are used for grazing, only a portion of the nutrients used by the crop are removed from the field in the live weight gain of the livestock, the remainder is returned to the land in manure and urine. The book "Southern Forages" estimates the N, P, & K removed in 100 pounds live weight gain as follows: **2.5 lbs N, 0.68 lbs P, 0.15 lbs K**

Waste Utilization and Nutrient Management Plan

Table 4 - Maximum Solids Application per Field Permit #: WQ0003190000

Est. Solids Produced Annually (wet tons)	LMU or Field No.	Acres	Crop Management and PI runoff potential	Current Soil Test P Level (ppm)	Max Annual P2O5 lbs/acre	Annual/Biennial	Maximum Solids Allowable Tons/Acre	Maximum Allowable Application Per field (Tons)
515,385	LMU 1							
	LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	90	A	123.3	11468
	LMU 2							
	LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	219	90	A	123.3	4809
	LMU 4							
	LMU 4A	76.0	Coastal graze 1 AU/1 ac, SG mod graze H	162	121	A	165.6	12582
	LMU 5							
	LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	268	90	A	123.3	4316
	LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	362	90	A	123.3	6289
	LMU 7							
	LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	90	A	123.3	4069
	LMU 8							
	LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	90	A	123.3	2220
	LMU 9							
	LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	90	A	123.3	3453
	LMU 10							
	LMU 10A	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	144	121	A	165.6	7615
	LMU 11							
	LMU 12							
	LMU 12A	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	91	A	124.2	7828
	LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	217	91	A	124.2	5467
	LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	201	91	A	124.2	1491
Total Solids Application Acres								
538								
Application Allowable on-site (tons)								
71607.5								
Not Adequate								
Solids to be used off-site (tons)								
443,777.1								

End of Table 4

Waste Utilization and Nutrient Management Plan

Table 5 - Nutrients Applied/Needs at Maximum Solids Rates Permit #: WQ0003190000

	Nutrients Applied When Application is at Maximum Rates			Supplemental Nutrients Needed When Application is at Maximum Rates			
LMU / Field #	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1							
LMU 1A	298	90	577	0	0	0	0
LMU 2							
LMU 3	298	90	577	25	0	0	0
LMU 4							
LMU 4A	400	121	775	0	0	0	0
LMU 5							
LMU 5A	298	90	577	0	0	0	0
LMU 6	298	90	577	0	0	0	0
LMU 7							
LMU 7A	298	90	577	0	0	0	0
LMU 8							
LMU 8A	298	90	577	30	0	0	0
LMU 9							
LMU 9A	298	90	577	55	0	0	0
LMU 10							
LMU 10A	400	121	775	0	0	0	0
LMU 11							
LMU 12							
LMU 12A	300	91	581	15	0	0	0
LMU 13	300	91	581	80	0	0	0
LMU 14	300	91	581	30	0	0	0

Waste Utilization and Nutrient Management Plan

Table 6 - Planned Solids Application Rates Permit #: WQ0003190000

LMU or Field No.	Double crop	Acres	Crop Management and PI runoff potential	Current Soil Test P ppm	Annual / Biennial	Max Rate tons/ac	% of Maximum to apply	Planned Solids tons/ac	Planned Solids per field (tons)
LMU 1									
LMU 1A		93.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	A	123.3	50	61.7	5734.1
LMU 2									
LMU 3		39.0	Coastal graze 1 AU/1 ac, SG mod graze M	219	A	123.3	50	61.7	2404.6
LMU 4									
LMU 4A		76.0	Coastal graze 1 AU/1 ac, SG mod graze H	162	A	165.6	100	165.6	12582.1
LMU 5									
LMU 5A		35.0	Coastal graze 1 AU/1 ac, SG mod graze M	268	A	123.3	50	61.7	2158.0
LMU 6		51.0	Coastal graze 1 AU/1 ac, SG mod graze M	362	A	123.3	50	61.7	3144.5
LMU 7									
LMU 7A		33.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	A	123.3	50	61.7	2034.7
LMU 8									
LMU 8A		18.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	A	123.3	50	61.7	1109.8
LMU 9									
LMU 9A		28.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	A	123.3	50	61.7	1726.4
LMU 10									
LMU 10A		46.0	Coastal graze 1 AU/1 ac, SG mod graze H	144	A	165.6	100	165.6	7615.5
LMU 11									
LMU 12									
LMU 12A		63.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	A	124.2	50	62.1	3913.8
LMU 13		44.0	Coastal graze 1 AU/1 ac, SG mod graze M	217	A	124.2	50	62.1	2733.5
LMU 14		12.0	Coastal graze 1 AU/1 ac, SG mod graze M	201	A	124.2	50	62.1	745.5

Acres	538.0		Will the planned per acre application rates use all of the Solids?	45902.5
515385		Tons of wet solids produced Annually		NO
0		Tons to be used off-site at Max. rates	Tons to be used off-site at planned rates	469482

Waste Utilization and Nutrient Management Plan

Table 7 - Nutrients Applied/Needed at Planned Solids Rates Permit #: WQ0003190000

Red cells? Proceed to adjustment page and fix.

	Nutrients Applied at Planned Rates			Supplemental Nutrients Needed at Planned Rates			
LMU / Field #	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1							
LMU 1A	149	45	289	115	0	0	0
LMU 2							
LMU 3	149	45	289	175	0	0	0
LMU 4							
LMU 4A	400	121	775	0	0	0	0
LMU 5							
LMU 5A	149	45	289	140	0	0	0
LMU 6	149	45	289	105	0	0	0
LMU 7							
LMU 7A	149	45	289	90	0	0	0
LMU 8							
LMU 8A	149	45	289	180	0	0	0
LMU 9							
LMU 9A	149	45	289	205	0	0	0
LMU 10							
LMU 10A	400	121	775	0	0	0	0
LMU 11							
LMU 12							
LMU 12A	150	46	291	165	0	0	0
LMU 13	150	46	291	230	0	0	0
LMU 14	150	46	291	180	0	0	0

Waste Utilization and Nutrient Management Plan

Table 8 - Maximum Effluent Application Per Field Permit #: WQ0003190000

Est. Available Effluent (ac inches)	LMU or Field No.	Acres	Double crop	Crop Management and PI runoff potential	Current Soil Test P Level (ppm)	Max Annual P_2O_5 (lbs/acre)	Annual/Biennial	Maximum Effluent Allowable (ac in/ac)	Maximum Effluent Allowable / Field (ac in)
3675	LMU 1	144.0		Coastal graze 1 AU/1 ac, SG mod graze M	368	90	A	5.8	837
Source:	LMU 1A								
	LMU 2	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	206	90	A	5.8	226
	LMU 3								
Dairy Lagoon	LMU 4	97.0		Coastal graze 1 AU/1 ac, SG mod graze M	162	234	A	15.0	1455
	LMU 4A								
	LMU 5	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	174	234	A	15.0	585
	LMU 5A								
	LMU 6								
	LMU 7	16.0		Coastal graze 1 AU/1 ac, SG mod graze M	346	90	A	5.8	93
	LMU 7A								
	LMU 8	26.0		Coastal graze 1 AU/1 ac, SG mod graze M	461	90	A	5.8	151
	LMU 8A								
	LMU 9	34.0		Coastal graze 1 AU/1 ac, SG mod graze M	356	90	A	5.8	197
	LMU 9A								
	LMU 10	29.0		Coastal graze 1 AU/1 ac, SG mod graze M	290	90	A	5.8	168
	LMU 10A								
	LMU 11	42.0		Coastal graze 1 AU/1 ac, SG mod graze M	144	234	A	15.0	630
	LMU 12	24.0		Coastal graze 1 AU/1 ac, SG mod graze M	277	90	A	5.8	139
	LMU 12A								
	LMU 13								
Total Effluent Application Acres	LMU 14								
490									
Maximum Effluent Application Allowable On-Site (ac in)									
4481									
Adequate									
Effluent to be used Off-Site (ac in)									
0									

End of Table 8

Waste Utilization and Nutrient Management Plan

Table 9 - Nutrients Applied/Needed at Maximum Effluent Rates Permit #: WQ0003190000

	Nutrients Applied When Application is at Maximum Rates			Supplemental Nutrients Needed When Application is at Maximum Rates			
LMU / Field #	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1	155	90	379	75	0	0	0
LMU 1A							
LMU 2	155	90	379	110	0	0	0
LMU 3							
LMU 4	400	234	979	0	0	0	0
LMU 4A							
LMU 5	400	234	979	0	0	0	0
LMU 5A							
LMU 6							
LMU 7	155	90	379	85	0	0	0
LMU 7A							
LMU 8	155	90	379	175	0	0	0
LMU 8A							
LMU 9	155	90	379	200	0	0	0
LMU 9A							
LMU 10	155	90	379	205	0	0	0
LMU 10A							
LMU 11	400	234	979	0	0	0	0
LMU 12	155	90	379	160	0	0	0
LMU 12A							
LMU 13							
LMU 14							

Waste Utilization and Nutrient Management Plan

Table 10 - Planned Effluent Application Rates Permit #: WQ0003190000

LMU or Field No.	Acres	Double crop	Crop Management and PI runoff potential	Current Soil Test P ppm	Annual / Biennial	Maximum Effluent (ac in/ac)	% of Maximum to apply	Planned Effluent (ac in/ac)	Planned Effluent / field (Ac. In)
LMU 1	144.0		Coastal graze 1 AU/1 ac, SG mod graze M	368	A	5.8	61.9	3.6	518
LMU 1A									
LMU 2	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	206	A	5.8	50.0	2.9	113
LMU 3									
LMU 4	97.0		Coastal graze 1 AU/1 ac, SG mod graze M	162	A	15	100.0	15.0	1455
LMU 4A									
LMU 5	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	174	A	15	100.0	15.0	585
LMU 5A									
LMU 6									
LMU 7	16.0		Coastal graze 1 AU/1 ac, SG mod graze M	346	A	5.8	50.0	2.9	46
LMU 7A									
LMU 8	26.0		Coastal graze 1 AU/1 ac, SG mod graze M	461	A	5.8	50.0	2.9	75
LMU 8A									
LMU 9	34.0		Coastal graze 1 AU/1 ac, SG mod graze M	356	A	5.8	50.0	2.9	99
LMU 9A									
LMU 10	29.0		Coastal graze 1 AU/1 ac, SG mod graze M	290	A	5.8	50.0	2.9	84
LMU 10A									
LMU 11	42.0		Coastal graze 1 AU/1 ac, SG mod graze M	144	A	15	100.0	15.0	630
LMU 12	24.0		Coastal graze 1 AU/1 ac, SG mod graze M	277	A	5.8	50.0	2.9	70
LMU 12A									
LMU 13									
LMU 14									
Acres	490.0								3676

Will the planned application rates use all of the Effluent?	**YES**

Waste Utilization and Nutrient Management Plan

Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #: WQ0003190000

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	Nutrients Applied at Planned Rates			Supplemental Nutrients Needed at Planned Rates			
LMU / Field #	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1	96	56	235	135	0	0	0
LMU 1A							
LMU 2	77	45	190	185	0	0	0
LMU 3							
LMU 4	400	234	980	0	0	0	0
LMU 4A							
LMU 5	400	234	980	0	0	0	0
LMU 5A							
LMU 6							
LMU 7	77	45	190	165	0	0	0
LMU 7A							
LMU 8	77	45	190	255	0	0	0
LMU 8A							
LMU 9	77	45	190	275	0	0	0
LMU 9A							
LMU 10	77	45	190	285	0	0	0
LMU 10A							
LMU 11	400	234	980	0	0	0	0
LMU 12	77	45	190	240	0	0	0
LMU 12A							
LMU 13							
LMU 14							

Waste Utilization and Nutrient Management Plan

Table 12 - Available Water Capacity to 24 inches(or less) of predominant soil in fields receiving effluent and Texture of the most restrictive soil layer in the upper 24 inches

Permit #: WQ0003190000

LMU / Field #	AWC (inches)	Restrictive Texture
LMU 1	0.75	Gravelly clay loam
LMU 1A		
LMU 2	2.82	Find Sandy Loam
LMU 3		
LMU 4	2.73	Fine Sand
LMU 4A		
LMU 5	4.05	Clay Loam
LMU 5A		
LMU 6		
LMU 7	1.87	Stony Clay
LMU 7A		
LMU 8	4.05	Clay Loam
LMU 8A		
LMU 9	3.48	Fine Sandy Loam
LMU 9A		
LMU 10	3.48	Fine Sandy Loam
LMU 10A		
LMU 11	3.48	Fine Sandy Loam
LMU 12	1.87	Stony Clay
LMU 12A		
LMU 13		
LMU 14		

LMU / Field #	AWC (inches)	Restrictive Texture

Waste Utilization and Nutrient Management Plan

Table 13 - Non Application Areas by Field Permit #: WQ0003190000

FS = 393-Filter Strip; **FB** = 386-Field Border, **RFB** = 391-Riparian Forest Buffer; **OLEA** = Other Land Excluded Ar

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
LMU 1	0.0	0.0			
LMU 1A	0.0	0.0			
LMU 2	0.0	0.0			
LMU 3	0.0	0.0			
LMU 4	0.0	0.0			
LMU 4A	0.0	0.0			
LMU 5	0.0	0.0			
LMU 5A	0.0	0.0			
LMU 6	0.0	0.0			
LMU 7	0.0	0.0			
LMU 7A	0.0	0.0			
LMU 8	0.0	0.0			
LMU 8A	0.0	0.0			
LMU 9	0.0	0.0			
LMU 9A	0.0	0.0			
LMU 10	0.0	0.0			
LMU 10A	0.0	0.0			
LMU 11	0.0	0.0			
LMU 12	0.0	0.0			
LMU 12A	0.0	0.0			
LMU 13	0.0	0.0			
LMU 14	0.0	0.0			

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
Totals	0.0	0.0	0.0	0.0	0.0

See Application Map for location of buffers

Total 590-633 application acres: 1028.0

Total 590-633 Field Acres: 1028.0

Waste Utilization and Nutrient Management Data Entries

General Data

Date :	8/12/2024
Farmer Name :	TMC Dairies Hico
County in which the Land is located :	Erath
Type of Waste Plan :	Other AFO-CAFO Waste Plan
Is this plan in a TMDL watershed for nutrients? Yes or No :	Yes
Is any field PERMITTED by TCEQ? Yes or No :	Yes
Permit # :	WQ0003190000

All other entries on General Page appear on the Cover Page

Animal Information

Plan Year :	2024
Are you receiving waste from another producer?	No
Number of animals :	10000
Approximate Weight :	1180
Days per year in confinement :	365
Hours per day confined :	24
ACRE FEET of effluent to be irrigated* :	306.25
Estimated annual gallons of effluent to be irrigated/applied annually :	99790950
For effluent, do you want application rates shown in gallons or acre inches? :	acre inches
Estimated Tons Solids to be Land Applied Annually (on or off site)* :	26800
Is this the first Year of the AFO-CAFO Operation? :	No

Analysis Information

Effluent Information

Date of Analysis:	6/4/2024
Manure Source:	Dairy Lagoon
Nitrogen % From Analysis:	0.0147
Phosphorus % From Analysis:	0.003
Potassium % From Analysis:	0.024
Moisture % From Analysis:	99.8

Manure / Solids Information

Date of Analysis:	6/4/2024	
Manure Source:	Other Solids	Explain Other:
Nitrogen % From Analysis:	2.904	Slurry
Phosphorus % From Analysis:	0.308	
Potassium % From Analysis:	3.75	
Moisture % From Analysis:	94.8	
What will be Applied to Fields on this Farm?	Both Effluent and Solids	
Is this Farm part of an AFO-CAFO?	No	

This plan is based on: rganic Nutrient Management Plan

Printed on: 8/12/24 2:48 PM

Field and Buffer Entries

Permit #: WQ0003190000

Printed on: 8/12/24 2:48 PM

Plan is based on: 590 Organic Nutrient Management Plar

FS = 393-Filter Strip, FB = 386-Field Border, RFB = 391-Riparian Forest Buffer, OLEA = Other Land Exclusion Areas or non-application areas (i.e. headquarters, freq. flooded areas, wooded areas, water bodies, etc)

NOTE: Field Border (FB) is expressed in ACRES on this spreadsheet, but as LINEAR FEET on the CPO.

Field No.	Total LMU or Field Acres	FS	FB	RFB	OLEA	Total Buffer Acres	Actual Application Acres	This Column Intentionally Left Blank
LMU 1	144					0.0	144.0	
LMU 1A	93					0.0	93.0	
LMU 2	39					0.0	39.0	
LMU 3	39					0.0	39.0	
LMU 4	97					0.0	97.0	
LMU 4A	76					0.0	76.0	
LMU 5	39					0.0	39.0	
LMU 5A	35					0.0	35.0	
LMU 6	51					0.0	51.0	
LMU 7	16					0.0	16.0	
LMU 7A	33					0.0	33.0	
LMU 8	26					0.0	26.0	
LMU 8A	18					0.0	18.0	
LMU 9	34					0.0	34.0	
LMU 9A	28					0.0	28.0	
LMU 10	29					0.0	29.0	
LMU 10A	46					0.0	46.0	
LMU 11	42					0.0	42.0	
LMU 12	24					0.0	24.0	
LMU 12A	63					0.0	63.0	
LMU 13	44					0.0	44.0	
LMU 14	12					0.0	12.0	

Soil Test, Crop Information and Plant Analysis Data Entries

Printed on: 8/12/24 2:48 PM Plan is based on: 590 Organic Nutrient Management Plan V 5.0 Permit #: WQ0003190000

Soil Test Analysis										Plant Analysis & Yield (optional) Use Only When Crop Removal is Required			
N (ppm)	P (ppm)	K (ppm)	Lime (enter amt or leave blank)	This column only for Dry Poultry	LMU or Field #	Appl. Area Acres	Crop/Land-Use and P Index Runoff Potential VL - L; M; H; or VH	E = Effluent S = Solids	Plant Analysis (Y / N)	% N	% P	% K	Yield Air Dry Production (lbs/ac/yr)
84	368	1636			LMU 1	144.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
68	206	425			LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
68	206	425			LMU 2	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
38	219	305			LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
41	162	286			LMU 4	97.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
41	162	286			LMU 4A	76.0	Coastal graze 1 AU/1 ac, SG mod graze H	S	N				
34	174	675			LMU 5	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
55	268	394			LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
72	362	681			LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
80	346	471			LMU 7	16.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
80	346	471			LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
35	461	763			LMU 8	26.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
35	461	763			LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
23	356	336			LMU 9	34.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
23	356	336			LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
19	290	677			LMU 10	29.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
37	144	495			LMU 10A	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	S	N				
37	144	495			LMU 11	42.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
42	277	402			LMU 12	24.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
42	277	402			LMU 12A	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
11	217	389			LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
34	201	515			LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				

Solids Application Rate Entries

Solids - Set the Planned Application Rates Permit #: WQ

515385		"Wet tons" of solids produced Annually	Will the planned rates use all of the				
			Tons to be used off-site at plann				
LMU or Field No.	Acres	Crop Management and PI runoff potential	Current Soil Test P ppm	Crop P_2O_5 Req.	Annual or Biennial Application Cycle	Maximum Solids Allowable Tons/Ac	Enter % of Maximum Planned to Apply
LMU 1							
LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	175	Annual	123.3	50.0
LMU 2							
LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	219	175	Annual	123.3	50.0
LMU 4							
LMU 4A	76.0	Coastal graze 1 AU/1 ac, SG mod graze H	162	175	Annual	165.6	100.0
LMU 5							
LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	268	175	Annual	123.3	50.0
LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	362	175	Annual	123.3	50.0
LMU 7							
LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	175	Annual	123.3	50.0
LMU 8							
LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	175	Annual	123.3	50.0
LMU 9							
LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	175	Annual	123.3	50.0
LMU 10							
LMU 10	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	144	175	Annual	165.6	100.0
LMU 11							
LMU 12							
LMU 12	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	175	Annual	124.2	50.0
LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	217	175	Annual	124.2	50.0
LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	201	175	Annual	124.2	50.0

Effluent Application Rate Entries

Effluent - Set the Planned Application Rates

Permit #: WQ0003190000

99790950	Gallons of Effluent to be used annually
3675	Acre inches of Effluent to be used annually

Will the planned rates use all of the effluent? Yes

LMU or Field No.	Acres	Crop Management and PI runoff potential	Current Soil Test P (ppm)	Crop P2O5 Req.	Annual or Biennial Application Cycle	Max Effluent Allowable (ac in/ac)	Enter % of Maximum Planned to Apply	Planned Effluent (ac in/ac)	Planned Effluent per field (acre inches)
LMU 1	144.0	Coastal graze 1 AU/1 ac, SG mod graze M	368	175	Annual	5.8	61.9	3.6	518
LMU 1A									
LMU 2	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	175	Annual	5.8	50.0	2.9	113
LMU 3									
LMU 4	97.0	Coastal graze 1 AU/1 ac, SG mod graze M	162	175	Annual	15.0	100.0	15	1455
LMU 4A									
LMU 5	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	174	175	Annual	15.0	100.0	15	585
LMU 5A									
LMU 6									
LMU 7	16.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	175	Annual	5.8	50.0	2.9	46
LMU 7A									
LMU 8	26.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	175	Annual	5.8	50.0	2.9	75
LMU 8A									
LMU 9	34.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	175	Annual	5.8	50.0	2.9	99
LMU 9A									
LMU 10	29.0	Coastal graze 1 AU/1 ac, SG mod graze M	290	175	Annual	5.8	50.0	2.9	84
LMU 10A									
LMU 11	42.0	Coastal graze 1 AU/1 ac, SG mod graze M	144	175	Annual	15.0	100.0	15	630
LMU 12	24.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	175	Annual	5.8	50.0	2.9	70
LMU 12A									
LMU 13									
LMU 14									
								Total Effluent This Page	3676

Printed on: 8/12/24 2:48 PM

Plan is based on: 590 Organic Nutrient Management Plan

Available Water Capacity Entries

Printed on: 8/12/24 2:48 PM Plan is based on: 590 Organic Nutrient Management Pla Permit #: WQ0003190000

LMU or Fields receiving Effluent	Texture of the soil layer within the upper 24 inches of the soil profile that has the lowest permeability (Don't Abbreviate)	Depth of First Layer (inches)		AWC of First Layer (in/in)		Depth of Second Layer (inches)		AWC of Second Layer (in/in)		Depth of Third Layer (inches)		AWC of Third Layer (in/in)		Depth of Fourth Layer (inches)		AWC of Fourth Layer (in/in)		Available Water Holding Capacity (AWC) of the upper 24 inches of the soil profile (Inches)
	EXAMPLE ENTRIES	0	3	0.12	0.2	3	14	0.16	0.21	14	18	0.08	0.12	18	24	0	0	
	Enter Data for the top 24" only																	
LMU 1	Gravelly clay loam	0	5	0.14	0.16	5	20	0	0	20	24	0	0	24				0.75
LMU 2	Find Sandy Loam	0	12	0.1	0.15	12	51	0.05	0.17	51				0				2.82
LMU 4	Fine Sand	0	10	0.05	0.09	10	24	0.12	0.17	24				0				2.73
LMU 5	Clay Loam	0	14	0.15	0.2	14	40	0.12	0.2	40				0				4.05
LMU 7	Stony Clay	0	8	0.11	0.2	8	12	0.08	0.18	12	14	0.04	0.07	14	24	0	0	1.87
LMU 8	Clay Loam	0	14	0.15	0.2	14	40	0.12	0.2	40				0				4.05
LMU 9	Fine Sandy Loam	0	12	0.11	0.17	12	50	0.12	0.18	50				0				3.48
LMU 10	Fine Sandy Loam	0	12	0.11	0.17	12	50	0.12	0.18	50				0				3.48
LMU 11	Fine Sandy Loam	0	12	0.11	0.17	12	50	0.12	0.18	50				0				3.48
LMU 12	Stony Clay	0	8	0.11	0.2	8	12	0.08	0.18	12	14	0.04	0.07	14	24	0	0	1.87

servi tech
6921 S. Bell • Amarillo, TX 79109
www.servitech.com

Phone: 806.677.0093
800.557.7509
Fax: 806.677.0329

Lab No: 3501

LABORATORY ANALYSIS REPORT

Report Date: 07/08/2024 01:08 pm

Send To: 6224	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118	Casey Johnson Casey Johnson Technical Director

Client Name:	DANCING CRANE DAIRY	**Received:**	06/11/2024
Sample ID:	RCS TD1	**Sampled:**	06/04/2024
		Invoice No:	425753
		P.O. #:	RICHARD GEORGE

	Analysis results		lbs/acre-in	meq/L
NUTRIENTS				
Nitrogen				
Total Nitrogen	147	ppm	33	10.5
Organic Nitrogen	41	ppm	9	2.9
Ammonium Nitrogen	106.3	ppm	24	7.6
Nitrate+Nitrite Nitrogen	<0.20	ppm	0	0
Major and Secondary Nutrients				
Phosphorus	30	ppm		
Phosphorus as P2O5	70	ppm	16	
Potassium	240	ppm		6.1
Potassium as K2O	290	ppm	66	
OTHER PROPERTIES				
Moisture	99.8	%		
Total Solids	0.2	%	453	
Organic Matter	0.1	%	227	
Ash	<0.10	%		
C:N Ratio	3.9	ratio		

Amended Report - Any information on this report supersedes the previous report on 06/26/2024

ENVIRO-AG ENGINEERING, INC.
EAE
AMARILLO STEPHENVILLE ARTESIA
Enviro-Ag Engineering, Inc.
3404 Airway Blvd,. Amarillo, TX 79118
Tel. 806-353-6123 Fax 806-353-4132

WASTEWATER CHAIN OF CUSTODY RECORD

Producer/Facility: Dancing Crane Dairy

County: Erath

Date Sampled: 6/4/2024

Date Shipped: 6/10/2024

Project Manager: Richard George

Sample Type	Sample ID	Number of Containers	Test Package	Proper Preservation	Matrix
Wastewater	RCS #TD1	2 3501	EAE TX CO KS LAGOON	Y	OT
Wastewater	RCS #TS1	2 3502	EAE TX CO KS LAGOON	Y	OT
Wastewater	RCS #TS2	2 3503	EAE TX CO KS LAGOON	Y	OT
Wastewater	RCS #TH2	2 3504	EAE TX CO KS LAGOON	Y	OT

Relinquished By: Ref. Internal COC

Company: EAE

Relinquished By: Lisa Postmus

Company: EAE

Date/Time: 6/11

Received By: [signature]

Relinquished By:

Company: ServiTech Lab

6.7/6.7

servi tech
6921 S. Bell • Amarillo, TX 79109
www.servitech.com

Phone: 806.677.0093
800.557.7509
Fax: 806.677.0329

Lab No.: **3500**

LABORATORY ANALYSIS REPORT

Report Date: 06/26/2024 09:21 pm

Send To: 6224

ENVIRO-AG ENGINEERING INC
3404 AIRWAY BLVD
AMARILLO, TX 79118

Amy Meier

Amy Meier
Data Review Coordinator

Results For: DANCING CRANE DAIRY
Sample ID: SLURRY

Received: 06/11/2024
Sampled: 06/04/2024
Invoice No: 425753
P.O. #: RICHARD GEORGE

		Analysis (dry basis)	Analysis (as rec'd)	Total content lbs per Acre-In	Total content lbs per 1000 gal	Estimated available first year* lbs per Acre-In	Estimated available first year* lbs per 1000 gal
NUTRIENTS							
Nitrogen							
Total Nitrogen	%	2.904	0.151	6583.0	13.6	194.5	7.7
Organic Nitrogen	%	2.231	0.116	5057.2	10.4	115.2	4.6
Ammonium Nitrogen	%	0.673	0.035	1525.9	3.1	79.3	3.1
Nitrate+Nitrite Nitrogen	%	<0.0010	<0.0010	0	<0.1	<0.1	<0.1
Major and Secondary Nutrients							
Phosphorus	%	0.308	0.016				
Phosphorus as P2O5	%	0.712	0.037	1613.1	3.3	75.5	3.0
Potassium	%	3.75	0.195				
Potassium as K2O	%	4.50	0.234	10202	21.1	530.5	21.1
OTHER PROPERTIES							
Moisture	%		94.8				
Total Solids	%		5.2	226700	468		
Organic Matter	%	53.8	2.8	122069	252		
Ash	%		2.4		216		
C:N Ratio	ratio		10.8				
Density	lbs/gal	155.8	8.1				

* Assumes 44% of organic nitrogen available during first crop year after application. Assumes 100% of ammonium and nitrate nitrogen available, but should be adjusted for potential field losses at application site.

ENVIRO-AG ENGINEERING, INC
EAE
AMARILLO STEPHENVILLE ARTESIA

Enviro-Ag Engineering, Inc.
3404 Airway Blvd., Amarillo, TX 79118
Tel. 806-353-6123 Fax 806-353-4132

MANURE CHAIN OF CUSTODY RECORD

Producer/Facility: Dancing Crane Dairy

County: Erath

Date Sampled: 6/4/2024

Date Shipped: 6/10/2024

Project Manager: Richard George

Sample Type	Sample ID	Number of Containers	Test Package	Proper Preservation	Matrix
Slurry	Slurry	1	3500 EAE TX CO KS SLURRY	Y	SL

Relinquished By: Ref. Internal COC
Company: EAE

Relinquished By: Lisa Postmus
Company: EAE
Date/Time: 6/11
Received By: [signature]

Relinquished By:
Company: ServiTech Lab
6.7.16.7

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 5, 2023

CERTIFIED MAIL 7022 2410 0000 5131 6677
RETURN RECEIPT REQUESTED

Klaas Talsma, and Anastasia Talsma, Owner
Dancing Crane Dairy
3502 County Road 209
Hico, Texas 76457

Re: Annual Soil Sample Analysis Results at Dancing Crane Dairy
CAFO Permit No.: WQ0003190000

Dear Mr. and Ms. Talsma:

Attached are the analytical results for the soil samples that were collected at your facility on March 7 and 8, 2023. A copy of the sampling map is attached. Please utilize these results to update your nutrient management plan.

In addition, if any of the results are greater than 200 parts per million for phosphorus, please develop a new nutrient utilization plan (NUP) or revise your existing NUP, in accordance with your permit. All new or revised NUPs that are required to be submitted for TCEQ review and approval shall be mailed to the following address:

Water Quality Assessment Section Manager
Water Quality Division, MC 150
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

If you collected a duplicate sample following RG-408 protocol during the TCEQ sampling event that indicates a significant difference in the TCEQ analysis results (greater than 20% difference), you may choose to dispute the TCEQ sample results within 20 calendar days from the date of this letter. You must provide copies of all supporting documentation, including but not limited to your sample results, chain of custody documentation and laboratory quality assurance documentation. Please submit this information in writing to the TCEQ at the following address:

ATTN: Annual CAFO Soil Sample Analysis Disputes
Water Section Manager
Dallas/Fort Worth Regional Office
Texas Commission on Environmental Quality
2309 Gravel Drive
Fort Worth, TX 76118-6951

An analysis dispute received after the time allocated above will not be eligible for re-analysis. If you have any questions, please feel free to contact Mr. Michael Martin in the Stephenville Office at 254-552-1900.

Sincerely,

Michael Martin, Team Leader, Water Section
DFW Region Office
Texas Commission on Environmental Quality

MM/dm

Enclosures: Laboratory Analysis Reports

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55637

Location: Dancing Crane
(Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
	-01									See RFA	LMU TD1 (0-2)
	-02										LMU TD1 (2-6)
	-03										LMU TD1 (6-24)
	-04										LMU TD2 (0-2)
	-05										LMU TD2 (2-6)
	-06										LMU TD2 (6-24)
12664	-07	3/8/23	0920								LMU TD3 (0-2)
12665	-08	3/8/23	0920								LMU TD3 (2-6)
12666	-09	3/8/23	0920								LMU TD3 (6-24)
12667	-10	3/8/23	0945								LMU TD4 (0-2)

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	3/15/23	1000	3-16-23

Shipper name: Fed Ex

Shipper Number: 7715 6006 2786

For Laboratory Use:

Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055637a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055637

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12664	55637-07	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12665	55637-08	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12666	55637-09	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12667	55637-10	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055637a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055637

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12664	55637-07	217	ppm	389	ppm	3796	ppm	276	ppm	46.1	ppm	12.7	ppm
12665	55637-08	175	ppm	407	ppm	4633	ppm	255	ppm	43.4	ppm	23.8	ppm
12666	55637-09	30.0	ppm	303	ppm	8000	ppm	340	ppm	70.7	ppm	74.9	ppm
12667	55637-10	277	ppm	402	ppm	5139	ppm	323	ppm	51.4	ppm	15.2	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12664	55637-07	5/3/2023	FMR	5/4/2023	JLP
12665	55637-08	5/3/2023	FMR	5/4/2023	JLP
12666	55637-09	5/3/2023	FMR	5/4/2023	JLP
12667	55637-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055637a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055637

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12664	55637-07	7.36	NA	0.103	dS/M	11.213	ppm
12665	55637-08	7.42	NA	0.093	dS/M	8.966	ppm
12666	55637-09	7.69	NA	0.112	dS/M	15.197	ppm
12667	55637-10	7.23	NA	0.285	dS/M	41.59	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12664	55637-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12665	55637-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12666	55637-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12667	55637-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055637a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055637

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055637a-45068 Print Date: 22-May-23

Quality Control Report

TCEQ COC# 055637

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55637	
Sample ID: 07 - 10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55638

Location: Dancing Crane
(Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12668	-01	3/8/23	0945							See RFA	LMU TD4 (2-6)
12669	-02	3/8/23	0945								LMU TD4 (6-24)
12670	-03	3/7/23	11:00								LMU TD 6 (0-2)
12671	-04	3/7/23	11:00								LMU TD6 (2-6)
12672	-05	3/7/23	11:00								LMU TD6 (6-24)
~~12673~~	-06 TG										LMU TD7 (0-6)
~~12674~~	-07										LMU TD7 (6-24)
12673	-08	3-7-21	11:15								LMU TH1 (0-2)
12674	-09	3-7-21	11:15								LMU TH1 (2-6)
12675	-10	3-7-21	11:15								LMU TH1 (6-24)

Relinquished by:	Date	Time	Received by:	
Vanessa Gardner	3/10/23	1000	[signature] 3-16-23	
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date	Time	Received by:	
Shipper name: Fed Ex	Shipper Number: 7715 6006 2786			

For Laboratory Use:			
Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055638a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055638

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12668	55638-01	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12669	55638-02	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12670	55638-03	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12671	55638-04	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12672	55638-05	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12673	55638-08	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12674	55638-09	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12675	55638-10	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055638a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055638

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12668	55638-01	197	ppm	461	ppm	5343	ppm	314	ppm	52.3	ppm	37.4	ppm
12669	55638-02	21.9	ppm	323	ppm	9590	ppm	257	ppm	82.5	ppm	59.7	ppm
12670	55638-03	206	ppm	425	ppm	7432	ppm	337	ppm	66.1	ppm	36.3	ppm
12671	55638-04	207	ppm	570	ppm	7875	ppm	384	ppm	69.7	ppm	54.9	ppm
12672	55638-05	33.4	ppm	250	ppm	9694	ppm	286	ppm	80.2	ppm	86.6	ppm
12673	55638-08	174	ppm	675	ppm	4593	ppm	288	ppm	51.2	ppm	18.5	ppm
12674	55638-09	112	ppm	619	ppm	4837	ppm	248	ppm	49.2	ppm	21.9	ppm
12675	55638-10	20.3	ppm	582	ppm	8287	ppm	311	ppm	74.8	ppm	68.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12668	55638-01	5/3/2023	FMR	5/4/2023	JLP
12669	55638-02	5/3/2023	FMR	5/4/2023	JLP
12670	55638-03	5/3/2023	FMR	5/4/2023	JLP
12671	55638-04	5/3/2023	FMR	5/4/2023	JLP
12672	55638-05	5/3/2023	FMR	5/4/2023	JLP
12673	55638-08	5/3/2023	FMR	5/4/2023	JLP
12674	55638-09	5/3/2023	FMR	5/4/2023	JLP
12675	55638-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055638a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055638

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12668	55638-01	7.74	NA	0.138	dS/M	9.146	ppm
12669	55638-02	7.82	NA	0.166	dS/M	13.059	ppm
12670	55638-03	7.07	NA	0.427	dS/M	67.826	ppm
12671	55638-04	7.58	NA	0.12	dS/M	13.348	ppm
12672	55638-05	7.85	NA	0.124	dS/M	13.88	ppm
12673	55638-08	7.24	NA	0.198	dS/M	34.496	ppm
12674	55638-09	7.72	NA	0.109	dS/M	10.501	ppm
12675	55638-10	7.76	NA	0.122	dS/M	14.403	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12668	55638-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12669	55638-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12670	55638-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12671	55638-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12672	55638-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12673	55638-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12674	55638-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12675	55638-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055638a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055638

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055638a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055638

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55638	
Sample ID: 01-050, 08-10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

B

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55639

Location: Dancing Crane (Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12642	-01	3-7-23	12:15							See RFA	LMU TH2 (0-2)
12643	-02		12:15								LMU TH2 (2-6)
12644	-03		12:15								LMU TH2 6-24
12645	-04		10:35								LMU TH3 (0-2)
12646	-05		10:35								LMU TH3 (2-6)
12647	-06		10:35								LMU TH3 (6-24)
12648	-07		12:55								LMU TH4E (0-2)
12649	-08		12:55								LMU TH4E (2-6)
12650	-09		12:55								LMU TH4E (6-24)
12651	-10		1:00								LMU TH4W (0-2)

Relinquished by:	Date	Time	Received by:	For Laboratory Use:			
Vanessa Gardner	3/15/23	1000	3-16-23				
Relinquished by:	Date	Time	Received by:	Received on ice:	Y	N	deg. C
Relinquished by:	Date	Time	Received by:	Preservatives:	Y	N	
Relinquished by:	Date	Time	Received by:	COC Seal:	Y	N	
Shipper name: Fed Ex	Shipper Number: 7715 6006 3120			Seals Intact:	Y	N	

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055639a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055639

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12642	55639-01	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12643	55639-02	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12644	55639-03	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12645	55639-04	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12646	55639-05	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12647	55639-06	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12648	55639-07	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12649	55639-08	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12650	55639-09	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12651	55639-10	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055639a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055639

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12642	55639-01	268	ppm	394	ppm	3956	ppm	332	ppm	39.6	ppm	24.7	ppm
12643	55639-02	299	ppm	526	ppm	4712	ppm	299	ppm	43.9	ppm	39.6	ppm
12644	55639-03	34.3	ppm	312	ppm	8572	ppm	316	ppm	59.5	ppm	41.5	ppm
12645	55639-04	362	ppm	681	ppm	8271	ppm	474	ppm	67.8	ppm	28.3	ppm
12646	55639-05	288	ppm	759	ppm	7237	ppm	438	ppm	59.4	ppm	41.5	ppm
12647	55639-06	30.8	ppm	314	ppm	14292	ppm	288	ppm	91.8	ppm	59.6	ppm
12648	55639-07	151	ppm	274	ppm	1858	ppm	216	ppm	25.3	ppm	8.67	ppm
12649	55639-08	83.7	ppm	201	ppm	1471	ppm	134	ppm	19.0	ppm	12.5	ppm
12650	55639-09	7.44	ppm	189	ppm	2401	ppm	263	ppm	24.0	ppm	33.8	ppm
12651	55639-10	219	ppm	305	ppm	3578	ppm	320	ppm	35.5	ppm	20.2	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12642	55639-01	5/3/2023	FMR	5/4/2023	JLP
12643	55639-02	5/3/2023	FMR	5/4/2023	JLP
12644	55639-03	5/3/2023	FMR	5/4/2023	JLP
12645	55639-04	5/3/2023	FMR	5/4/2023	JLP
12646	55639-05	5/3/2023	FMR	5/4/2023	JLP
12647	55639-06	5/3/2023	FMR	5/4/2023	JLP
12648	55639-07	5/3/2023	FMR	5/4/2023	JLP
12649	55639-08	5/3/2023	FMR	5/4/2023	JLP
12650	55639-09	5/3/2023	FMR	5/4/2023	JLP
12651	55639-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055639a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055639

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12642	55639-01	7.17	NA	0.186	dS/M	54.696	ppm
12643	55639-02	7.6	NA	0.103	dS/M	17.329	ppm
12644	55639-03	7.76	NA	0.087	dS/M	13.21	ppm
12645	55639-04	7.27	NA	0.22	dS/M	71.701	ppm
12646	55639-05	7.6	NA	0.15	dS/M	27.677	ppm
12647	55639-06	7.89	NA	0.212	dS/M	27.896	ppm
12648	55639-07	6.96	NA	0.134	dS/M	26.874	ppm
12649	55639-08	7.42	NA	0.085	dS/M	7.144	ppm
12650	55639-09	7.62	NA	0.087	dS/M	7.312	ppm
12651	55639-10	7.02	NA	0.161	dS/M	37.898	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12642	55639-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12643	55639-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12644	55639-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12645	55639-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12646	55639-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12647	55639-06	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12648	55639-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12649	55639-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12650	55639-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12651	55639-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055639a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055639

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12659	IC927	43.4	ppm	292	ppm	2101	ppm	333	ppm	36.4	ppm	42.3	ppm
12660	IC928	43.3	ppm	284	ppm	2052	ppm	324	ppm	36.1	ppm	41.5	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk199	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC927	5/3/2023	FMR	5/4/2023	JLP
IC928	5/3/2023	FMR	5/4/2023	JLP
blk199	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055639a-45068 Print Date: 22-May-23

Quality Control Report

TCEQ COC# 055639

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12659	IC927	5.9	na	0.25	dS/M	5.897	ppm	
12660	IC928	5.8	na	0.25	dS/M	5.759	ppm	
	Mean IC	5.845	na	0.25	dS/M	5.828	ppm	
12660spike	Spiked sample	-	-	-	-	4.3	ppm	67
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk199	-	na	0	dS/M	-0.23	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep Date	pH/Conductivity prep Tech	pH Analysis Date	pH Analysis Tech	Conductivity Date	Conductivity Tech	Nitate-N Extract Date	Nitate-N Extract Tech	Nitrate-N Analysis Date	Nitrate-N Analysis Tech
IC927	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC928	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk199	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55639	
Sample ID: 01-10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

B

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55640

Location: Dancing Crane
(Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12652	-01	3-7-23	1:00							see RFA	LMU TH4W (2-6)
12653	-02		1:00								LMU TH4W (6-24)
12654	-03		11:49								LMU TH5 (0-2)
12655	-04		11:45								LMU TH5 (2-6)
12656	-05		11:45								LMU TH5 (6-24)
12657	-06		12:25								LMU TH6 (0-2)
12658	-07		12:25								LMU TH6 (2-6)
12661	-08		12:25								LMU TH6 (6-24)
12662	-09		11:46								LMU TH7 (0-6)
12663	-10		11:46								LMU TH7 (6-24)

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	3/6/23	1000	3.16-23

Shipper name: Fed Ex

Shipper Number: 7715 6006 3120

For Laboratory Use:

Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055640a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12652	55640-01	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12653	55640-02	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12654	55640-03	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12655	55640-04	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12656	55640-05	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12657	55640-06	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12658	55640-07	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055640a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12652	55640-01	169	ppm	339	ppm	3432	ppm	265	ppm	33.9	ppm	33.4	ppm
12653	55640-02	20.2	ppm	241	ppm	6714	ppm	310	ppm	56.1	ppm	112	ppm
12654	55640-03	139	ppm	258	ppm	3456	ppm	235	ppm	36.4	ppm	14.5	ppm
12655	55640-04	93.3	ppm	225	ppm	3251	ppm	171	ppm	33.4	ppm	17.9	ppm
12656	55640-05	6.03	ppm	206	ppm	8106	ppm	318	ppm	70.9	ppm	50.0	ppm
12657	55640-06	162	ppm	286	ppm	2548	ppm	252	ppm	32.4	ppm	13.8	ppm
12658	55640-07	73.6	ppm	241	ppm	2183	ppm	188	ppm	27.3	ppm	23.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12652	55640-01	5/3/2023	FMR	5/4/2023	JLP
12653	55640-02	5/3/2023	FMR	5/4/2023	JLP
12654	55640-03	5/3/2023	FMR	5/4/2023	JLP
12655	55640-04	5/3/2023	FMR	5/4/2023	JLP
12656	55640-05	5/3/2023	FMR	5/4/2023	JLP
12657	55640-06	5/3/2023	FMR	5/4/2023	JLP
12658	55640-07	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12652	55640-01	7.29	NA	0.078	dS/M	11.302	ppm
12653	55640-02	7.78	NA	0.101	dS/M	15.649	ppm
12654	55640-03	6.85	NA	0.132	dS/M	35.766	ppm
12655	55640-04	7.05	NA	0.091	dS/M	9.181	ppm
12656	55640-05	7.22	NA	0.122	dS/M	11.718	ppm
12657	55640-06	6.86	NA	0.26	dS/M	41.433	ppm
12658	55640-07	7.13	NA	0.128	dS/M	10.245	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12652	55640-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12653	55640-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12654	55640-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12655	55640-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12656	55640-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12657	55640-06	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12658	55640-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055640a-45068 Print Date: 22-May-23
Quality Control Report TCEQ COC# 055640

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12659	IC927	43.4	ppm	292	ppm	2101	ppm	333	ppm	36.4	ppm	42.3	ppm
12660	IC928	43.3	ppm	284	ppm	2052	ppm	324	ppm	36.1	ppm	41.5	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk199	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC927	5/3/2023	FMR	5/4/2023	JLP
IC928	5/3/2023	FMR	5/4/2023	JLP
blk199	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055640

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12659	IC927	5.9	na	0.25	dS/M	5.897	ppm	
12660	IC928	5.8	na	0.25	dS/M	5.759	ppm	
	Mean IC	5.845	na	0.25	dS/M	5.828	ppm	
12660spike	Spiked sample	-	-	-	-	4.3	ppm	67
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk199	-	na	0	dS/M	-0.23	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC927	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC928	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk199	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055640b-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12661	55640-08	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12662	55640-09	0-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12663	55640-10	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses N03-N EXTRACTION - SWFTL0014R5.SOP/N03-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055640b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12661	55640-08	4.58	ppm	249	ppm	6999	ppm	333	ppm	62.1	ppm	135	ppm
12662	55640-09	201	ppm	515	ppm	15074	ppm	325	ppm	116	ppm	33.9	ppm
12663	55640-10	48.9	ppm	335	ppm	9950	ppm	205	ppm	83.0	ppm	26.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12661	55640-08	5/3/2023	FMR	5/4/2023	JLP
12662	55640-09	5/3/2023	FMR	5/4/2023	JLP
12663	55640-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12661	55640-08	7.56	NA	0.148	dS/M	6.382	ppm
12662	55640-09	7.5	NA	0.175	dS/M	34.355	ppm
12663	55640-10	7.86	NA	0.117	dS/M	9.108	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12661	55640-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12662	55640-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12663	55640-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055640b-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055640

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640b-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055640

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55640	
Sample ID: 01-10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55641 2

Location: Dancing Crane (Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond	Analyses Requested	REMARKS
12676	-01	3-7-23	9:46							See RFA	LMU TH8 (0-6)
12677	-02	3-7-23	9:46								LMU TH8 (6-24)
12678	-03	3/8/23	1100								LMU TS1 (0-2)
12681	-04	3/8/23	1100								LMU TS1 (2-6)
12682	-05	3/8/23	1100								LMU TS1 (6-24)
12683	-06	3/8/23	1030								LMU TS2 (0-2)
12684	-07	3/8/23	1030								LMU TS2 (2-6)
12685	-08	3/8/23	1030								LMU TS2 (6-24)
12686	-09	3/8/23	1145								LMU TS4 (0-2)
12687	-10	3/8/23	1145								LMU TS4 (2-6)

Relinquished by:	Date	Time	Received by:	For Laboratory Use:
Vanessa Gardner	3/15/23	1000	3-16-23	
Relinquished by:	Date	Time	Received by:	Received on ice: Y N deg. C
Relinquished by:	Date	Time	Received by:	Preservatives: Y N
Relinquished by:	Date	Time	Received by:	COC Seal: Y N
Shipper name: FedEx	Shipper Number: 7715 6006 3109			Seals Intact: Y N

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055641a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12676	55641-01	0-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12677	55641-02	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12678	55641-03	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055641a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12676	55641-01	25.9	ppm	160	ppm	2579	ppm	137	ppm	36.1	ppm	16.2	ppm
12677	55641-02	0.421	ppm	174	ppm	6409	ppm	334	ppm	67.1	ppm	208	ppm
12678	55641-03	290	ppm	677	ppm	2684	ppm	482	ppm	48.3	ppm	74.5	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12676	55641-01	5/3/2023	FMR	5/4/2023	JLP
12677	55641-02	5/3/2023	FMR	5/4/2023	JLP
12678	55641-03	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055641a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12676	55641-01	6.64	NA	0.095	dS/M	13.399	ppm
12677	55641-02	7.68	NA	0.214	dS/M	2.799	ppm
12678	55641-03	7.56	NA	0.33	dS/M	19.252	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12676	55641-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12677	55641-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12678	55641-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055641a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055641

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055641a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055641

Laboratory ID:		pH	pH	Conducitity	Conducitity	Nitrate-N	Nitrate-N	Nitrate-N
			units	conc.	units	conc.	units	% recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH	Conducitity	Conducitity	Nitrate-N	Nitrate-N
		units	conc.	units	conc.	units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055641b-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12681	55641-04	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12682	55641-05	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12683	55641-06	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12684	55641-07	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12685	55641-08	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12686	55641-09	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12687	55641-10	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055641b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12681	55641-04	246	ppm	652	ppm	3053	ppm	374	ppm	46.2	ppm	72.1	ppm
12682	55641-05	54.2	ppm	703	ppm	5801	ppm	523	ppm	62.6	ppm	315	ppm
12683	55641-06	144	ppm	495	ppm	2965	ppm	312	ppm	53.7	ppm	91.6	ppm
12684	55641-07	113	ppm	292	ppm	2745	ppm	196	ppm	46.3	ppm	51.6	ppm
12685	55641-08	26.4	ppm	158	ppm	6039	ppm	233	ppm	57.5	ppm	117	ppm
12686	55641-09	356	ppm	336	ppm	3499	ppm	340	ppm	61.2	ppm	23.9	ppm
12687	55641-10	311	ppm	463	ppm	4830	ppm	325	ppm	52.7	ppm	39.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12681	55641-04	5/9/2023	DEC	5/9/2023	JLP
12682	55641-05	5/9/2023	DEC	5/9/2023	JLP
12683	55641-06	5/9/2023	DEC	5/9/2023	JLP
12684	55641-07	5/9/2023	DEC	5/9/2023	JLP
12685	55641-08	5/9/2023	DEC	5/9/2023	JLP
12686	55641-09	5/9/2023	DEC	5/9/2023	JLP
12687	55641-10	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055641b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12681	55641-04	7.72	NA	0.131	dS/M	3.747	ppm
12682	55641-05	8.22	NA	0.136	dS/M	12.495	ppm
12683	55641-06	7.1	NA	0.199	dS/M	36.617	ppm
12684	55641-07	7.1	NA	0.095	dS/M	7.259	ppm
12685	55641-08	7.6	NA	0.094	dS/M	8.904	ppm
12686	55641-09	6.79	NA	0.217	dS/M	22.616	ppm
12687	55641-10	7.35	NA	0.185	dS/M	2.752	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12681	55641-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12682	55641-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12683	55641-06	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12684	55641-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12685	55641-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12686	55641-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12687	55641-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055641b-45068 Print Date: 22-May-23
Quality Control Report TCEQ COC# 055641

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12699	IC931	50.5	ppm	292	ppm	2018	ppm	327	ppm	40.1	ppm	46.3	ppm
12700	IC932	50.5	ppm	293	ppm	2017	ppm	331	ppm	39.8	ppm	47.8	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk201	<0.0245	ppm	<0.135	ppm	0.296	ppm	<0.0870	ppm	0.411	ppm	0.461	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC931	5/9/2023	DEC	5/9/2023	JLP
IC932	5/9/2023	DEC	5/9/2023	JLP
blk201	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055641b-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055641

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12699	IC931	5.9	na	0.253	dS/M	6.069	ppm	
12700	IC932	5.9	na	0.25	dS/M	5.313	ppm	
	Mean IC	5.855	na	0.2515	dS/M	5.691	ppm	
12700spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk201	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC931	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC932	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk201	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55641	
Sample ID: 01-10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55642 2

Location: Dancing Crane
(Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID: | Sampler: (signature) Vanessa Gardner | Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12688	-01	3/8/23	1145							See RFA	LMUT54 (6-24)
12689	-02	3/8/23	~~12~~ 1210								LMUT55 (0-2)
12690	-03	3/8/23	1210								LMUT55 (2-6)
12691	-04	3/8/23	1210								LMUT55 (6-24)
	-05										
	-06										
	-07										
	-08										
	-09										
	-10										

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	3/15/23	1000	3-16-23
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:

Shipper name: Fed Ex | Shipper Number: 7715 6006 3109

For Laboratory Use:			
Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055642a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055642

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12688	55642-01	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12689	55642-02	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12690	55642-03	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12691	55642-04	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055642a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055642

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12688	55642-01	71.8	ppm	416	ppm	6396	ppm	452	ppm	66.1	ppm	232	ppm
12689	55642-02	461	ppm	763	ppm	6492	ppm	399	ppm	83.2	ppm	28.4	ppm
12690	55642-03	355	ppm	606	ppm	6664	ppm	408	ppm	86.2	ppm	39.7	ppm
12691	55642-04	54.4	ppm	368	ppm	9894	ppm	397	ppm	96.2	ppm	107	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12688	55642-01	5/9/2023	DEC	5/9/2023	JLP
12689	55642-02	5/9/2023	DEC	5/9/2023	JLP
12690	55642-03	5/9/2023	DEC	5/9/2023	JLP
12691	55642-04	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055642a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055642

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12688	55642-01	7.87	NA	0.105	dS/M	15.162	ppm
12689	55642-02	7.32	NA	0.239	dS/M	34.733	ppm
12690	55642-03	7.49	NA	0.285	dS/M	16.827	ppm
12691	55642-04	7.84	NA	0.172	dS/M	32.467	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12688	55642-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12689	55642-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12690	55642-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12691	55642-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055642a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055642

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12699	IC931	50.5	ppm	292	ppm	2018	ppm	327	ppm	40.1	ppm	46.3	ppm
12700	IC932	50.5	ppm	293	ppm	2017	ppm	331	ppm	39.8	ppm	47.8	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk201	<0.0245	ppm	<0.135	ppm	0.296	ppm	<0.0870	ppm	0.411	ppm	0.461	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC931	5/9/2023	DEC	5/9/2023	JLP
IC932	5/9/2023	DEC	5/9/2023	JLP
blk201	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055642a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055642

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12699	IC931	5.9	na	0.253	dS/M	6.069	ppm	
12700	IC932	5.9	na	0.25	dS/M	5.313	ppm	
	Mean IC	5.855	na	0.2515	dS/M	5.691	ppm	
12700spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk201	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC931	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC932	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk201	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55642	
Sample ID: 01 - 04	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

Dancing Crane Dairy3502 CR 209, Hico, TX 76457**Oct. 26, 2018 Permit**

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the TCEQ Region 4 Stephenville Office at 254-552-1900.

Dancing Crane Dairy**LMU TH 8**Oct. 26, 2018 Permit

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the TCEQ Region 4 Stephenville Office at 254-552-1900.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 27, 2023

CERTIFIED MAIL 7022 2410 0000 5131 6745
RETURN RECEIPT REQUESTED
Mr. Klass Talsma, and Ms. Anastasia Talsma,, Owner
Dancing Crane Dairy
7469 County Road 209
Hico, Texas 76457

Re: Annual Soil Sample Analysis Results at Dancing Crane Dairy
CAFO Permit No.: WQ0003190000

Dear Mr. Talsma, and Ms. Talsma:

Attached are the analytical results for the soil samples that were collected at your facility on March 27, 2023. A copy of the sampling map is attached. Please utilize these results to update your nutrient management plan.

In addition, if any of the results are greater than 200 parts per million for phosphorus, please develop a new nutrient utilization plan (NUP) or revise your existing NUP, in accordance with your permit. All new or revised NUPs that are required to be submitted for TCEQ review and approval shall be mailed to the following address:

Water Quality Assessment Section Manager
Water Quality Division, MC 150
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

If you collected a duplicate sample following RG-408 protocol during the TCEQ sampling event that indicates a significant difference in the TCEQ analysis results (greater than 20% difference), you may choose to dispute the TCEQ sample results within 20 calendar days from the date of this letter. You must provide copies of all supporting documentation, including but not limited to your sample results, chain of custody documentation and laboratory quality assurance documentation. Please submit this information in writing to the TCEQ at the following address:

ATTN: Annual CAFO Soil Sample Analysis Disputes
Water Section Manager
Dallas/Fort Worth Regional Office
Texas Commission on Environmental Quality
2309 Gravel Drive
Fort Worth, TX 76118-6951

An analysis dispute received after the time allocated above will not be eligible for re-analysis. If you have any questions, please feel free to contact Mr. Michael Martin in the Stephenville Office at 254-552-1900.

Sincerely,

Michael Martin, Team Leader, Water Section
DFW Region Office
Texas Commission on Environmental Quality

MM/dm

Enclosures: Laboratory Analysis Reports

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55661

Location: Dancing Crane (Do not fill in this shaded area if the facility information must be confidential)

Permit #: WQ 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12696	-01	3/27/23	1130								TD 1 (0-2)
12697	-02	3/27/23	1130								TD 1 (2-6)
12698	-03	3/27/23	1130								TD 1 (6-24)
12701	-04	3/27/23	1201								TD 2 (0-2)
12702	-05	3/27/23	1201								TD 2 (2-6)
12703	-06	3/27/23	1201								TD 2 (6-24)
12704	-07	3/27/23	1045								TD 7 (0-2)
12705	-08	3/27/23	1045								TD 7 (6-24)
12706	-09	3/27/23	1045								TD 7 (2-6)
	-10										

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	4/24/23	1000	[illegible signature] 4-25-23
Relinquished by:	Date	Time	Received by: [illegible signature]
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Shipper name: FedEx	Shipper Number: 7719 3792 3227		

For Laboratory Use:			
Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055661a-45091
Print Date: 14-Jun-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12696	55661-01	0-2	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12697	55661-02	2-6	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12698	55661-03	6-24	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055661a-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12696	55661-01	368	ppm	1636	ppm	5635	ppm	901	ppm	60.0	ppm	167	ppm
12697	55661-02	133	ppm	1757	ppm	7589	ppm	840	ppm	68.9	ppm	303	ppm
12698	55661-03	13.2	ppm	991	ppm	11442	ppm	496	ppm	82.4	ppm	445	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12696	55661-01	5/30/2023	FMR	5/30/2023	JLP
12697	55661-02	5/30/2023	FMR	5/30/2023	JLP
12698	55661-03	5/30/2023	FMR	5/30/2023	JLP

Report ID: 055661a-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12696	55661-01	7.65	NA	0.485	dS/M	84.166	ppm
12697	55661-02	7.95	NA	0.202	dS/M	18.255	ppm
12698	55661-03	7.84	NA	0.312	dS/M	29.708	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12696	55661-01	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12697	55661-02	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12698	55661-03	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

Report ID: 055661a-45091 Print Date: 14-Jun-23

Quality Control Report TCEQ COC# 055661

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12699	IC933	41.5	ppm	279	ppm	2039	ppm	315	ppm	32.6	ppm	40.1	ppm
12700	IC934	39.1	ppm	272	ppm	1981	ppm	309	ppm	31.0	ppm	39.4	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	39.0	ppm	265.0	ppm	1857.0	ppm	292.0	ppm	26.0	ppm	30.0	ppm
	IC Upper	47.1	ppm	310.0	ppm	2315.0	ppm	359.0	ppm	45.1	ppm	52.0	ppm
	blk202	-0.338	ppm	-0.979	ppm	-2.22	ppm	-0.503	ppm	0.293	ppm	-0.0438	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC933	5/30/2023	FMR	5/30/2023	JLP
IC934	5/30/2023	FMR	5/30/2023	JLP
blk202	5/30/2023	FMR	5/30/2023	JLP

Quality Control Report

TCEQ COC# 055661

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12699	IC933	5.8	na	0.251	dS/M	5.742	ppm	
12700	IC934	5.9	na	0.254	dS/M	5.032	ppm	
	Mean IC	5.84	na	0.2525	dS/M	5.387	ppm	
12700spike	Spiked sample	-	-	-	-	4.7	ppm	86.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk202	-	na	0	dS/M	-0.066	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC933	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
IC934	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
blk202	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055661b-45091
Print Date: 14-Jun-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12701	55661-04	0-2	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12702	55661-05	2-6	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12703	55661-06	6-24	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12704	55661-07	0-2	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12705	55661-08	2-6	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12706	55661-09	6-24	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055661b-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12701	55661-04	346	ppm	471	ppm	7539	ppm	370	ppm	55.6	ppm	31.2	ppm
12702	55661-05	303	ppm	932	ppm	7263	ppm	487	ppm	49.7	ppm	39.7	ppm
12703	55661-06	83.7	ppm	903	ppm	10287	ppm	418	ppm	62.0	ppm	52.7	ppm
12704	55661-07	137	ppm	356	ppm	3539	ppm	232	ppm	31.3	ppm	27.6	ppm
12705	55661-08	9.80	ppm	188	ppm	7060	ppm	228	ppm	48.5	ppm	83.2	ppm
12706	55661-09	86.7	ppm	308	ppm	4298	ppm	173	ppm	33.0	ppm	30.3	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12701	55661-04	5/30/2023	FMR	5/30/2023	JLP
12702	55661-05	5/30/2023	FMR	5/30/2023	JLP
12703	55661-06	5/30/2023	FMR	5/30/2023	JLP
12704	55661-07	5/30/2023	FMR	5/30/2023	JLP
12705	55661-08	5/30/2023	FMR	5/30/2023	JLP
12706	55661-09	5/30/2023	FMR	5/30/2023	JLP

Report ID: 055661b-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12701	55661-04	6.94	NA	0.228	dS/M	79.62	ppm
12702	55661-05	7.53	NA	0.097	dS/M	14.917	ppm
12703	55661-06	7.77	NA	0.106	dS/M	18.415	ppm
12704	55661-07	7.06	NA	0.106	dS/M	48.368	ppm
12705	55661-08	7.57	NA	0.095	dS/M	21.035	ppm
12706	55661-09	7.26	NA	0.061	dS/M	14.804	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12701	55661-04	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12702	55661-05	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12703	55661-06	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12704	55661-07	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12705	55661-08	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12706	55661-09	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

Report ID: 055661b-45091 Print Date: 14-Jun-23

Quality Control Report TCEQ COC# 055661

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12719	IC935	43.4	ppm	284	ppm	2054	ppm	323	ppm	34.4	ppm	42.0	ppm
12720	IC936	41.2	ppm	276	ppm	1993	ppm	315	ppm	33.6	ppm	40.3	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	39.0	ppm	265.0	ppm	1857.0	ppm	292.0	ppm	26.0	ppm	30.0	ppm
	IC Upper	47.1	ppm	310.0	ppm	2315.0	ppm	359.0	ppm	45.1	ppm	52.0	ppm
	blk202	-0.338	ppm	-0.979	ppm	-2.22	ppm	-0.503	ppm	0.293	ppm	-0.0438	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC935	5/30/2023	FMR	5/30/2023	JLP
IC936	5/30/2023	FMR	5/30/2023	JLP
blk202	5/30/2023	FMR	5/30/2023	JLP

Report ID: 055661b-45091 Print Date: 14-Jun-23

Quality Control Report

TCEQ COC# 055661

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12719	IC935	5.8	na	0.253	dS/M	5.134	ppm	
12720	IC936	5.8	na	0.252	dS/M	5.171	ppm	
	Mean IC	5.835	na	0.2525	dS/M	5.1525	ppm	
12720spike	Spiked sample	-	-	-	-	4.7	ppm	86.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk202	-	na	0	dS/M	-0.066	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC935	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
IC936	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
blk202	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

g Crane Dairy**3502 CR 209, Hico, TX 76457**Oct. 26, 2018

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been

Dancing Crane Dairy**LMU TH 8**Oct. 26, 2018 Permit

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only th

Attachment F

TCEQ STAFF CONTACT INFORMATION

TCEQ - BOSQUE 1255-1226 SOIL SAMPLES

Date: 27 MAR 2023 COC#: 55661

Should you need to contact TCEQ regarding this sample, please contact the following staff as appropriate:

Primary Contact	Investigator	Phone #	Email Address
	Vanessa Gardner	254-552-1903	Vanessa.Gardner@tceq.texas.gov
	Michael Martin	254-552-1901	Michael.Martin@tceq.texas.gov
	Cody Christian	254-552-1912	Cody.Christian@tceq.texas.gov
	Chris Pearson	254-552-1905	Chris.Pearson@tceq.texas.gov

If the primary investigator cannot be reached within one business day, the following persons may be contacted:

Michael Martin, Team Leader, Stephenville Off.	254-552-1901	Michael.Martin@tceq.texas.gov
Rebecca Stephens, Administrative Assistant	254-552-1900	Rebecca.Stephens@tceq.texas.gov
Jeff Tate, Water Section Manager, Dallas/Ft. Worth Regional Office	817-588-5875	Jeff.Tate@tceq.texas.gov
Cassandra Derrick, Project Manager, Field Operations Support Div., Austin Central Office	512-239-5304	Cassandra.Derrick@tceq.texas.gov

Mailing Addresses:

Stephenville Special Project Office 580-D W. Lingleville Rd. Stephenville , Texas 76401 Main: 254-552-1900 or 1-800-687-7078 Fax: 254-552-1922	**Dallas/Ft. Worth Regional Office** 2309 Gravel Drive Fort Worth, Texas 76118 Main: 817-588-5800 Fax: 817-588-5701

Waste Utilization and Nutrient Management Plan

TMC Dairies Hico
7469 CR 209
Hico, TX 76457

TCEQ Permit Number:
WQ0003190000

Owner
3T Martins Farm Hico, LLC
PO Box 599
Hico, TX 76457

Operator
TMC Dairies LLC
3105 Mesquite Rd
Dalhart, TX 79022-7635

Type of Organic Nutrient Management Plan:
Other AFO-CAFO Waste Plan
located in Erath County

Prepared By:

(Signature)
Richard George
Certified Nutrient Management Specialist
Certificate Number = TX201504
Expiration Date = December 31, 2024
Enviro-Ag Engineering
9855 FM 847
Dublin, TX 76446
(254) 233-9948

This plan is based on:
590 Organic Nutrient Management Plan V 5.0

8/12/24 4:33 PM

Executive Summary
Dancing Crane Dairy
WQ0003190000
Phase II NUP

LMU Summary:

All fields are established in coastal and small grains for perennial coverage.

Nutrient Summary:

The following is a summary of maximum allowed application rates.

LMU #	Max N Lb/ac Application Rates	Max P205 Lb/ac Application Rates	Planned N Lb/ac Application Rates	Planned P205 Lb/ac Application Rates
LMU 1	155	90	128	75
LMU 1A	298	90	149	45
LMU 2	155	90	124	72
LMU 3	298	90	149	45
LMU 4	400	234	360	210
LMU 4A	400	234	360	210
LMU 5	400	234	360	210
LMU 5A	298	90	149	45
LMU 6	298	90	149	45
LMU 7	155	90	124	72
LMU 7A	298	90	149	45
LMU 8	155	90	124	72
LMU 8A	298	90	149	45
LMU 9	155	90	124	72
LMU 9A	298	90	149	45
LMU 10	155	90	124	72
LMU 10A	400	121	400	121
LMU 11	400	234	360	210
LMU 12	155	90	124	72
LMU 12A	300	91	150	46
LMU 13	300	91	150	46
LMU 14	300	91	150	46

EAE recommends applying at the planned application rates shown above and in the tables of the NMP. Application at the maximum rates will result in a more rapid buildup of phosphorus than if applied at the lower rates.

This plan utilizes the Phase II Engineering Calcs. for 13,500 head and average live weight between the proposed headcounts of Jersey/Holstein cattle.

The most recent soil and waste analysis were used in this plan. 2022 soil sampling was conducted in March of 2023 by the TCEQ. The LMUs are reconfigured in this application and all LMU names have changed. A LMU & Soil Cross-Reference sheet is attached to this Executive Summary with the old/new LMU name as well as the soil analysis utilized for each LMU in this plan.

Although this plan illustrates that certain LMUs are designated for wastewater application, and others for manure application, it is not the intent of this document to limit application of wastewater and manure to specified LMUs. Any waste source may be applied to any permitted LMU as long as the maximum rates shown above are not exceeded during the plan year.

Any remaining manure is to be hauled off by a contract hauler for beneficial use. Offsite manure transfer activities will be in accordance with NRCS and TCEQ requirements for sampling, recordkeeping, and land application.

Supplemental nutrients will be necessary to achieve the desired yields. Commercial N application shall be split such that individual application events do not exceed 100 lbs/ac N.

Executive Summary Attachment

TMC Dairies Hico - LMU & Soil Cross-Reference

Existing LMU Name	Proposed LMU Name	Soil Sample Utilized in NMPs
TD1-144 Acres	LMU 1- 144 Ac.	TD1
TD2-56 Acres	Split into – LMU 7 (Pivot)-16 Ac. LMU 7A (Outside Pivot)- 33 Ac.	TD2 for both 7 & 7A
TD3-40	LMU 13 – 44 Ac.	TD3
TD4-86	Split into – LMU 12 (Pivot)-24 Ac. LMU 12A (Outside Pivot)-63 Ac.	TD4 for both 12 & 12A
TD6-131	Split into – LMU 2 (pivot)-39 Ac. LMU 1A (outside pivot)-93 Ac.	TD6 for both 2 & 1A
TD7-14	No longer a LMU.	----------------------------
TH1-39	LMU 5-39 Ac.	TH1
TH2-45	LMU 5A-35 Ac.	TH2
TH3-45	LMU 6-51 Ac.	TH3
TH4E-22 TH4W-14	Combined into: LMU 3 – 39 Ac.	*TH4W (utilized as a worst case due to higher P level)
TH5-80 TH6-81	Combined – LMU 4 (Pivot)-97 Ac. LMU 4A (Outside Pivot)-76 Ac.	*TH6 (utilized as a worst case due to higher P level)
TH7-13	LMU 14 – 12 Ac.	TH7
TH8-58	No longer a LMU.	-----------------------------
TS1-28	LMU 10 – 29 Ac.	TS1
TS2-92	Split into LMU 11 (Pivot)-42 Ac. LMU 10A (Outside Pivots)-46 Ac.	TS2 for both 11 & 10A
TS4-62	Split into LMU 9 (Pivot)-34 Ac. LMU 9A (Outside Pivot)-28 Ac.	TS4 for both 9 & 9A
TS5-44	Split into LMU 8 (Pivot)-26 Ac. LMU 8A (Outside Pivot)-18 Ac.	TS5 for both 8 & 8A

* Where permitted fields were combined into new LMUs, the soil analysis with the highest P level was used in the NMP for the new fields. The soil analysis for the old fields with lower P levels were not utilized (TH4E & TH5.)

ENVIRO-AG ENGINEERING, INC.

Alternative Crop List
Dancing Crane Dairy
WQ0003190000

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Alfalfa Hay 10 Tons	530	532	180	101
Alfalfa Hay 12 Tons	640	638	180	121
Alfalfa Hay 2 Tons	120	106	35	20
Alfalfa Hay 4 Tons	210	213	80	40
Alfalfa Hay 6 Tons	300	319	130	60
Alfalfa Hay 8 Tons	420	426	180	81
Bahia 2 Cut Hay 7000 #	140	89	70	21
Bahia 3 Cut Hay 8000 #	210	102	80	24
Bahia 4 Cut Hay 9000 #	280	114	115	27
Bahia Grazing + 1 Hay	110	83	70	19
Bahia Grazing 1 AU/1 ac	260	114	70	27
Bahia Grazing 1 AU/2 ac	220	108	45	25
Bahia Grazing 1 AU/3 ac	180	102	45	24
Bahia Grazing 1 AU/4 ac	140	95	45	22
Bahia Grazing 1 AU/5 ac	100	79	45	18
Bahia Grazing 1 AU/6 ac	60	65	45	15
Cantaloupes 15-20 tons	120	88	105	82
Coastal 2 Cut + Graze	260	198	125	62
Coastal 2 Cut Hay	200	169	125	39
Coastal 3 Cut + Graze	360	257	125	80
Coastal 3 Cut Hay	300	238	125	74
Coastal 4 Cut Hay	400	257	170	80
Coastal 5-6 Cut Hay	500	297	170	93
Coastal Grazing + 1 Hay	160	145	70	34
Coastal Grazing 1 AU/0.5 ac	300	218	70	68
Coastal Grazing 1 AU/1 ac	240	198	70	62
Coastal Grazing 1 AU/2 ac	200	169	70	39
Coastal Grazing 1 AU/3 ac	160	145	70	34
Coastal Grazing 1 AU/4 ac	120	120	70	28
Coastal Grazing 1 AU/5 ac	90	103	70	24
Coastal Grazing 1 AU/6 ac	60	86	70	20
Coastal GC (30%DM) 21-23 Ton	400	345	170	95
Coastal GC (30%DM) 18-20 Ton	350	300	170	82
Coastal GC (30%DM) 15-17 Ton	300	255	125	70
Coastal GC (30%DM) 9-11 Ton	200	170	125	47
Common 2 Cut Hay 6000 #	140	113	80	26
Common 3 Cut Hay 7400 #	210	141	80	46
Common 4 Cut Hay 8000 #	280	152	80	49
Common 5-6 Cut Hay 9000 #	350	171	80	56
Common Grazing + 1 Hay	110	100	70	23
Common Grazing + 2 Hay	180	132	80	30
Common Grazing + 3 Hay	250	148	80	48
Common Grazing 1 AU/1ac	260	152	70	49
Common Grazing 1 AU/2 ac	220	143	45	46
Common Grazing 1 AU/3 ac	180	132	45	30
Common Grazing 1 AU/4 ac	140	113	45	26
Common Grazing 1 AU/5 ac	100	94	45	22
Common Grazing 1 AU/6 ac	60	79	45	18

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Corn 111 - 130 bu	144	117	105	47
Corn 131 - 150 bu	164	135	105	54
Corn 151 - 170 bu	180	153	130	61
Corn 171 - 190 bu	210	171	130	68
Corn 191 - 210 bu	250	189	130	75
Corn 211 - 230 bu	280	207	130	83
Corn 231 - 250 bu	300	225	130	90
Corn 250 - 275 bu	325	243	130	97
Corn 276 - 300 bu	350	261	130	104
Corn 301 - 350 bu	375	279	130	111
Corn 50 - 70 bu	70	63	80	25
Corn 71 - 90 bu	90	81	80	32
Corn 91 - 110 bu	120	99	105	39
Cotton 0.5 Bale	25	18	30	9
Cotton 1.0 Bale	50	36	55	18
Cotton 2.0 Bale	100	71	105	35
Cotton 3.0 Bale	150	107	105	53
Cotton 3.5 Bale	175	125	105	62
Cotton 4.0 Bale	200	142	105	71
Cotton 4.5 Bale	225	160	105	80
Cotton 5.0 Bale	250	178	105	89
Eastern gamagrass- 3000 #	80	57	40	21
Eastern gamagrass- 6000 #	120	114	60	41
Fescue, Tall Hay/Graze 7000#	150	140	80	42
Grain Sorg. 1000 #	20	17	30	8
Grain Sorg. 10000 #	200	167	130	82
Grain Sorg. 1500 #	30	25	30	12
Grain Sorg. 2000 #	40	33	30	16
Grain Sorg. 3000 #	60	50	55	25
Grain Sorg. 4000 #	80	67	55	33
Grain Sorg. 5000 #	100	84	80	41
Grain Sorg. 6000 #	120	100	80	49
Grain Sorg. 7000 #	140	117	130	58
Grain Sorg. 8000 #	160	134	130	66
Grain Sorg. 9000 #	180	150	130	74
Guar 3500 lbs	25	22	80	76
Johnsongrass Hay 6000 #	140	101	80	32
Klein 3 Cut Hay 7200 #	150	83	55	16
Klein 4 Cut Hay 7800 #	150	90	55	18
Klein Grazing + 1 Hay	80	69	55	14
Klein Grazing 1 AU/1.5 ac	150	90	80	18
Klein Grazing 1 AU/2.5 ac	80	69	55	14
Klein Grazing 1 AU/6 ac	40	58	55	11
Legume Overseeded	80	60	105	15
Legume w/ryegrass	160	94	160	38
Midland Bermuda 4000 #	120	75	80	17
Midland Bermuda 6000 #	150	113	105	26
Midland Bermuda 8000 #	200	150	105	35

ENVIRO-AG ENGINEERING, INC.

Alternative Crop List
Dancing Crane Dairy
WQ0003190000

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Native Grazing or Hay 4000#	80	44	70	34
Native Grazing or Hay 3000#	40	33	55	25
Native Grazing or Hay 1500#	20	17	27	13
Native Grazing or Hay 750#	10	8	13	6
Oat Light Grazing	120	107	55	40
Oat Moderate Grazing	160	110	80	41
Oats Hay 2-3 tons	120	100	55	37
Oats Heavy Grazing plus Hay	200	117	80	43
Old World Bluestem- 3000 #	40	33	55	25
Old World Bluestem- 6000 #	80	66	55	51
Peanut Hay Dryland 1 Ton	50	47	70	11
Peanut Hay Dryland 2 Tons	100	93	70	22
Peanut Hay Irrigated 3 Tons	150	140	95	33
Peanuts Irrigated 4500 #	180	162	95	18
Rice Early 7500 #	195	104	45	41
Rice Late 7500 #	180	104	45	41
Rice plus Ratoon Early 10000 #	295	139	60	55
Rice plus Ratoon Late 10000 #	280	139	60	55
Rye Forage 5000 #	140	84	55	31
Rye Forage 7000 #	240	117	80	43
Ryegrass Hay 6000	140	100	55	37
Ryegrass Heavy Grazing	200	117	80	43
Ryegrass Moderate Grazing	140	84	55	31
SG Green Chop(25% DM) 8 to 9 tons	260	203	90	73
SG Green Chop(25% DM) 6 to 7 tons	200	158	80	57
SG Green Chop(25% DM) 4 to 5 tons	135	113	60	41
SG Green Chop(25% DM) 2 to 3 tons	75	68	40	24
SG Silage(35% DM) 12 to 14 tons	160	128	90	67
SG Silage(35% DM) 10 to 11 tons	120	101	70	53
SG Silage(35% DM) 8 to 9 tons	95	83	40	43
SG Silage(35% DM) 5 to 7 tons	70	64	30	34
Silage - Corn(35% DM) 11 - 15 Ton	140	119	80	58
Silage - Corn(35% DM) 16 - 20 Ton	240	183	100	77
Silage - Corn(35% DM) 21 - 25 Ton	350	263	105	96
Silage - Corn(35% DM) 26 - 30 Ton	420	315	135	115
Silage - Corn(35% DM) 7 - 10 Ton	85	79	60	38
Silage - Sorg(35% DM) 11 - 15 Ton	200	179	75	55
Silage - Sorg(35% DM) 16 - 20 Ton	280	238	95	74
Silage - Sorg(35% DM) 21 - 25 Ton	360	298	115	92
Silage - Sorg(35% DM) 26 - 30 Ton	380	315	130	111
Silage - Sorg(35% DM) 31 - 40 Ton	450	364	155	135
Silage - Sorg(35% DM) 41 - 50 Ton	580	455	190	168
Silage - Sorg(35% DM) 51 - 60 Ton	700	550	220	202
Silage - Sorg(35% DM) 7 - 10 Ton	125	119	60	37
Small Grain Heavy Grazing	240	112	105	41
Small Grain Light Grazing	60	75	80	28
Small Grain Moderate Grazing	160	97	105	36
Sorg. - Sudan Hay/Graze 11000 #	240	219	105	83

Crop and Yield Goal	Nitrogen		P2O5	
	Requirement	Removal	Requirement	Removal
Sorg. - Sudan Hay/Graze 7500 #	160	149	55	57
Sorg Forage Hay/Graze 11000 #	240	219	105	83
Sorg Forage Hay/Graze 7500 #	160	151	55	57
Soybean 30 bu	110	119	60	24
Soybean 50 bu	180	180	80	40
Sunflower 2000#	100	71	56	30
Sunflower 3000#	175	107	65	45
Triticale Graze or Hay 7000 #	160	117	105	43
Triticale Graze or Hay 9000 #	240	150	105	56
Watermelons 12 tons	80	53	55	49
Weeping Lovegrass 3500 #	70	39	55	30
Wheat Forage 2000 #	60	33	80	12
Wheat Forage 4000 #	160	67	105	25
Wheat Forage 6000 #	240	100	105	37
Wheat Grain 20 - 30 bu + Grazing	60	58	55	40
Wheat Grain 20 - 30 bu	45	37	55	26
Wheat Grain 31 - 40 bu + Grazing	80	71	75	48
Wheat Grain 31 - 40 bu	60	50	75	34
Wheat Grain 41 - 50 bu + Grazing	100	83	75	57
Wheat Grain 41 - 50 bu	75	62	75	43
Wheat Grain 51 - 60 bu + Grazing	120	96	90	65
Wheat Grain 51 - 60 bu	90	75	90	51
Wheat Grain 61 - 70 bu + Grazing	140	108	90	74
Wheat Grain 61 - 70 bu	105	87	90	60
Wheat Grain 71 - 80 bu + Grazing	160	121	95	82
Wheat Grain 71 - 80 bu	120	100	95	68
Wheat Grain 81 - 90 bu + Grazing	180	133	95	91
Wheat Grain 81 - 90 bu	135	112	95	77
Wheat Grain 91 - 100 bu + Grazing	200	146	95	99
Wheat Grain 91 - 100 bu	150	125	95	85
Wheat Heavy Grazing	240	114	105	42
Wheat Light Grazing	60	75	80	28
Wheat Moderate Grazing	160	97	105	36
Millet GC (25% DM) 18 - 24 Ton	180	140	60	46
Millet Hay/Graze 11000 #	150	95	45	40
Silage - Millet(35% DM) 15 - 18 Ton	190	139	60	46
Popcorn Shelled 3000 - 4000 #	80	74	80	27
Popcorn Shelled 4000 - 5000 #	100	92	80	33
Popcorn Shelled 5000 - 6000 #	120	110	80	40
Vetch Hay 1 Ton	70	60	105	14
Vetch Hay 2 Tons	140	120	105	28
Vetch Green chop(25%DM) 4 Tons	70	56	105	7
Vetch Green chop(25%DM) 8 Tons	140	112	105	14
Winter Pea Hay 5000#	140	137	105	35
Winter Pea Green chop(25%DM)8-9 Tons	140	123	105	32
Cowpea Hay 2 Tons	140	120	105	26
Cowpea GreenChop 8Tons(25%DM) Tons	140	120	105	26

Waste Utilization and Nutrient Management Plan

EXECUTIVE SUMMARY: Permit #: WQ0003190000

This Nutrient Management Plan has fields that meet NMP and/or NUP requirements.

See Attached Executive Summary

LOCATION AND PURPOSE OF THE PLAN

This animal operation is located in **Erath** County (see attached topo map and plan map for location.) The purpose of this plan is to outline the details of the land application of the effluent and solids produced by this operation. When the plan is fully implemented, it should minimize the effects of the land application of animal wastes on the soil, water, air, plant, and animal resources in and around the application area. This plan, when applied, will meet the requirements of the Natural Resources Conservation Service Waste Utilization Standard and Nutrient Management Standard.

The plan is for the year of **2024** and will remain in effect until revision based on new soil or manure analysis or crop change (yield or crop) result in a new P-Index rating or plan classification (NMP-NUP). The waste has been stored in a **Dairy Lagoon** . Approximately **13500** head will be confined with the average weight of **1237** pounds. The animals will be confined **24** hours per day for **365** days per year.

PI Index by Field

Printed on: 8/12/24 4:35 PM
This plan is based on: Iutrient Management Plan V 5.0
Permit #: WQ0003190000

Client Name: TMC Dairies Hico
Date: 8/12/2024

Planner: Richard George
Location: Erath
Rainfall: >25.0 inches

LMU or Fields	Crop	Slope	Runoff Curve	Soil Test P Level	Inorganic P_2O_5 Appl Rate	Organic P_2O_5 Appl Rate	Inorganic Method & Timing	Organic Method & Timing	Proximity of Appl to Named Stream	Runoff Class	Soil Erosion	Total Index Points	P Runoff Potential	Soil Test Date:
1	Coastal graze 1 AU/1 ac, SG mod graze	4.2%	80	8	0	6	0	0.5	0	4	0	18.5	Medium	3/27/23
1A	Coastal graze 1 AU/1 ac, SG mod graze	4.7%	80	8	0	6	0	4	0	4	0	22	Medium	3/7/23
2	Coastal graze 1 AU/1 ac, SG mod graze	4.7%	61	8	0	6	0	0.5	0	2	0	16.5	Medium	3/7/23
3	Coastal graze 1 AU/1 ac, SG mod graze	3.3%	61	8	0	6	0	4	1.25	1	0	20.25	Medium	3/7/23
4	Coastal graze 1 AU/1 ac, SG mod graze	3.1%	74	8	0	6	0	0.5	5	2	0	21.5	Medium	3/7/23
4A	Coastal graze 1 AU/1 ac, SG mod graze	3.1%	39	8	0	6	0	0.5	5	0	0	19.5	Medium	3/7/23
5	Coastal graze 1 AU/1 ac, SG mod graze	1.5%	74	8	0	6	0	0.5	0	1	0	15.5	Medium	3/7/23
5A	Coastal graze 1 AU/1 ac, SG mod graze	1.5%	61	8	0	6	0	4	0	1	0	19	Medium	3/7/23
6	Coastal graze 1 AU/1 ac, SG mod graze	2.9%	80	8	0	6	0	4	0	2	0	20	Medium	3/7/23
7	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	0	2	0	16.5	Medium	3/27/23
7A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	0	2	0	20	Medium	3/27/23
8	Coastal graze 1 AU/1 ac, SG mod graze	3.4%	74	8	0	6	0	0.5	0	2	0	16.5	Medium	3/8/23
8A	Coastal graze 1 AU/1 ac, SG mod graze	3.4%	74	8	0	6	0	4	0	2	0	20	Medium	3/8/23
9	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	0	2	0	16.5	Medium	3/8/23
9A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	1.25	2	0	21.25	Medium	3/8/23
10	Coastal graze 1 AU/1 ac, SG mod graze	2.5%	80	8	0	6	0	0.5	5	2	0	21.5	Medium	3/8/23
10A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	61	8	0	6	0	4	5	1	0	24	High	3/8/23
11	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	5	2	0	21.5	Medium	3/8/23
12	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	0.5	1.25	2	0	17.75	Medium	3/8/23
12A	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	1.25	2	0	21.25	Medium	3/8/23
13	Coastal graze 1 AU/1 ac, SG mod graze	4.4%	61	8	0	6	0	4	0	2	0	20	Medium	3/8/23
14	Coastal graze 1 AU/1 ac, SG mod graze	3.8%	80	8	0	6	0	4	0	2	0	20	Medium	3/7/23

Values in Table 1 may be based on actual analysis or "book" values during the initial planning to determine land application rates for the initial plan. When "book" values are used, they will be from NRCS, Texas Cooperative Extension or averages from other TX testing lab sources. Site specific data will be used as soon as feasible after production begins. Manure and/or effluent will be tested at least annually or in the year of application if it is stored for more than one year. If the actual values are more than 10% higher or lower than the estimated values, this plan will need to be revised accordingly.

Application of waste products may be made up to the Maximum Rate given in Table 2 or 2a as applicable. Table 2 applies to those that are subject to Nutrient Management Plan (NMP) requirements while Table 2a applies when subject to Nutrient Utilization Plan (NUP) requirements. Current requirements for both the NMP and NUP are given in the headers of the tables. Table 2a has a criteria involving the distance to a named stream when the Soil Test P Level is above 200 ppm in arid areas as well as special requirements when the site is in a TMDL watershed designated by TCEQ. For various P Index Ratings, the maximum rates in Table 2 are based on crop requirements, whereas the maximum rates in Table 2a are based on crop removal rates. County avg. rainfall information can be found in the TX Agronomy Technical Note 15, Phosphorus Assessment Tool for Texas, located in the eFOTG at the address given in the section entitled **"Collecting Soil Samples for Analyses"**.

CROP REMOVAL RATES:

Crop Removal Rates of nitrogen (N), phosphorus (P), and potassium (K) in pounds per acre are given in Table 3 for the crop and yield planned for each field. This Table is included for information only, and should be used during the planning process to compare planned or maximum application rates to crop removal. Crop removal rates may be based on actual analysis of harvested material or default values in the database. P build-up will occur at higher rates when crop removal rates are exceeded..

SOLIDS APPLICATION:

The maximum solids application rates are given in Table 4 along with the current soil test P level, maximum P_2O_5 application rate, maximum tons per acre of solids and the total tons of solids per field that can be applied to each field. The maximum tons of solids that can be utilized on the fields planned is indicated in the box near the lower left corner of Table 4. When the total application acres of the fields are adequate to allow all of the solids to be applied, "Adequate" will be indicated below the tonnage in this box. If "Not Adequate" is indicated, then the lower box will indicate the tons of solids that must be utilized off-site unless more fields/acres are added. This plan is valid only if the application of waste to the crops listed does not exceed the per acre rates by more than 10%. If the yield of a crop does not meet the expected goal, the application rate should be adjusted the following year.

The estimated amounts of N, P_2O_5, and K_2O contained in the solids are provided in Table 5 for the maximum application rate. Supplemental N and K_2O will be applied to achieve the yield goals in Table 4 when recommended by the soil test and the maximum rate of the solids does not meet the crop needs. When the maximum application rate is applied and Table 5 indicates additional commercial nutrients, they **must** be applied to fields as indicated. **NOTE:** If additional nitrogen is recommended, the producer should consider collecting soil samples from the 6 - 36 inch layer to see if there is any additional deep nitrogen available. Additional deep nitrogen within the root zone of the crop can be substituted for supplemental commercial nitrogen, and should be included in the soil test N ppm entry.

In situations where more land is available than is needed to utilize the maximum application rate on each field, the application rates in Table 6 have been reduced to the level that does not exceed the amount of solids produced. Table 7 indicates the amount of nutrients provided and, if needed, the supplemental nutrients which **must** be applied when the application is based on these rates. The amounts of supplemental nutrients in Table 7 are based on the actual amount of waste available rather than the **maximum** rate that **"could"** be applied.

The second line from the bottom of Table 6 on the right has a box that will be **"YES"** or **"NO"**. When the reduced rates use all solids to be produced in a year, this box will be **"Yes"**. If the percentages are too low, it will be **"No"**. If **"No"**, either more acreage is needed on which to apply the solids or the solids will need to be transported off-site. The amount is located on the bottom line on the extreme right of the page.

Actual application will be based on the quantities produced, as well as, current manure analyses. **Application at the MAXIMUM rates shown in Table 4 will result in a more rapid build-up of phosphorus than if applied at lower rates. A different percentage may be used as long as the rate does not exceed the maximum shown in Table 4 for the field and the proper amount of supplemental nutrients are applied. Applying a lower rate to the fields with higher soil test P levels will slow down the P buildup and extend their land application life. Phosphorus will also build up more rapidly on pastureland than on hayland or cropland, since very few nutrients are actually removed by grazing animals.**

The solids may be applied to the same acreage every year according to Table 2 or 2a. The annual rates in both Table 4 and 6 may be doubled not to exceed the 2X the annual nitrogen requirement or nitrogen removal rate, as applicable. When the full biennial rate has been used, no additional phosphorus fertilizer or animal wastes may be applied in the alternate year. A column in both tables indicates whether the rates given are Annual Rates (A) or Biennial Rates (B). Rates given are based on Table 2 or 2a as applicable. Annual application rate for fields in a TMDL area with a Soil Test P level equal to or greater than 500 ppm or any field in a TMDL area with P Index Rating of Very High is 0.5 annual crop removal rate.

EFFLUENT APPLICATION:

The maximum effluent application rates are given in Table 8 for each field. This table provides the current soil test P level, maximum P_2O_5 application rate, effluent either in gallons per acre or acre inches per acre and the amount of effluent that can be applied per field. The maximum amount of effluent that can be utilized on the fields planned is indicated in a box near the lower left corner of Table 8. When the total application acres are adequate to allow all of the effluent to be applied, "Adequate" will be indicated below this box. If "Not Adequate" is indicated, then the lower box will indicate the amount of effluent that must be utilized off-site unless more field acres are added.

The estimated amounts of N, P, and K contained in the effluent are provided in Table 9 for the maximum application rate indicated in Table 8. Supplemental N and K_2O will be applied to achieve the yield goals when recommended by the soil test and the maximum rates of the effluent do not meet the crop requirements. **NOTE:** If additional nitrogen is recommended, the producer should consider collecting soil samples from the 6 - 36 inch layer to see if there is any additional deep nitrogen available. Additional deep nitrogen within the root zone of the crop can be substituted for supplemental commercial nitrogen.

In situations where more land is available than is needed to utilize the maximum application rate on each field, the application rates in Table 10 have been reduced to the level that does not exceed the amount of effluent produced. Table 11 indicates the amount of nutrients provided and, if needed, the supplemental nutrients which **must** be applied when application is made based on the rates in Table 10. These amounts of supplemental nutrients in Table 11 are based on the planned amount of effluent available rather than the **maximum** rate that **"could"** be applied.

The bottom line on the right of Table 10 has a box that will be **"YES"** or **"NO"**. When the reduced rates uses all effluent to be produced in a year, this box will be **"Yes"**. If the percentages are too low, it will be **"No"**. If **"No"** is indicated, either more acreage is needed on which to apply the effluent or the effluent will need to be transported off-site.

Actual application will be based on the quantities produced, as well as, current manure analyses. **Application at the MAXIMUM rates shown in Table 8 will result in a more rapid build-up of phosphorus than if applied at lower rates. A different percentage may be used as long as the rate does not exceed the maximum shown in Table 8 for the field and the proper amount of supplemental nutrients are applied. Applying a lower rate to fields with higher soil test P levels will slow down the P buildup and extend their land application life. Phosphorus will also build up more rapidly on pastureland than on hayland or cropland, since very few nutrients are actually removed by grazing animals.**

The effluent may be applied to the same acreage every year according to Table 2 or 2a. The annual rates in both Table 8 and 10 may be doubled not to exceed the 2X the annual nitrogen requirement or nitrogen removal rate, as applicable, when the full biennial rate has been used, no additional phosphorus fertilizer or animal wastes may be applied in the alternate year. A column in both tables indicates whether the rates given are Annual Rates (A) or Biennial Rates (B). Rates given are based on Table 2 or 2a as applicable. Annual application rate for fields in a TMDL area with a Soil Test P level equal to or greater than 500 ppm or any field in a TMDL area with P Index Rating of Very High is 0.5 annual crop removal rate.

Maximum Hourly Application Rate - The maximum hourly application rate is determined by the texture of the soil layer with the lowest permeability within the upper 24 inches of the of the predominant soil in each field. The hourly application rate must be low enough to avoid runoff and/or ponding. For effluent with 0.5% solids or less, **DO NOT** exceed the rates shown in Table 1 of the attached Job Sheet titled, *"Waste Utilization, Determining Effluent Application Rates"*. If the effluent contains more than 0.5% solids, those values must be reduced by the appropriate amount shown in Table 2 of the attached *"Waste Utilization, Determining Effluent Application Rates"* Job Sheet.

Maximum One-Time Application Rate - The maximum amount of effluent that can be applied to a given field at any one-time is the amount that will bring the top 24 inches of the soil to 100% field capacity. This amount is determined by subtracting the amount of water stored in the soil (estimated by feel and appearance method) from the available water holding capacity (AWC) of the soil. The available water holding capacity of the top 24 inches of the predominant soil of each field receiving effluent and the texture of the most restrictive layer in the upper 24 inches are given in Table 12.

To determine any one-time application amount, the current percent of field capacity (FC) of the upper 24 inches of the predominant soil in the field should be estimated using the guidance in Table 3 of the attached Job Sheet, *"Waste Utilization, Determining Effluent Application Rates, rev 4/06"*. Additional information on estimating soil moisture can be found in the NRCS Program Aid 1619, *"Estimating Soil Moisture by Feel and Appearance"*, or from the University of Nebraska Extension publication No. G84-690-A by the same name. Both of these publications have pictures of various soils at different percentages of field capacity to be used as a guide to estimating soil moisture. Once the current percent of FC is estimated, it is subtracted from the AWC amount in Table 12 for the given field and the difference is the maximum application for those soil conditions on that day. Remember, the maximum hourly application and the maximum one time application rates are only estimates to be used as a guide.

Solids/Effluent Land Application: - Land application of solids and/or effluent should be made at appropriate times to meet crop needs, but can be made at any time as long as the total annual (or biennial) rate, maximum hourly rate, and the maximum one time application rates are not exceeded. Effluent should be surface applied uniformly. No runoff or ponding should occur during application thus frequent observations should be made. Neither effluent or solids will be applied to slopes >8% with a runoff curve >80, or steeper than 16% slope with a runoff curve of 70 or greater, unless the application is part of an erosion control plan. Waste will not be spread at night, during rainfall events, or on frozen or saturated soils if a potential risk for runoff exists. Waste will not be applied to frequently flooded soils during months when the soils typically flood. If frequently flooded soil occur on any potential application field see attached, "Water Features Table", for months when flooding is expected. Solids should be applied with a manure spreader as uniformly as feasible. Surface applications with trucks should only be made when soil conditions are favorable in order to minimize soil compaction.

Managing Runoff -
A minimum 100 ft. setback or vegetated buffer (Filter Strip, Field Border, Riparian Forested Buffer, etc.) will be established and maintained between the application area and all surface water bodies, sink holes, and watercourses as designated on Soil Survey sheets or USGS topographic maps. A minimum application distance from private and public will be 150 ft. and 500 ft. respectively. A minimum application distance from water wells used exclusively for agricultural irrigation will be 100 ft. Table 9 provides a summary of the setbacks and out areas of each field.

Managing Leaching -
When soils with sandy, loamy sand, or gravelly surface textures have a Nitrogen Leaching Index score of >2 appropriate measures will be used to minimize the potential of leaching. These measures will include, split applications of waste, and may include double cropping, or cover crops, and irrigation water management (on fields that receive supplemental or full irrigation).

MORTALITY MANAGEMENT:
All mortality will be disposed of properly within 3 days according to the Texas Commission on Environmental Quality (TCEQ) rules. The preferred method for disposal of routine mortality is by a rendering plant. Before planning this method, contact the facility or its representative to be informed of special handling procedures, equipment needs, scheduling requirements, etc. Maintain a list of contact phone numbers so information will be readily available following a catastrophic die-off. Verify that local companies which have previously picked up and/or rendered dead animals are still doing so. A number of rendering companies across the state have stopped dead animal pick up service, and others have raised their fees significantly. Periodically review the availability and cost of rendering so that the plan can be modified if necessary. This can be an excellent option if mortality can be loaded and transported while still fresh or the mortality can be refrigerated until loaded and transported.

Disposal in a landfill may be an option in some locations. Before planning this option, the closest commercial, regional, county, or municipal landfill should be contacted to determine if the landfill has a permit which would allow acceptance of dead animals (swine, sheep, cattle, etc.). Also ask if there are any restrictions on type and volume of animal mortality that will be accepted at the facility. Landfill fees and transport, offloading, and handling procedures should be discussed with landfill managers and documented for reference when needed. The landfill is not a viable option if the producer does not own or have access to a vehicle capable of transporting mortality quickly in an emergency situation. After a catastrophic die-off is not a good time to find out that a driver and truck to transport mortality will not be available for several weeks **(MAKE ARRANGEMENTS NOW, NOT AFTER THE ANIMALS ARE DEAD).**

On-farm disposal of catastrophic mortality may be considered if site conditions permit. On-farm methods include burial, composting, and incineration. Incinerators and composters are excellent options for routine mortality but usually do not have the capacity to handle mortality volumes associated with catastrophic events. Composting and incineration should not be relied on for catastrophic mortality handling without a documented evaluation of worst anticipated mortality condition (number, type, and weight of animals), and the anticipated capacity of the system (i.e., lb./hr. incineration rate, hrs/day of operation). NRCS Mortality Facility Standard 316 will be used for all mortality management.

See the attached soil interpretation, ENG - Animal Mortality Disposal (Catastrophic) Trench, to make a preliminary assessment of the limitations of the soils on this farm for burial of catastrophic mortality. The attached TX NRCS Technical Guidance, Catastrophic Animal Mortality Management (Burial Method) should be used as a guide to overcome minor limitations and as design criteria for the construction of burial pits for catastrophic mortality. Mortality burial sites shall be located outside the 100 -year floodplain. Mortality burial will not be less than 200 feet from a well, spring, or water course. A FIELD INVESTIGATION BY A QUALIFIED PROFESSIONAL SHOULD BE MADE BEFORE AN AREA IS USED FOR A BURIAL SITE FOR CATASTROPHIC MORTALITY EVENTS. **The TCEQ Industrial and Hazardous Waste Permits Section, MC-130, <u>must</u> be contacted before burial of catastrophic mortality.**

TCEQ
Industrial and Hazardous Waste Permits Section, MC-130
PO Box 13087
Austin, TX 78711-3087
Phone: 512-239-2334 Fax: 512-239-6383

Air Quality:

The following steps should be taken when spreading effluent or solids to reduce problems associated with odor.
1. Avoid spreading effluent or solids when wind will blow odors toward populated areas.
2. Avoid spreading effluent or solids immediately before weekends or holidays, if people are likely to be engaged in nearby outdoor activities.
3. Avoid spreading effluent or solids near heavily traveled highways.
4. Make applications in the morning when the air is warming, rather than in the late afternoon.
5. All materials will be handled in a manner to minimize the generation of particulate matter, odors, and greenhouse gas emissions.

EFFLUENT AND SOLIDS STORAGE & TESTING: Permit #: WQ0003190000

Effluent and solids will be stored in facilities designed, constructed, and maintained according to USDA NRCS Standards and specifications.

Effluent and solids sampling is needed to get a better idea of the nutrients actually being applied. Effluent and/or solids samples will be collected at least annually, or in the year of its use if waste is typically stored for more than 1 year. The samples will be submitted immediately to a lab for testing. If sent to Texas A&M soil lab or SFASU Soil Testing Lab for analysis, use the "plant and forage analysis" form and note the type of operation. Request that the manure be analyzed for percent dry matter, solids, total nitrogen, total phosphorus, and total potassium. Further information on collecting effluent and manure samples for analysis can be found in the TCE publication No. L-5175, *"Managing Crop Nutrients Through Soil, Manure and Effluent Testing"*. **TCEQ sampling rules and testing requirements will be followed on permitted sites.**

COLLECTING SOIL SAMPLES FOR ANALYSIS:

Collect a composite sample for each field (or area of similar soils and management not more than 40 acres in size) comprised of 10 - 15 randomly selected cores. Each core should represent 0 - 6 inches below the surface except for when injection has been done over 6" in depth, then the core should represent the 3-9" layer. Thoroughly mix each set of core samples, and select about a pint of the mixture as the sample for analysis. Label each sample for the field that it represents. Request that the samples be analyzed for nitrate nitrogen, plant-available phosphorus, potassium, sodium, magnesium, calcium, sulfur, boron, conductivity; and pH. Also note on the samples that they are from an effluent or solids application area. **TCEQ sampling rules and testing requirements will be followed on permitted sites.** A weighted average of 0-2 and 2-6 inch layers will be used for calculations on permitted sites.

Further information on collecting soil samples can be found on the TCE Form D-494, p 2, TCE Publication No. L-1793, and TCEQ RG-408. Additional NRCS guidance and requirements can be found in the Nutrient Management (590) standard located in the Texas electronic Field Office Technical Guide (eFOTG) at:

http://efotg.nrcs.usda.gov/efotg_locator.aspx?map=TX

Click the county desired.
Click Section IV in the left column under eFOTG
Type: 590 in the Search Menu above eFOTG and click: **GO**
Click on the desired item under Nutrient Management in the left column

SOIL ANALYSIS:

A soil analysis will be completed for all areas to be used for all effluent or solids application areas. The soil test analysis method will be **Mehlich III with inductively coupled plasma (ICP)**. The area will be tested and analyzed at least annually to monitor P build up.

Waste Utilization and Nutrient Management Plan

RECORD KEEPING: Permit #: WQ0003190000

Detailed records should be maintained by the producer for all application of animal waste to land owned and operated by the producer. Records should include date, time, location, amount of application, weather conditions, estimated wind speed and direction, etc. A rain gauge should be in place at the application site and accurate records of rainfall should be maintained at the site. All records must be kept for at least 5 years. **TCEQ requirements will be followed on permitted sites.**

Records should also be kept showing amounts of litter given or sold to others. **A copy of the effluent analysis and/or solids analysis and a Waste Utilization Guidelines Sheet should be given to anyone who will use either the effluent or solids off-site. If they routinely use animal wastes for fertilizer, they should be directed to the local Soil and Water Conservation District or NRCS office to develop a Waste Utilization and Nutrient Management Plan for their land.**

This portion may be completed by producer, if desired or recorded elsewhere.

Record of waste leaving the farm or used as feed. **Estimated Annual Excess**

Date	Amount	Hauler or Recipient

Excess Remaining May be continued on additional sheets

OPERATION AND MAINTENANCE: Permit #: WQ0003190000

Application equipment should be maintained in good working order and it should be calibrated annually so that the desired rate and amount of effluent and solids will be applied.

Information on calibrating manure spreaders can be found in the TCE publication No. L-5175, *"Managing Crop Nutrients Through Soil, Manure and Effluent Testing"*. Information on calibrating big gun sprinklers can be found in the Arkansas Extension publication, *"Calibrating Stationary Big Gun Sprinklers for Manure Application"*. For information on calibrating tank spreaders, traveling guns, and additional information on other manure spreading equipment, see Nebraska Extension publication No. G95-1267-A, *"Manure Applicator Calibration"*. Observe and follow manufacturer's recommended maintenance schedules for all equipment and facilities involved in the waste management system. For information on lagoon functions, refer to TCE publication E9, *"Proper Lagoon Management"*.

Any changes in this system should be discussed with the local Soil and Water Conservation District, USDA Natural Resources Conservation Service, or other qualified professional prior to their implementation.

Plan Prepared by:	**Richard George**	Date:	**8/12/2024**
Plan Approved by:	[signature]	Date:	8-12-24
Producer Signature:	Discussed w/ Producer	Date:	8-12-24

The producer's signature indicates that this plan has been discussed with him/her.
If this plan is not signed by the producer, indicate how the plan was provided to the producer.

Waste Utilization and Nutrient Management Plan

Table 1 - Estimated Effluent and Solids Quantities Produced Permit #: WQ0003190000

Avg. Number of Animals	Type of Waste
13,500	**Dairy Lagoon**
	Other Solids

Contact the local Soil and Water Conservation District or USDA Natural Resources Conservation Service office if the total number of animals change by more than 10% so your plan can be revised.

Estimated Acre Inches of Effluent to be Available Annually* **4,898**

Estimated Tons Solids to be Land Applied Annually (on or off site)* **703,673.1**

*From engineering design.

Estimated Nutrient Availabilty
Effluent

	pounds/yr	Pounds / 1000 gal	Pounds / Acre Inch	
N	130,534	0.98	26.7	**
P2O5	76,256	0.57	15.6	
K2O	319,675	2.40	65.3	

** Effluent Values Based on Analysis dated: June 4, 2024

Estimated Nutrient Availabilty
Solids

	pounds / yr	pounds / ton	
N	1,700,164	2.4	**
P2O5	516,167	0.7	
K2O	3,293,190	4.7	

** Solids Values Based on Analysis dated: June 4, 2024

Default values were used on all fields for plant removal of nutrients and yield levels.

Waste Utilization and Nutrient Management Plan

TABLE 2. A Nutrient Management Plan (NMP) is required where Soil Test P Level [1/] is:

- **less than 200 ppm statewide or**
- **or < 350 ppm in arid areas 2/ with a named stream > one mile.**

P – Index Rating	Maximum TMDL Annual P Application Rate [5/]	Maximum Annual P Application	Maximum Biennial Application Rate
Very Low, Low	Annual Nitrogen (N) Requirement	Annual Nitrogen (N) Requirement	2.0 Times Annual N Requirement
Medium	2.0 Times Annual Crop P Requirement [3/]	2.0 Times Annual Crop P Requirement [3/]	2.0 Times Annual N Requirement
High [5]	1.5 Times Annual Crop P Requirement [3/]	1.5 Times Annual Crop P Requirement [3/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Requirement
Very High [5]	1.0 Times Annual Crop P Requirement [3/]	1.0 Times Annual Crop P Requirement [3/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Requirement

TABLE 2a. A Nutrient Utilization Plan (NUP) is required by TCEQ where Soil Test P Level [1/] is:

- **equal to or greater than 200 ppm in non-arid areas [2/] or**
- **equal to or greater than 350 ppm in arid areas [2/] with a named stream greater than one mile or**
- **equal to or greater than 200 ppm in arid areas [2/] with a named stream less than one mile.**

P – Index Rating	Maximum TMDL Annual P Application Rate [5/]	Maximum Annual P Application	Maximum Biennial Application Rate
Very Low, Low	1.0 Times Annual Crop P Removal [4/]	Annual N Crop Removal	2.0 Times Annual N Removal
Medium	1.0 Times Annual Crop P Removal [4/]	1.5 Times Annual Crop P Removal [4/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Crop Removal
High [5]	1.0 Times Annual Crop P Removal [4/]	1.0 Times Annual Crop P Removal [4/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Crop Removal
Very High [5]	0.5 Times Annual Crop P Removal [4/]	0.5 Times Annual Crop P Removal [4/]	Double the Maximum Annual P Application Not to Exceed 2 times the Annual N Crop Removal

Footnotes Applicable to both Tables

1/ Soil test P will be Mehlich III by inductively coupled plasma (ICP).

2/ Non-arid areas, counties receiving => 25 inches annual rainfall, will use the 200 ppm P level while arid areas, counties receiving < 25 inches of annual rainfall, will use the 350 ppm P level. See map in TX Agronomy Technical Note 15, Phosphorus Assessment Tool for Texas, for county designations.

3/ Not to exceed the annual nitrogen requirement rate.

4/ Not to exceed the annual nitrogen removal rate.

5/ When soil test phosphorus levels are ≥ 500 ppm, with a P-Index rating of "High" or "Very High", there will be no additional application of phosphorus to a CMU or field.

Waste Utilization and Nutrient Management Plan

Table 3 - Crop Removal Rates (For Information Only) Permit #: WQ0003190000

LMU or Field No.	Acres	Crop and P Index Level	TCEQ Plan Type	Actual Crop Analysis or Default	Total Est. N Removal lbs/Ac/Yr	Total Est. P_2O_5 Removal lbs/Ac/Yr	Total Est. K_2O Removal lbs/Ac/Yr
LMU 1	144.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 2	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 4	97.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
LMU 4A	76.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
LMU 5	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 7	16.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 8	26.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 9	34.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 10	29.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 10A	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	NMP	Default	300	90	267
LMU 11	42.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
LMU 12	24.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 12A	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267

NOTE: When crops are used for grazing, only a portion of the nutrients used by the crop are removed from the field in the live weight gain of the livestock, the remainder is returned to the land in manure and urine. The book "Southern Forages" estimates the N, P, & K removed in 100 pounds live weight gain as follows: **2.5 lbs N, 0.68 lbs P, 0.15 lbs K**

Waste Utilization and Nutrient Management Plan

Table 4 - Maximum Solids Application per Field Permit #: WQ0003190000

Est. Solids Produced Annually (wet tons)	LMU or Field No.	Acres	Crop Management and PI runoff potential	Current Soil Test P Level (ppm)	Max Annual P2O5 lbs/acre	Annual/Biennial	Maximum Solids Allowable Tons/Acre	Maximum Allowable Application Per field (Tons)
703,673	LMU 1							
	LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	90	A	123.3	11468
	LMU 2							
	LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	219	90	A	123.3	4809
	LMU 4							
	LMU 4A							
	LMU 5							
	LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	268	90	A	123.3	4316
	LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	362	90	A	123.3	6289
	LMU 7							
	LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	90	A	123.3	4069
	LMU 8							
	LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	90	A	123.3	2220
	LMU 9							
	LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	90	A	123.3	3453
	LMU 10							
	LMU 10A	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	144	121	A	165.6	7615
	LMU 11							
	LMU 12							
	LMU 12A	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	91	A	124.2	7828
	LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	217	91	A	124.2	5467
	LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	201	91	A	124.2	1491
Total Solids Application Acres								
462								
Application Allowable on-site (tons)								
59025.4								
Not Adequate								
Solids to be used off-site (tons)								
644,647.7								

End of Table 4

Waste Utilization and Nutrient Management Plan

Table 5 - Nutrients Applied/Needs at Maximum Solids Rates Permit #: WQ0003190000

LMU / Field #	Nutrients Applied When Application is at Maximum Rates			Supplemental Nutrients Needed When Application is at Maximum Rates			
	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1							
LMU 1A	298	90	577	0	0	0	0
LMU 2							
LMU 3	298	90	577	25	0	0	0
LMU 4							
LMU 4A							
LMU 5							
LMU 5A	298	90	577	0	0	0	0
LMU 6	298	90	577	0	0	0	0
LMU 7							
LMU 7A	298	90	577	0	0	0	0
LMU 8							
LMU 8A	298	90	577	30	0	0	0
LMU 9							
LMU 9A	298	90	577	55	0	0	0
LMU 10							
LMU 10A	400	121	775	0	0	0	0
LMU 11							
LMU 12							
LMU 12A	300	91	581	15	0	0	0
LMU 13	300	91	581	80	0	0	0
LMU 14	300	91	581	30	0	0	0

Waste Utilization and Nutrient Management Plan

Table 6 - Planned Solids Application Rates Permit #: WQ0003190000

LMU or Field No.	Double crop	Acres	Crop Management and PI runoff potential	Current Soil Test P ppm	Annual / Biennial	Max Rate tons/ac	% of Maximum to apply	Planned Solids tons/ac	Planned Solids per field (tons)
LMU 1									
LMU 1A		93.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	A	123.3	50	61.7	5734.1
LMU 2									
LMU 3		39.0	Coastal graze 1 AU/1 ac, SG mod graze M	219	A	123.3	50	61.7	2404.6
LMU 4									
LMU 4A									
LMU 5									
LMU 5A		35.0	Coastal graze 1 AU/1 ac, SG mod graze M	268	A	123.3	50	61.7	2158.0
LMU 6		51.0	Coastal graze 1 AU/1 ac, SG mod graze M	362	A	123.3	50	61.7	3144.5
LMU 7									
LMU 7A		33.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	A	123.3	50	61.7	2034.7
LMU 8									
LMU 8A		18.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	A	123.3	50	61.7	1109.8
LMU 9									
LMU 9A		28.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	A	123.3	50	61.7	1726.4
LMU 10									
LMU 10A		46.0	Coastal graze 1 AU/1 ac, SG mod graze H	144	A	165.6	100	165.6	7615.5
LMU 11									
LMU 12									
LMU 12A		63.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	A	124.2	50	62.1	3913.8
LMU 13		44.0	Coastal graze 1 AU/1 ac, SG mod graze M	217	A	124.2	50	62.1	2733.5
LMU 14		12.0	Coastal graze 1 AU/1 ac, SG mod graze M	201	A	124.2	50	62.1	745.5
Acres		462.0		Will the planned per acre application rates use all of the Solids?					33320.4
703673			Tons of wet solids produced Annually						NO
0			Tons to be used off-site at Max. rates	Tons to be used off-site at planned rates					670353

Waste Utilization and Nutrient Management Plan

Table 7 - Nutrients Applied/Needed at Planned Solids Rates Permit #: WQ0003190000

Red cells? Proceed to adjustment page and fix.

LMU / Field #	Nutrients Applied at Planned Rates			Supplemental Nutrients Needed at Planned Rates			
	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1							
LMU 1A	149	45	289	115	0	0	0
LMU 2							
LMU 3	149	45	289	175	0	0	0
LMU 4							
LMU 4A							
LMU 5							
LMU 5A	149	45	289	140	0	0	0
LMU 6	149	45	289	105	0	0	0
LMU 7							
LMU 7A	149	45	289	90	0	0	0
LMU 8							
LMU 8A	149	45	289	180	0	0	0
LMU 9							
LMU 9A	149	45	289	205	0	0	0
LMU 10							
LMU 10A	400	121	775	0	0	0	0
LMU 11							
LMU 12							
LMU 12A	150	46	291	165	0	0	0
LMU 13	150	46	291	230	0	0	0
LMU 14	150	46	291	180	0	0	0

Waste Utilization and Nutrient Management Plan

Table 8 - Maximum Effluent Application Per Field Permit #: WQ0003190000

Est. Available Effluent (ac inches)	LMU or Field No.	Acres	Double crop	Crop Management and PI runoff potential	Current Soil Test P Level (ppm)	Max Annual P_2O_5 (lbs/acre)	Annual/Biennial	Maximum Effluent Allowable (ac in/ac)	Maximum Effluent Allowable / Field (ac in)
4898	LMU 1	144.0		Coastal graze 1 AU/1 ac, SG mod graze M	368	90	A	5.8	837
Source:	LMU 1A								
	LMU 2	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	206	90	A	5.8	226
	LMU 3								
Dairy Lagoon	LMU 4	97.0		Coastal graze 1 AU/1 ac, SG mod graze M	162	234	A	15.0	1455
	LMU 4A	76.0		Coastal graze 1 AU/1 ac, SG mod graze M	162	234	A	15.0	1140
	LMU 5	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	174	234	A	15.0	585
	LMU 5A								
	LMU 6								
	LMU 7	16.0		Coastal graze 1 AU/1 ac, SG mod graze M	346	90	A	5.8	93
	LMU 7A								
	LMU 8	26.0		Coastal graze 1 AU/1 ac, SG mod graze M	461	90	A	5.8	151
	LMU 8A								
	LMU 9	34.0		Coastal graze 1 AU/1 ac, SG mod graze M	356	90	A	5.8	197
	LMU 9A								
	LMU 10	29.0		Coastal graze 1 AU/1 ac, SG mod graze M	290	90	A	5.8	168
	LMU 10A								
	LMU 11	42.0		Coastal graze 1 AU/1 ac, SG mod graze M	144	234	A	15.0	630
	LMU 12	24.0		Coastal graze 1 AU/1 ac, SG mod graze M	277	90	A	5.8	139
	LMU 12A								
	LMU 13								
Total Effluent Application Acres	LMU 14								
566									
Maximum Effluent Application Allowable On-Site (ac in)									
5621									
Adequate									
Effluent to be used Off-Site (ac in)									
0									

End of Table 8

Table 9 - Nutrients Applied/Needed at Maximum Effluent Rates Permit #: WQ0003190000

	Nutrients Applied When Application is at Maximum Rates			Supplemental Nutrients Needed When Application is at Maximum Rates			
LMU / Field #	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1	155	90	379	75	0	0	0
LMU 1A							
LMU 2	155	90	379	110	0	0	0
LMU 3							
LMU 4	400	234	979	0	0	0	0
LMU 4A	400	234	979	0	0	0	0
LMU 5	400	234	979	0	0	0	0
LMU 5A							
LMU 6							
LMU 7	155	90	379	85	0	0	0
LMU 7A							
LMU 8	155	90	379	175	0	0	0
LMU 8A							
LMU 9	155	90	379	200	0	0	0
LMU 9A							
LMU 10	155	90	379	205	0	0	0
LMU 10A							
LMU 11	400	234	979	0	0	0	0
LMU 12	155	90	379	160	0	0	0
LMU 12A							
LMU 13							
LMU 14							

Waste Utilization and Nutrient Management Plan

Table 10 - Planned Effluent Application Rates Permit #: WQ0003190000

LMU or Field No.	Acres	Double crop	Crop Management and PI runoff potential	Current Soil Test P ppm	Annual / Biennial	Maximum Effluent (ac in/ac)	% of Maximum to apply	Planned Effluent (ac in/ac)	Planned Effluent / field (Ac. In)
LMU 1	144.0		Coastal graze 1 AU/1 ac, SG mod graze M	368	A	5.8	82.4	4.8	690
LMU 1A									
LMU 2	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	206	A	5.8	80.0	4.6	181
LMU 3									
LMU 4	97.0		Coastal graze 1 AU/1 ac, SG mod graze M	162	A	15	90.0	13.5	1310
LMU 4A	76.0		Coastal graze 1 AU/1 ac, SG mod graze M	162	A	15	90.0	13.5	1026
LMU 5	39.0		Coastal graze 1 AU/1 ac, SG mod graze M	174	A	15	90.0	13.5	527
LMU 5A									
LMU 6									
LMU 7	16.0		Coastal graze 1 AU/1 ac, SG mod graze M	346	A	5.8	80.0	4.6	74
LMU 7A									
LMU 8	26.0		Coastal graze 1 AU/1 ac, SG mod graze M	461	A	5.8	80.0	4.6	121
LMU 8A									
LMU 9	34.0		Coastal graze 1 AU/1 ac, SG mod graze M	356	A	5.8	80.0	4.6	158
LMU 9A									
LMU 10	29.0		Coastal graze 1 AU/1 ac, SG mod graze M	290	A	5.8	80.0	4.6	135
LMU 10A									
LMU 11	42.0		Coastal graze 1 AU/1 ac, SG mod graze M	144	A	15	90.0	13.5	567
LMU 12	24.0		Coastal graze 1 AU/1 ac, SG mod graze M	277	A	5.8	80.0	4.6	111
LMU 12A									
LMU 13									
LMU 14									
Acres	566.0				Will the planned application rates use all of the Effluent?				4898
									YES

Waste Utilization and Nutrient Management Plan

Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #: WQ0003190000

Red cells? Proceed to adjustment page and fix.

	Nutrients Applied at Planned Rates			Supplemental Nutrients Needed at Planned Rates			
LMU / Field #	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	N Lb/ac	P_2O_5 Lb/ac	K_2O Lb/ac	Lime T/Ac
LMU 1	128	75	312	105	0	0	0
LMU 1A							
LMU 2	124	72	303	140	0	0	0
LMU 3							
LMU 4	360	210	882	0	0	0	0
LMU 4A	360	210	882	0	0	0	0
LMU 5	360	210	882	0	0	0	0
LMU 5A							
LMU 6							
LMU 7	124	72	303	115	0	0	0
LMU 7A							
LMU 8	124	72	303	205	0	0	0
LMU 8A							
LMU 9	124	72	303	230	0	0	0
LMU 9A							
LMU 10	124	72	303	240	0	0	0
LMU 10A							
LMU 11	360	210	882	0	0	0	0
LMU 12	124	72	303	190	0	0	0
LMU 12A							
LMU 13							
LMU 14							

Waste Utilization and Nutrient Management Plan

Table 12 - Available Water Capacity to 24 inches(or less) of predominant soil in fields receiving effluent and Texture of the most restrictive soil layer in the upper 24 inches Permit #: WQ0003190000

LMU / Field #	AWC (inches)	Restrictive Texture	LMU / Field #	AWC (inches)	Restrictive Texture
LMU 1	0.75	Gravelly clay loam			
LMU 1A					
LMU 2	2.82	Find Sandy Loam			
LMU 3					
LMU 4	2.73	Fine Sand			
LMU 4A	2.44	Fine Sand			
LMU 5	4.05	Clay Loam			
LMU 5A					
LMU 6					
LMU 7	1.87	Stony Clay			
LMU 7A					
LMU 8	4.05	Clay Loam			
LMU 8A					
LMU 9	3.48	Fine Sandy Loam			
LMU 9A					
LMU 10	3.48	Fine Sandy Loam			
LMU 10A					
LMU 11	3.48	Fine Sandy Loam			
LMU 12	1.87	Stony Clay			
LMU 12A					
LMU 13					
LMU 14					

Waste Utilization and Nutrient Management Plan

Table 13 - Non Application Areas by Field Permit #: WQ0003190000

FS = 393-Filter Strip; **FB** = 386-Field Border, **RFB** = 391-Riparian Forest Buffer; **OLEA** = Other Land Excluded Ar

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
LMU 1	0.0	0.0			
LMU 1A	0.0	0.0			
LMU 2	0.0	0.0			
LMU 3	0.0	0.0			
LMU 4	0.0	0.0			
LMU 4A	0.0	0.0			
LMU 5	0.0	0.0			
LMU 5A	0.0	0.0			
LMU 6	0.0	0.0			
LMU 7	0.0	0.0			
LMU 7A	0.0	0.0			
LMU 8	0.0	0.0			
LMU 8A	0.0	0.0			
LMU 9	0.0	0.0			
LMU 9A	0.0	0.0			
LMU 10	0.0	0.0			
LMU 10A	0.0	0.0			
LMU 11	0.0	0.0			
LMU 12	0.0	0.0			
LMU 12A	0.0	0.0			
LMU 13	0.0	0.0			
LMU 14	0.0	0.0			

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
Totals	0.0	0.0	0.0	0.0	0.0

See Application Map for location of buffers

Total 590-633 application acres: 1028.0

Total 590-633 Field Acres: 1028.0

Waste Utilization and Nutrient Management Data Entries

	General Data
Date :	8/12/2024
Farmer Name :	TMC Dairies Hico
County in which the Land is located :	Erath
Type of Waste Plan :	Other AFO-CAFO Waste Plan
Is this plan in a TMDL watershed for nutrients? Yes or No :	Yes
Is any field PERMITTED by TCEQ? Yes or No :	Yes
Permit # :	WQ0003190000

All other entries on General Page appear on the Cover Page

	Animal Information
Plan Year :	2024
Are you receiving waste from another producer?	No
Number of animals :	13500
Approximate Weight :	1237
Days per year in confinement :	365
Hours per day confined :	24
***ACRE FEET* of effluent to be irrigated* :**	408.14
Estimated annual gallons of effluent to be irrigated/applied annually :	132991602.7
For effluent, do you want application rates shown in gallons or acre inches? :	acre inches
Estimated Tons Solids to be Land Applied Annually (on or off site)* :	36591
Is this the first Year of the AFO-CAFO Operation? :	No

Analysis Information

	Effluent Information
Date of Analysis:	6/4/2024
Manure Source:	Dairy Lagoon
Nitrogen % From Analysis:	0.0147
Phosphorus % From Analysis:	0.003
Potassium % From Analysis:	0.024
Moisture % From Analysis:	99.8

	Manure / Solids Information	
Date of Analysis:	6/4/2024	
Manure Source:	Other Solids	Explain Other:
Nitrogen % From Analysis:	2.904	Slurry
Phosphorus % From Analysis:	0.308	
Potassium % From Analysis:	3.75	
Moisture % From Analysis:	94.8	
What will be Applied to Fields on this Farm?	Both Effluent and Solids	
Is this Farm part of an AFO-CAFO?	No	

This plan is based on: rganic Nutrient Management Plan
Printed on: 8/12/24 4:34 PM

Field and Buffer Entries

Permit #: WQ0003190000

Printed on: 8/12/24 4:34 PM

Plan is based on: 590 Organic Nutrient Management Plar

FS = 393-Filter Strip, FB = 386-Field Border, RFB = 391-Riparian Forest Buffer, OLEA = Other Land Exclusion Areas or non-application areas (i.e. headquarters, freq. flooded areas, wooded areas, water bodies, etc)

NOTE: Field Border (FB) is expressed in ACRES on this spreadsheet, but as LINEAR FEET on the CPO.

Field No.	Total LMU or Field Acres	FS	FB	RFB	OLEA	Total Buffer Acres	Actual Application Acres	This Column Intentionally Left Blank
LMU 1	144					0.0	144.0	
LMU 1A	93					0.0	93.0	
LMU 2	39					0.0	39.0	
LMU 3	39					0.0	39.0	
LMU 4	97					0.0	97.0	
LMU 4A	76					0.0	76.0	
LMU 5	39					0.0	39.0	
LMU 5A	35					0.0	35.0	
LMU 6	51					0.0	51.0	
LMU 7	16					0.0	16.0	
LMU 7A	33					0.0	33.0	
LMU 8	26					0.0	26.0	
LMU 8A	18					0.0	18.0	
LMU 9	34					0.0	34.0	
LMU 9A	28					0.0	28.0	
LMU 10	29					0.0	29.0	
LMU 10A	46					0.0	46.0	
LMU 11	42					0.0	42.0	
LMU 12	24					0.0	24.0	
LMU 12A	63					0.0	63.0	
LMU 13	44					0.0	44.0	
LMU 14	12					0.0	12.0	

Soil Test, Crop Information and Plant Analysis Data Entries

Printed on: 8/12/24 4:34 PM Plan is based on: 590 Organic Nutrient Management Plan V 5.0 Permit #: WQ0003190000

Soil Test Analysis										Plant Analysis & Yield (optional) Use Only When Crop Removal is Required			
N (ppm)	P (ppm)	K (ppm)	Lime (enter amt or leave blank)	This column only for Dry Poultry	LMU or Field #	Appl. Area Acres	Crop/Land-Use and P Index Runoff Potential VL - L; M; H; or VH	E = Effluent S = Solids	Plant Analysis (Y / N)	% N	% P	% K	Yield Air Dry Production (lbs/ac/yr)
84	368	1636			LMU 1	144.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
68	206	425			LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
68	206	425			LMU 2	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
38	219	305			LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
41	162	286			LMU 4	97.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
41	162	286			LMU 4A	76.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
34	174	675			LMU 5	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
55	268	394			LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
72	362	681			LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
80	346	471			LMU 7	16.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
80	346	471			LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
35	461	763			LMU 8	26.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
35	461	763			LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
23	356	336			LMU 9	34.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
23	356	336			LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
19	290	677			LMU 10	29.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
37	144	495			LMU 10A	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	S	N				
37	144	495			LMU 11	42.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
42	277	402			LMU 12	24.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
42	277	402			LMU 12A	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
11	217	389			LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				
34	201	515			LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	S	N				

Solids Application Rate Entries

Solids - Set the Planned Application Rates

Permit #: WQ

703673	"Wet tons" of solids produced Annually						
			Will the planned rates use all of the				
			Tons to be used off-site at plann				
LMU or Field No.	Acres	Crop Management and PI runoff potential	Current Soil Test P ppm	Crop P_2O_5 Req.	Annual or Biennial Application Cycle	Maximum Solids Allowable Tons/Ac	Enter % of Maximum Planned to Apply
LMU 1							
LMU 1A	93.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	175	Annual	123.3	50.0
LMU 2							
LMU 3	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	219	175	Annual	123.3	50.0
LMU 4							
LMU 4A							
LMU 5							
LMU 5A	35.0	Coastal graze 1 AU/1 ac, SG mod graze M	268	175	Annual	123.3	50.0
LMU 6	51.0	Coastal graze 1 AU/1 ac, SG mod graze M	362	175	Annual	123.3	50.0
LMU 7							
LMU 7A	33.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	175	Annual	123.3	50.0
LMU 8							
LMU 8A	18.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	175	Annual	123.3	50.0
LMU 9							
LMU 9A	28.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	175	Annual	123.3	50.0
LMU 10							
LMU 10A	46.0	Coastal graze 1 AU/1 ac, SG mod graze H	144	175	Annual	165.6	100.0
LMU 11							
LMU 12							
LMU 12A	63.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	175	Annual	124.2	50.0
LMU 13	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	217	175	Annual	124.2	50.0
LMU 14	12.0	Coastal graze 1 AU/1 ac, SG mod graze M	201	175	Annual	124.2	50.0

Effluent Application Rate Entries

Effluent - Set the Planned Application Rates

Permit #: WQ0003190000

132991603	Gallons of Effluent to be used annually
4898	Acre inches of Effluent to be used annually

Will the planned rates use all of the effluent? **Yes**

LMU or Field No.	Acres	Crop Management and PI runoff potential	Current Soil Test P (ppm)	Crop P2O5 Req.	Annual or Biennial Application Cycle	Max Effluent Allowable (ac in/ac)	Enter % of Maximum Planned to Apply	Planned Effluent (ac in/ac)	Planned Effluent per field (acre inches)
LMU 1	144.0	Coastal graze 1 AU/1 ac, SG mod graze M	368	175	Annual	5.8	82.4	4.79	690
LMU 1A									
LMU 2	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	206	175	Annual	5.8	80.0	4.64	181
LMU 3									
LMU 4	97.0	Coastal graze 1 AU/1 ac, SG mod graze M	162	175	Annual	15.0	90.0	13.5	1310
LMU 4A	76.0	Coastal graze 1 AU/1 ac, SG mod graze M	162	175	Annual	15.0	90.0	13.5	1026
LMU 5	39.0	Coastal graze 1 AU/1 ac, SG mod graze M	174	175	Annual	15.0	90.0	13.5	527
LMU 5A									
LMU 6									
LMU 7	16.0	Coastal graze 1 AU/1 ac, SG mod graze M	346	175	Annual	5.8	80.0	4.64	74
LMU 7A									
LMU 8	26.0	Coastal graze 1 AU/1 ac, SG mod graze M	461	175	Annual	5.8	80.0	4.64	121
LMU 8A									
LMU 9	34.0	Coastal graze 1 AU/1 ac, SG mod graze M	356	175	Annual	5.8	80.0	4.64	158
LMU 9A									
LMU 10	29.0	Coastal graze 1 AU/1 ac, SG mod graze M	290	175	Annual	5.8	80.0	4.64	135
LMU 10A									
LMU 11	42.0	Coastal graze 1 AU/1 ac, SG mod graze M	144	175	Annual	15.0	90.0	13.5	567
LMU 12	24.0	Coastal graze 1 AU/1 ac, SG mod graze M	277	175	Annual	5.8	80.0	4.64	111
LMU 12A									
LMU 13									
LMU 14									

Total Effluent This Page: 4898

Available Water Capacity Entries

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LMU or Fields receiving Effluent	Texture of the soil layer within the upper 24 inches of the soil profile that has the lowest permeability (Don't Abbreviate)	EXAMPLE ENTRIES																Available Water Holding Capacity (AWC) of the upper 24 inches of the soil profile (Inches)
		0	3	0.12	0.2	3	14	0.16	0.21	14	18	0.08	0.12	18	24	0	0	
		Enter Data for the top 24" only																
		Depth of First Layer (inches)		AWC of First Layer (in/in)		Depth of Second Layer (inches)		AWC of Second Layer (in/in)		Depth of Third Layer (inches)		AWC of Third Layer (in/in)		Depth of Fourth Layer (inches)		AWC of Fourth Layer (in/in)		
LMU 1	Gravelly clay loam	0	5	0.14	0.16	5	20	0	0	20	24	0	0	24				0.75
LMU 2	Find Sandy Loam	0	12	0.1	0.15	12	51	0.05	0.17	51				0				2.82
LMU 4	Fine Sand	0	10	0.05	0.09	10	24	0.12	0.17	24				0				2.73
LMU 4A	Fine Sand	0	4	0.09	0.13	4	24	0.08	0.12	24				0				2.44
LMU 5	Clay Loam	0	14	0.15	0.2	14	40	0.12	0.2	40				0				4.05
LMU 7	Stony Clay	0	8	0.11	0.2	8	12	0.08	0.18	12	14	0.04	0.07	14	24	0	0	1.87
LMU 8	Clay Loam	0	14	0.15	0.2	14	40	0.12	0.2	40				0				4.05
LMU 9	Fine Sandy Loam	0	12	0.11	0.17	12	50	0.12	0.18	50				0				3.48
LMU 10	Fine Sandy Loam	0	12	0.11	0.17	12	50	0.12	0.18	50				0				3.48
LMU 11	Fine Sandy Loam	0	12	0.11	0.17	12	50	0.12	0.18	50				0				3.48
LMU 12	Stony Clay	0	8	0.11	0.2	8	12	0.08	0.18	12	14	0.04	0.07	14	24	0	0	1.87

servi tech
6921 S. Bell • Amarillo, TX 79109
www.servitech.com

Phone: 806.677.0093
800.557.7509
Fax: 806.677.0329

Lab No: **3501**	**LABORATORY ANALYSIS REPORT**	Report Date: 07/08/2024 01:08 pm

Send To: 6224	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118	Casey Johnson Casey Johnson Technical Director

Client Name:	DANCING CRANE DAIRY	**Received:**	06/11/2024
Sample ID:	RCS TD1	**Sampled:**	06/04/2024
		Invoice No:	425753
		P.O. #:	RICHARD GEORGE

	Analysis results		lbs/acre-in	meq/L
NUTRIENTS				
Nitrogen				
Total Nitrogen	147	ppm	33	10.5
Organic Nitrogen	41	ppm	9	2.9
Ammonium Nitrogen	106.3	ppm	24	7.6
Nitrate+Nitrite Nitrogen	<0.20	ppm	0	0
Major and Secondary Nutrients				
Phosphorus	30	ppm		
Phosphorus as P2O5	70	ppm	16	
Potassium	240	ppm		6.1
Potassium as K2O	290	ppm	66	
OTHER PROPERTIES				
Moisture	99.8	%		
Total Solids	0.2	%	453	
Organic Matter	0.1	%	227	
Ash	<0.10	%		
C:N Ratio	3.9	ratio		

Amended Report - Any information on this report supersedes the previous report on 06/26/2024

ENVIRO-AG ENGINEERING, INC.

EAE

AMARILLO · STEPHENVILLE · ARTESIA

Enviro-Ag Engineering, Inc.
3404 Airway Blvd,. Amarillo, TX 79118
Tel. 806-353-6123 Fax 806-353-4132

WASTEWATER CHAIN OF CUSTODY RECORD

Producer/Facility: Dancing Crane Dairy

County: Erath

Date Sampled: 6/4/2024

Date Shipped: 6/10/2024

Project Manager: Richard George

Sample Type	Sample ID	Number of Containers	Test Package	Proper Preservation	Matrix
Wastewater	RCS #TD1	2 350[illegible]	EAE TX CO KS LAGOON	Y	OT
Wastewater	RCS #TS1	2 35[illegible]	EAE TX CO KS LAGOON	Y	OT
Wastewater	RCS #TS2	2 35[illegible]3	EAE TX CO KS LAGOON	Y	OT
Wastewater	RCS #TH2	2 35[illegible]4	EAE TX CO KS LAGOON	Y	OT

Relinquished By: Ref. Internal COC

Company: EAE

Relinquished By: Lisa Postmus

Company: EAE

Date/Time: 6/11

Received By: [illegible]

Relinquished By:

Company: ServiTech Lab

6.7/6.7

servi tech
6921 S. Bell • Amarillo, TX 79109
www.servitech.com

Phone: 806.677.0093
800.557.7509
Fax: 806.677.0329

Lab No.: **3500**	**LABORATORY ANALYSIS REPORT**	Report Date: 06/26/2024 09:21 pm
Send To: 6224	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118	Amy Meier Amy Meier Data Review Coordinator
Results For: **Sample ID:**	DANCING CRANE DAIRY SLURRY	**Received:** 06/11/2024 **Sampled:** 06/04/2024 **Invoice No:** 425753 **P.O. #:** RICHARD GEORGE

		Analysis (dry basis)	Analysis (as rec'd)	Total content lbs per Acre-In	Total content lbs per 1000 gal	Estimated available first year* lbs per Acre-In	Estimated available first year* lbs per 1000 gal
NUTRIENTS							
Nitrogen							
Total Nitrogen	%	2.904	0.151	6583.0	13.6	194.5	7.7
Organic Nitrogen	%	2.231	0.116	5057.2	10.4	115.2	4.6
Ammonium Nitrogen	%	0.673	0.035	1525.9	3.1	79.3	3.1
Nitrate+Nitrite Nitrogen	%	<0.0010	<0.0010	0	<0.1	<0.1	<0.1
Major and Secondary Nutrients							
Phosphorus	%	0.308	0.016				
Phosphorus as P2O5	%	0.712	0.037	1613.1	3.3	75.5	3.0
Potassium	%	3.75	0.195				
Potassium as K2O	%	4.50	0.234	10202	21.1	530.5	21.1
OTHER PROPERTIES							
Moisture	%		94.8				
Total Solids	%		5.2	226700	468		
Organic Matter	%	53.8	2.8	122069	252		
Ash	%		2.4		216		
C:N Ratio	ratio		10.8				
Density	lbs/gal	155.8	8.1				

* Assumes 44% of organic nitrogen available during first crop year after application. Assumes 100% of ammonium and nitrate nitrogen available, but should be adjusted for potential field losses at application site.

ENVIRO-AG ENGINEERING, INC.

AMARILLO STEPHENVILLE ARTESIA

Enviro-Ag Engineering, Inc.
3404 Airway Blvd., Amarillo, TX 79118
Tel. 806-353-6123 Fax 806-353-4132

MANURE CHAIN OF CUSTODY RECORD

Producer/Facility: Dancing Crane Dairy

County: Erath

Date Sampled: 6/4/2024

Date Shipped: 6/10/2024

Project Manager: Richard George

Sample Type	Sample ID	Number of Containers	Test Package	Proper Preservation	Matrix
Slurry	Slurry	1	3500 EAE TX CO KS SLURRY	Y	SL

Relinquished By: Ref. Internal COC
Company: EAE

Relinquished By: Lisa Postmus
Company: EAE
Date/Time: 6/11
Received By: CG

Relinquished By:
Company: ServiTech Lab

6.7/6.7

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 5, 2023

CERTIFIED MAIL 7022 2410 0000 5131 6677
RETURN RECEIPT REQUESTED

Klaas Talsma, and Anastasia Talsma, Owner
Dancing Crane Dairy
3502 County Road 209
Hico, Texas 76457
Re: Annual Soil Sample Analysis Results at Dancing Crane Dairy
CAFO Permit No.: WQ0003190000

Dear Mr. and Ms. Talsma:

Attached are the analytical results for the soil samples that were collected at your facility on March 7 and 8, 2023. A copy of the sampling map is attached. Please utilize these results to update your nutrient management plan.

In addition, if any of the results are greater than 200 parts per million for phosphorus, please develop a new nutrient utilization plan (NUP) or revise your existing NUP, in accordance with your permit. All new or revised NUPs that are required to be submitted for TCEQ review and approval shall be mailed to the following address:

Water Quality Assessment Section Manager
Water Quality Division, MC 150
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

If you collected a duplicate sample following RG-408 protocol during the TCEQ sampling event that indicates a significant difference in the TCEQ analysis results (greater than 20% difference), you may choose to dispute the TCEQ sample results within 20 calendar days from the date of this letter. You must provide copies of all supporting documentation, including but not limited to your sample results, chain of custody documentation and laboratory quality assurance documentation. Please submit this information in writing to the TCEQ at the following address:

ATTN: Annual CAFO Soil Sample Analysis Disputes
Water Section Manager
Dallas/Fort Worth Regional Office
Texas Commission on Environmental Quality
2309 Gravel Drive
Fort Worth, TX 76118-6951

An analysis dispute received after the time allocated above will not be eligible for re-analysis. If you have any questions, please feel free to contact Mr. Michael Martin in the Stephenville Office at 254-552-1900.

Sincerely,

Michael Martin, Team Leader, Water Section
DFW Region Office
Texas Commission on Environmental Quality

MM/dm

Enclosures: Laboratory Analysis Reports

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55637

Location: Dancing Crane (Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:
Sampler: (signature) Vanessa Gardner
Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
	-01									See RFA	LMU TD1 (0-2)
	-02										LMU TD1 (2-6)
	-03										LMU TD1 (6-24)
	-04										LMU TD2 (0-2)
	-05										LMU TD2 (2-6)
	-06										LMU TD2 (6-24)
12664	-07	3/8/23	0920								LMU TD3 (0-2)
12665	-08	3/8/23	0920								LMU TD3 (2-6)
12666	-09	3/8/23	0920								LMU TD3 (6-24)
12667	-10	3/8/23	0945								LMU TD4 (0-2)

Relinquished by:	Date	Time	Received by:	For Laboratory Use:			
Relinquished by: Vanessa Gardner	3/15/23	1000	Received by: 3-16-23				
Relinquished by:	Date	Time	Received by:	Received on ice:	Y	N	deg. C
Relinquished by:	Date	Time	Received by:	Preservatives:	Y	N	
Relinquished by:	Date	Time	Received by:	COC Seal:	Y	N	
Shipper name: Fed Ex	Shipper Number: 7715 6006 2786			Seals Intact:	Y	N	

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055637a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055637

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12664	55637-07	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12665	55637-08	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12666	55637-09	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12667	55637-10	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055637a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055637

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12664	55637-07	217	ppm	389	ppm	3796	ppm	276	ppm	46.1	ppm	12.7	ppm
12665	55637-08	175	ppm	407	ppm	4633	ppm	255	ppm	43.4	ppm	23.8	ppm
12666	55637-09	30.0	ppm	303	ppm	8000	ppm	340	ppm	70.7	ppm	74.9	ppm
12667	55637-10	277	ppm	402	ppm	5139	ppm	323	ppm	51.4	ppm	15.2	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12664	55637-07	5/3/2023	FMR	5/4/2023	JLP
12665	55637-08	5/3/2023	FMR	5/4/2023	JLP
12666	55637-09	5/3/2023	FMR	5/4/2023	JLP
12667	55637-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055637a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055637

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12664	55637-07	7.36	NA	0.103	dS/M	11.213	ppm
12665	55637-08	7.42	NA	0.093	dS/M	8.966	ppm
12666	55637-09	7.69	NA	0.112	dS/M	15.197	ppm
12667	55637-10	7.23	NA	0.285	dS/M	41.59	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12664	55637-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12665	55637-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12666	55637-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12667	55637-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055637a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055637

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055637a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055637

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55637	
Sample ID: 07-10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55638

Location: Dancing Crane
(Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12668	-01	3/8/23	0945							See RFA	LMU TD4 (2-6)
12669	-02	3/8/23	0945								LMU TD4 (6-24)
12670	-03	3/7/23	11:00								LMU TD 6 (0-2)
12671	-04	3/7/23	11:00								LMU TD6 (2-6)
12672	-05	3/7/23	11:00								LMU TD6 (6-24)
~~12673~~	-06 TG										LMU TD7 (0-6)
~~12674~~	-07										LMU TD7 (6-24)
12673	-08	3-7-21	11:15								LMU THI (0-2)
12674	-09	3-7-21	11:15								LMU THI (2-6)
12675	-10	3-7-21	11:15								LMU THI (6-24)

Relinquished by:	Date	Time	Received by:	
Vanessa Gardner	3/10/23	1000	[illegible] 3-16-23	For Laboratory Use:
Relinquished by:	Date	Time	Received by:	Received on ice: Y N deg. C
Relinquished by:	Date	Time	Received by:	Preservatives: Y N
Relinquished by:	Date	Time	Received by:	COC Seal: Y N
Shipper name: Fed Ex	Shipper Number: 7715 6006 2786			Seals Intact: Y N

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055638a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055638

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12668	55638-01	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12669	55638-02	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12670	55638-03	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12671	55638-04	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12672	55638-05	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12673	55638-08	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12674	55638-09	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12675	55638-10	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055638a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055638

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12668	55638-01	197	ppm	461	ppm	5343	ppm	314	ppm	52.3	ppm	37.4	ppm
12669	55638-02	21.9	ppm	323	ppm	9590	ppm	257	ppm	82.5	ppm	59.7	ppm
12670	55638-03	206	ppm	425	ppm	7432	ppm	337	ppm	66.1	ppm	36.3	ppm
12671	55638-04	207	ppm	570	ppm	7875	ppm	384	ppm	69.7	ppm	54.9	ppm
12672	55638-05	33.4	ppm	250	ppm	9694	ppm	286	ppm	80.2	ppm	86.6	ppm
12673	55638-08	174	ppm	675	ppm	4593	ppm	288	ppm	51.2	ppm	18.5	ppm
12674	55638-09	112	ppm	619	ppm	4837	ppm	248	ppm	49.2	ppm	21.9	ppm
12675	55638-10	20.3	ppm	582	ppm	8287	ppm	311	ppm	74.8	ppm	68.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12668	55638-01	5/3/2023	FMR	5/4/2023	JLP
12669	55638-02	5/3/2023	FMR	5/4/2023	JLP
12670	55638-03	5/3/2023	FMR	5/4/2023	JLP
12671	55638-04	5/3/2023	FMR	5/4/2023	JLP
12672	55638-05	5/3/2023	FMR	5/4/2023	JLP
12673	55638-08	5/3/2023	FMR	5/4/2023	JLP
12674	55638-09	5/3/2023	FMR	5/4/2023	JLP
12675	55638-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055638a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055638

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12668	55638-01	7.74	NA	0.138	dS/M	9.146	ppm
12669	55638-02	7.82	NA	0.166	dS/M	13.059	ppm
12670	55638-03	7.07	NA	0.427	dS/M	67.826	ppm
12671	55638-04	7.58	NA	0.12	dS/M	13.348	ppm
12672	55638-05	7.85	NA	0.124	dS/M	13.88	ppm
12673	55638-08	7.24	NA	0.198	dS/M	34.496	ppm
12674	55638-09	7.72	NA	0.109	dS/M	10.501	ppm
12675	55638-10	7.76	NA	0.122	dS/M	14.403	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12668	55638-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12669	55638-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12670	55638-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12671	55638-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12672	55638-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12673	55638-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12674	55638-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12675	55638-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055638a-45068 Print Date: 22-May-23
Quality Control Report TCEQ COC# 055638

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055638a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055638

Laboratory ID:		pH	pH	Conducitity	Conducitity	Nitrate-N	Nitrate-N	Nitrate-N
			units	conc.	units	conc.	units	% recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH	Conducitity	Conducitity	Nitrate-N	Nitrate-N
		units	conc.	units	conc.	units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55638	
Sample ID: 01-05, 08-10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

B

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55639

Location: Dancing Crane (Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12642	-01	3-7-23	12:15							See RFA	LMU TH2 (0-2)
12643	-02		12:15								LMU TH2 (2-6)
12644	-03		12:15								LMU TH2 6-24
12645	-04		10:35								LMU TH3 (0-2)
12646	-05		10:35								LMU TH3 (2-6)
12647	-06		10:35								LMU TH3 (6-24)
12648	-07		12:55								LMU TH4E (0-2)
12649	-08		12:55								LMU TH4E (2-6)
12650	-09		12:55								LMU TH4E (6-24)
12651	-10		1:00								LMU TH4W (0-2)

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	3/15/23	1000	3-16-23
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:

Shipper name: Fed Ex

Shipper Number: 7715 6006 3120

For Laboratory Use:

Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055639a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055639

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12642	55639-01	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12643	55639-02	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12644	55639-03	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12645	55639-04	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12646	55639-05	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12647	55639-06	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12648	55639-07	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12649	55639-08	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12650	55639-09	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12651	55639-10	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055639a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055639

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12642	55639-01	268	ppm	394	ppm	3956	ppm	332	ppm	39.6	ppm	24.7	ppm
12643	55639-02	299	ppm	526	ppm	4712	ppm	299	ppm	43.9	ppm	39.6	ppm
12644	55639-03	34.3	ppm	312	ppm	8572	ppm	316	ppm	59.5	ppm	41.5	ppm
12645	55639-04	362	ppm	681	ppm	8271	ppm	474	ppm	67.8	ppm	28.3	ppm
12646	55639-05	288	ppm	759	ppm	7237	ppm	438	ppm	59.4	ppm	41.5	ppm
12647	55639-06	30.8	ppm	314	ppm	14292	ppm	288	ppm	91.8	ppm	59.6	ppm
12648	55639-07	151	ppm	274	ppm	1858	ppm	216	ppm	25.3	ppm	8.67	ppm
12649	55639-08	83.7	ppm	201	ppm	1471	ppm	134	ppm	19.0	ppm	12.5	ppm
12650	55639-09	7.44	ppm	189	ppm	2401	ppm	263	ppm	24.0	ppm	33.8	ppm
12651	55639-10	219	ppm	305	ppm	3578	ppm	320	ppm	35.5	ppm	20.2	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12642	55639-01	5/3/2023	FMR	5/4/2023	JLP
12643	55639-02	5/3/2023	FMR	5/4/2023	JLP
12644	55639-03	5/3/2023	FMR	5/4/2023	JLP
12645	55639-04	5/3/2023	FMR	5/4/2023	JLP
12646	55639-05	5/3/2023	FMR	5/4/2023	JLP
12647	55639-06	5/3/2023	FMR	5/4/2023	JLP
12648	55639-07	5/3/2023	FMR	5/4/2023	JLP
12649	55639-08	5/3/2023	FMR	5/4/2023	JLP
12650	55639-09	5/3/2023	FMR	5/4/2023	JLP
12651	55639-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055639a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055639

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12642	55639-01	7.17	NA	0.186	dS/M	54.696	ppm
12643	55639-02	7.6	NA	0.103	dS/M	17.329	ppm
12644	55639-03	7.76	NA	0.087	dS/M	13.21	ppm
12645	55639-04	7.27	NA	0.22	dS/M	71.701	ppm
12646	55639-05	7.6	NA	0.15	dS/M	27.677	ppm
12647	55639-06	7.89	NA	0.212	dS/M	27.896	ppm
12648	55639-07	6.96	NA	0.134	dS/M	26.874	ppm
12649	55639-08	7.42	NA	0.085	dS/M	7.144	ppm
12650	55639-09	7.62	NA	0.087	dS/M	7.312	ppm
12651	55639-10	7.02	NA	0.161	dS/M	37.898	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12642	55639-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12643	55639-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12644	55639-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12645	55639-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12646	55639-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12647	55639-06	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12648	55639-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12649	55639-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12650	55639-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12651	55639-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055639a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055639

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12659	IC927	43.4	ppm	292	ppm	2101	ppm	333	ppm	36.4	ppm	42.3	ppm
12660	IC928	43.3	ppm	284	ppm	2052	ppm	324	ppm	36.1	ppm	41.5	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk199	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC927	5/3/2023	FMR	5/4/2023	JLP
IC928	5/3/2023	FMR	5/4/2023	JLP
blk199	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055639a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055639

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12659	IC927	5.9	na	0.25	dS/M	5.897	ppm	
12660	IC928	5.8	na	0.25	dS/M	5.759	ppm	
	Mean IC	5.845	na	0.25	dS/M	5.828	ppm	
12660spike	Spiked sample	-	-	-	-	4.3	ppm	67
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk199	-	na	0	dS/M	-0.23	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC927	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC928	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk199	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number:	55639
Sample ID:	01-10

Standard Request for Analysis	
NO3-N	Mg
~~P~~ Mehlich III by ICP	Conductivity
K	pH
Na	

Additional Tests

N/A

B

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55640

Location: Dancing Crane
(Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12652	-01	3-7-23	1:00							see RFA	LMU TH4W (2-6)
12653	-02		1:00								LMU TH4W (6-24)
12654	-03		11:49								LMU TH5 (0-2)
12655	-04		11:45								LMU TH5 (2-6)
12656	-05		11:45								LMU TH5 (6-24)
12657	-06		12:25								LMU TH6 (0-2)
12658	-07		12:25								LMU TH6 (2-6)
12661	-08		12:25								LMU TH6 (6-24)
12662	-09		11:46								LMU TH7 (0-6)
12663	-10		11:46								LMU TH7 (6-24)

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	3/6/23	1000	[signature] 3-16-23
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Shipper name: Fed Ex	Shipper Number: 7715 6006 3120		

For Laboratory Use:

Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055640a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12652	55640-01	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12653	55640-02	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12654	55640-03	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12655	55640-04	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12656	55640-05	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12657	55640-06	0-2	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12658	55640-07	2-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055640a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12652	55640-01	169	ppm	339	ppm	3432	ppm	265	ppm	33.9	ppm	33.4	ppm
12653	55640-02	20.2	ppm	241	ppm	6714	ppm	310	ppm	56.1	ppm	112	ppm
12654	55640-03	139	ppm	258	ppm	3456	ppm	235	ppm	36.4	ppm	14.5	ppm
12655	55640-04	93.3	ppm	225	ppm	3251	ppm	171	ppm	33.4	ppm	17.9	ppm
12656	55640-05	6.03	ppm	206	ppm	8106	ppm	318	ppm	70.9	ppm	50.0	ppm
12657	55640-06	162	ppm	286	ppm	2548	ppm	252	ppm	32.4	ppm	13.8	ppm
12658	55640-07	73.6	ppm	241	ppm	2183	ppm	188	ppm	27.3	ppm	23.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12652	55640-01	5/3/2023	FMR	5/4/2023	JLP
12653	55640-02	5/3/2023	FMR	5/4/2023	JLP
12654	55640-03	5/3/2023	FMR	5/4/2023	JLP
12655	55640-04	5/3/2023	FMR	5/4/2023	JLP
12656	55640-05	5/3/2023	FMR	5/4/2023	JLP
12657	55640-06	5/3/2023	FMR	5/4/2023	JLP
12658	55640-07	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12652	55640-01	7.29	NA	0.078	dS/M	11.302	ppm
12653	55640-02	7.78	NA	0.101	dS/M	15.649	ppm
12654	55640-03	6.85	NA	0.132	dS/M	35.766	ppm
12655	55640-04	7.05	NA	0.091	dS/M	9.181	ppm
12656	55640-05	7.22	NA	0.122	dS/M	11.718	ppm
12657	55640-06	6.86	NA	0.26	dS/M	41.433	ppm
12658	55640-07	7.13	NA	0.128	dS/M	10.245	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12652	55640-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12653	55640-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12654	55640-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12655	55640-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12656	55640-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12657	55640-06	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12658	55640-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055640a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055640

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12659	IC927	43.4	ppm	292	ppm	2101	ppm	333	ppm	36.4	ppm	42.3	ppm
12660	IC928	43.3	ppm	284	ppm	2052	ppm	324	ppm	36.1	ppm	41.5	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk199	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC927	5/3/2023	FMR	5/4/2023	JLP
IC928	5/3/2023	FMR	5/4/2023	JLP
blk199	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055640

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12659	IC927	5.9	na	0.25	dS/M	5.897	ppm	
12660	IC928	5.8	na	0.25	dS/M	5.759	ppm	
	Mean IC	5.845	na	0.25	dS/M	5.828	ppm	
12660spike	Spiked sample	-	-	-	-	4.3	ppm	67
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk199	-	na	0	dS/M	-0.23	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC927	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC928	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk199	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055640b-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12661	55640-08	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12662	55640-09	0-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12663	55640-10	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055640b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12661	55640-08	4.58	ppm	249	ppm	6999	ppm	333	ppm	62.1	ppm	135	ppm
12662	55640-09	201	ppm	515	ppm	15074	ppm	325	ppm	116	ppm	33.9	ppm
12663	55640-10	48.9	ppm	335	ppm	9950	ppm	205	ppm	83.0	ppm	26.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12661	55640-08	5/3/2023	FMR	5/4/2023	JLP
12662	55640-09	5/3/2023	FMR	5/4/2023	JLP
12663	55640-10	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055640

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12661	55640-08	7.56	NA	0.148	dS/M	6.382	ppm
12662	55640-09	7.5	NA	0.175	dS/M	34.355	ppm
12663	55640-10	7.86	NA	0.117	dS/M	9.108	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12661	55640-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12662	55640-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12663	55640-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055640b-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055640

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055640b-45068 Print Date: 22-May-23

Quality Control Report

TCEQ COC# 055640

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55640	
Sample ID: 01-10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55641 2

Location: Dancing Crane (Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12676	-01	3-7-23	9:46							See RFA	LMU TH8 (0-6)
12677	-02	3-7-23	9:46								LMU TH8 (6-24)
12678	-03	3/8/23	1100								LMU TS1 (0-2)
12681	-04	3/8/23	1100								LMU TS1 (2-6)
12682	-05	3/8/23	1100								LMU TS1 (6-24)
12683	-06	3/8/23	1030								LMU TS2 (0-2)
12684	-07	3/8/23	1030								LMU TS2 (2-6)
12685	-08	3/8/23	1030								LMU TS2 (6-24)
12686	-09	3/8/23	1145								LMU TS4 (0-2)
12687	-10	3/8/23	1145								LMU TS4 (2-6)

Relinquished by:	Date	Time	Received by:	For Laboratory Use:			
Relinquished by: Vanessa Gardner	3/15/23	1000	Received by: 3-16-23				
Relinquished by:	Date	Time	Received by:	Received on ice:	Y	N	deg. C
Relinquished by:	Date	Time	Received by:	Preservatives:	Y	N	
Relinquished by:	Date	Time	Received by:	COC Seal:	Y	N	
Shipper name: Fed Ex	Shipper Number: 7715 6006 3109			Seals Intact:	Y	N	

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055641a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12676	55641-01	0-6	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12677	55641-02	6-24	3/7/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12678	55641-03	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055641a-45068　　Print Date: 22-May-23

Standard Sample Report　　TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12676	55641-01	25.9	ppm	160	ppm	2579	ppm	137	ppm	36.1	ppm	16.2	ppm
12677	55641-02	0.421	ppm	174	ppm	6409	ppm	334	ppm	67.1	ppm	208	ppm
12678	55641-03	290	ppm	677	ppm	2684	ppm	482	ppm	48.3	ppm	74.5	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12676	55641-01	5/3/2023	FMR	5/4/2023	JLP
12677	55641-02	5/3/2023	FMR	5/4/2023	JLP
12678	55641-03	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055641a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12676	55641-01	6.64	NA	0.095	dS/M	13.399	ppm
12677	55641-02	7.68	NA	0.214	dS/M	2.799	ppm
12678	55641-03	7.56	NA	0.33	dS/M	19.252	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12676	55641-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12677	55641-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12678	55641-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055641a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055641

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12679	IC929	46.2	ppm	285	ppm	2015	ppm	324	ppm	38.7	ppm	42.1	ppm
12680	IC930	48.9	ppm	296	ppm	2085	ppm	339	ppm	40.2	ppm	44.0	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk200	<0.0151	ppm	<0.0783	ppm	<0.530	ppm	<0.0530	ppm	0.409	ppm	<0.0968	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0111	ppm	0.0783	ppm	0.5303	ppm	0.0530	ppm	0.0072	ppm	0.0968	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC929	5/3/2023	FMR	5/4/2023	JLP
IC930	5/3/2023	FMR	5/4/2023	JLP
blk200	5/3/2023	FMR	5/4/2023	JLP

Report ID: 055641a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055641

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12679	IC929	5.9	na	0.252	dS/M	5.989	ppm	
12680	IC930	5.9	na	0.251	dS/M	5.741	ppm	
	Mean IC	5.86	na	0.2515	dS/M	5.865	ppm	
12680spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk200	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC929	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC930	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk200	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055641b-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12681	55641-04	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12682	55641-05	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12683	55641-06	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12684	55641-07	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12685	55641-08	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12686	55641-09	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12687	55641-10	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na – Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055641b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12681	55641-04	246	ppm	652	ppm	3053	ppm	374	ppm	46.2	ppm	72.1	ppm
12682	55641-05	54.2	ppm	703	ppm	5801	ppm	523	ppm	62.6	ppm	315	ppm
12683	55641-06	144	ppm	495	ppm	2965	ppm	312	ppm	53.7	ppm	91.6	ppm
12684	55641-07	113	ppm	292	ppm	2745	ppm	196	ppm	46.3	ppm	51.6	ppm
12685	55641-08	26.4	ppm	158	ppm	6039	ppm	233	ppm	57.5	ppm	117	ppm
12686	55641-09	356	ppm	336	ppm	3499	ppm	340	ppm	61.2	ppm	23.9	ppm
12687	55641-10	311	ppm	463	ppm	4830	ppm	325	ppm	52.7	ppm	39.4	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12681	55641-04	5/9/2023	DEC	5/9/2023	JLP
12682	55641-05	5/9/2023	DEC	5/9/2023	JLP
12683	55641-06	5/9/2023	DEC	5/9/2023	JLP
12684	55641-07	5/9/2023	DEC	5/9/2023	JLP
12685	55641-08	5/9/2023	DEC	5/9/2023	JLP
12686	55641-09	5/9/2023	DEC	5/9/2023	JLP
12687	55641-10	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055641b-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055641

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12681	55641-04	7.72	NA	0.131	dS/M	3.747	ppm
12682	55641-05	8.22	NA	0.136	dS/M	12.495	ppm
12683	55641-06	7.1	NA	0.199	dS/M	36.617	ppm
12684	55641-07	7.1	NA	0.095	dS/M	7.259	ppm
12685	55641-08	7.6	NA	0.094	dS/M	8.904	ppm
12686	55641-09	6.79	NA	0.217	dS/M	22.616	ppm
12687	55641-10	7.35	NA	0.185	dS/M	2.752	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12681	55641-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12682	55641-05	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12683	55641-06	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12684	55641-07	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12685	55641-08	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12686	55641-09	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12687	55641-10	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055641b-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055641

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12699	IC931	50.5	ppm	292	ppm	2018	ppm	327	ppm	40.1	ppm	46.3	ppm
12700	IC932	50.5	ppm	293	ppm	2017	ppm	331	ppm	39.8	ppm	47.8	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk201	<0.0245	ppm	<0.135	ppm	0.296	ppm	<0.0870	ppm	0.411	ppm	0.461	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC931	5/9/2023	DEC	5/9/2023	JLP
IC932	5/9/2023	DEC	5/9/2023	JLP
blk201	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055641b-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055641

Laboratory ID:		pH	pH	Conducitity	Conducitity	Nitrate-N	Nitrate-N	Nitrate-N
			units	conc.	units	conc.	units	% recovery
12699	IC931	5.9	na	0.253	dS/M	6.069	ppm	
12700	IC932	5.9	na	0.25	dS/M	5.313	ppm	
	Mean IC	5.855	na	0.2515	dS/M	5.691	ppm	
12700spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk201	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH	Conducitity	Conducitity	Nitrate-N	Nitrate-N
		units	conc.	units	conc.	units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC931	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC932	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk201	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55641	
Sample ID: 01 - 10	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55642 2

Location: Dancing Crane

(Do not fill in this shaded area if the facility information must be confidential)

Permit #: 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12688	-01	3/8/23	1145							See RFA	LMUTS4 (6-24)
12689	-02	3/8/23	~~1227~~ 1210								LMUTS5 (0-2)
12690	-03	3/8/23	1210								LMUTS5 (2-6)
12691	-04	3/8/23	1210								LMUTS5 (6-24)
	-05										
	-06										
	-07										
	-08										
	-09										
	-10										

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	3/5/23	1000	3-6-23

Shipper name: Fed Ex

Shipper Number: 7715 6006 3109

For Laboratory Use:

	Y	N	
Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055642a-45068
Print Date: 22-May-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055642

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12688	55642-01	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12689	55642-02	0-2	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12690	55642-03	2-6	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP
12691	55642-04	6-24	3/8/2023	Vanessa Gardner	4	3/16/2023	soil	3/24/2023	4/27/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055642a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055642

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12688	55642-01	71.8	ppm	416	ppm	6396	ppm	452	ppm	66.1	ppm	232	ppm
12689	55642-02	461	ppm	763	ppm	6492	ppm	399	ppm	83.2	ppm	28.4	ppm
12690	55642-03	355	ppm	606	ppm	6664	ppm	408	ppm	86.2	ppm	39.7	ppm
12691	55642-04	54.4	ppm	368	ppm	9894	ppm	397	ppm	96.2	ppm	107	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12688	55642-01	5/9/2023	DEC	5/9/2023	JLP
12689	55642-02	5/9/2023	DEC	5/9/2023	JLP
12690	55642-03	5/9/2023	DEC	5/9/2023	JLP
12691	55642-04	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055642a-45068 Print Date: 22-May-23

Standard Sample Report TCEQ COC# 055642

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12688	55642-01	7.87	NA	0.105	dS/M	15.162	ppm
12689	55642-02	7.32	NA	0.239	dS/M	34.733	ppm
12690	55642-03	7.49	NA	0.285	dS/M	16.827	ppm
12691	55642-04	7.84	NA	0.172	dS/M	32.467	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12688	55642-01	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12689	55642-02	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12690	55642-03	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
12691	55642-04	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

Report ID: 055642a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055642

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12699	IC931	50.5	ppm	292	ppm	2018	ppm	327	ppm	40.1	ppm	46.3	ppm
12700	IC932	50.5	ppm	293	ppm	2017	ppm	331	ppm	39.8	ppm	47.8	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	42.1	ppm	264.0	ppm	1911.0	ppm	289.0	ppm	26.1	ppm	29.0	ppm
	IC Upper	51.9	ppm	320.0	ppm	2499.0	ppm	369.0	ppm	46.8	ppm	53.0	ppm
	blk201	<0.0245	ppm	<0.135	ppm	0.296	ppm	<0.0870	ppm	0.411	ppm	0.461	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0043	ppm	0.1351	ppm	0.0211	ppm	0.0870	ppm	0.0098	ppm	0.9263	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC931	5/9/2023	DEC	5/9/2023	JLP
IC932	5/9/2023	DEC	5/9/2023	JLP
blk201	5/9/2023	DEC	5/9/2023	JLP

Report ID: 055642a-45068 Print Date: 22-May-23

Quality Control Report TCEQ COC# 055642

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12699	IC931	5.9	na	0.253	dS/M	6.069	ppm	
12700	IC932	5.9	na	0.25	dS/M	5.313	ppm	
	Mean IC	5.855	na	0.2515	dS/M	5.691	ppm	
12700spike	Spiked sample	-	-	-	-	4.8	ppm	70.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk201	-	na	0	dS/M	-0.27	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC931	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
IC932	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW
blk201	5/4/2023	DEC	5/4/2023	DEC	5/4/2023	DEC	5/3/2023	FMR	05/04/23	JW

REQUEST FOR ANALYSIS
TCEQ-BOSQUE 1255/1226 SOIL SAMPLES

COC Number: 55642	
Sample ID: 01 - 04	
Standard Request for Analysis	
NO3-N	Mg
P Mehlich III by ICP	Conductivity
K	pH
Na	
Additional Tests	
N/A	

Dancing Crane Dairy3502 CR 209, Hico, TX 76457**Oct. 26, 2018 Permit**

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the TCEQ Region 4 Stephenville Office at 254-552-1900.

Dancing Crane Dairy**LMU TH 8**Oct. 26, 2018 Permit

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries. For more information concerning this map, contact the TCEQ Region 4 Stephenville Office at 254-552-1900.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 27, 2023

CERTIFIED MAIL 7022 2410 0000 5131 6745
RETURN RECEIPT REQUESTED
Mr. Klass Talsma, and Ms. Anastasia Talsma,, Owner
Dancing Crane Dairy
7469 County Road 209
Hico, Texas 76457
Re: Annual Soil Sample Analysis Results at Dancing Crane Dairy
CAFO Permit No.: WQ0003190000

Dear Mr. Talsma, and Ms. Talsma:

Attached are the analytical results for the soil samples that were collected at your facility on March 27, 2023. A copy of the sampling map is attached. Please utilize these results to update your nutrient management plan.

In addition, if any of the results are greater than 200 parts per million for phosphorus, please develop a new nutrient utilization plan (NUP) or revise your existing NUP, in accordance with your permit. All new or revised NUPs that are required to be submitted for TCEQ review and approval shall be mailed to the following address:

Water Quality Assessment Section Manager
Water Quality Division, MC 150
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

If you collected a duplicate sample following RG-408 protocol during the TCEQ sampling event that indicates a significant difference in the TCEQ analysis results (greater than 20% difference), you may choose to dispute the TCEQ sample results within 20 calendar days from the date of this letter. You must provide copies of all supporting documentation, including but not limited to your sample results, chain of custody documentation and laboratory quality assurance documentation. Please submit this information in writing to the TCEQ at the following address:

ATTN: Annual CAFO Soil Sample Analysis Disputes
Water Section Manager
Dallas/Fort Worth Regional Office
Texas Commission on Environmental Quality
2309 Gravel Drive
Fort Worth, TX 76118-6951

An analysis dispute received after the time allocated above will not be eligible for re-analysis. If you have any questions, please feel free to contact Mr. Michael Martin in the Stephenville Office at 254-552-1900.

Sincerely,

Michael Martin, Team Leader, Water Section
DFW Region Office
Texas Commission on Environmental Quality

MM/dm

Enclosures: Laboratory Analysis Reports

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Chain of Custody Record

55661

Location: Dancing Crane (Do not fill in this shaded area if the facility information must be confidential)

Permit #: WQ 3190

Region:	Organization #:	PCA Code:	Program:	Sampler telephone number:

E-Mail ID:

Sampler: (signature) Vanessa Gardner

Sampler: (please print clearly) Vanessa Gardner

Lab ID Number	Sample ID	Date	Time	# of Bottles	Grab/ Comp.	Matrix L,S,M,O,T	CL2	pH	Cond.	Analyses Requested	REMARKS
12696	-01	3/27/23	1130								TD1 (0-2)
12697	-02	3/27/23	1130								TD1 (2-6)
12698	-03	3/27/23	1130								TD1 (6-24)
12701	-04	3/27/23	1201								TD2 (0-2)
12702	-05	3/27/23	1201								TD2 (2-6)
12703	-06	3/27/23	1201								TD2 (6-24)
12704	-07	3/27/23	1045								TD7 (0-6)
12705	-08	3/27/23	1045								TD7 (6-24)
12706	-09	3/27/23	1045								TD7 (2-6)
	-10										

Relinquished by:	Date	Time	Received by:
Vanessa Gardner	4/24/23	1000	4-25-23

Shipper name: FEDEX

Shipper Number: 7719 3792 3227

For Laboratory Use:

	Y	N	
Received on ice:	Y	N	deg. C
Preservatives:	Y	N	
COC Seal:	Y	N	
Seals Intact:	Y	N	

TCEQ-10065 (11/02) White (Original) -Lab Yellow-Lab Pink-Contract Lab Manager Goldenrod-Collector Copy

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055661a-45091
Print Date: 14-Jun-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12696	55661-01	0-2	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12697	55661-02	2-6	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12698	55661-03	6-24	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055661a-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12696	55661-01	368	ppm	1636	ppm	5635	ppm	901	ppm	60.0	ppm	167	ppm
12697	55661-02	133	ppm	1757	ppm	7589	ppm	840	ppm	68.9	ppm	303	ppm
12698	55661-03	13.2	ppm	991	ppm	11442	ppm	496	ppm	82.4	ppm	445	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12696	55661-01	5/30/2023	FMR	5/30/2023	JLP
12697	55661-02	5/30/2023	FMR	5/30/2023	JLP
12698	55661-03	5/30/2023	FMR	5/30/2023	JLP

Report ID: 055661a-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12696	55661-01	7.65	NA	0.485	dS/M	84.166	ppm
12697	55661-02	7.95	NA	0.202	dS/M	18.255	ppm
12698	55661-03	7.84	NA	0.312	dS/M	29.708	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12696	55661-01	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12697	55661-02	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12698	55661-03	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

Report ID: 055661a-45091 Print Date: 14-Jun-23
Quality Control Report TCEQ COC# 055661

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12699	IC933	41.5	ppm	279	ppm	2039	ppm	315	ppm	32.6	ppm	40.1	ppm
12700	IC934	39.1	ppm	272	ppm	1981	ppm	309	ppm	31.0	ppm	39.4	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	39.0	ppm	265.0	ppm	1857.0	ppm	292.0	ppm	26.0	ppm	30.0	ppm
	IC Upper	47.1	ppm	310.0	ppm	2315.0	ppm	359.0	ppm	45.1	ppm	52.0	ppm
	blk202	-0.338	ppm	-0.979	ppm	-2.22	ppm	-0.503	ppm	0.293	ppm	-0.0438	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC933	5/30/2023	FMR	5/30/2023	JLP
IC934	5/30/2023	FMR	5/30/2023	JLP
blk202	5/30/2023	FMR	5/30/2023	JLP

Report ID: 055661a-45091 Print Date: 14-Jun-23

Quality Control Report TCEQ COC# 055661

Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12699	IC933	5.8	na	0.251	dS/M	5.742	ppm	
12700	IC934	5.9	na	0.254	dS/M	5.032	ppm	
	Mean IC	5.84	na	0.2525	dS/M	5.387	ppm	
12700spike	Spiked sample	-	-	-	-	4.7	ppm	86.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk202	-	na	0	dS/M	-0.066	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC933	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
IC934	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
blk202	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

Report for Samples analyzed Under Contract Number: 582-10-99518

Report ID: 055661b-45091
Print Date: 14-Jun-23

Texas A&M AgriLife Extension Service Soil, Water and Forage Testing Laboratory
108 Soil Testing Laboratory, 2478 TAMU
College Station, TX 77843-2478
979-862-4955

Client Name: Dancing Crane
Client address: not provided

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Sample Depth (inches)	Sample Coll. Date:	Collector Name:	TCEQ Region #	Date Received	Sample Type:	Sample opened Date	Sample Ground Date	Process Tech.
12701	55661-04	0-2	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12702	55661-05	2-6	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12703	55661-06	6-24	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12704	55661-07	0-2	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12705	55661-08	2-6	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP
12706	55661-09	6-24	3/27/2023	Vanessa Gardner	4	4/25/2023	soil	4/27/2023	5/28/2023	TLP

Methods and Sample Preparation:

Receiving of samples Processing - SWFTL0097R0.SOP

Upon opening of sample chests, all samples are identified and organized as listed on COC to insure completeness and condition of shipment. Individually each sample is spread across a non-reactive tray where foreign materials is physically removed and discarded. The sample(s) are then placed inside a 65C drying oven and allow to remain until dry. Individual samples were then removed from drying oven and pulverized with an Agvise soil pulzerized fitted with a shaking 2mm screen. Every attempt was again made to remove any remaining plant tissue in the pulverized sample(s). Soil was then transferred to the laboratory sample cups and while additional sample was stored.

Analytical Methods:

Soil pH 2:1 DI water:soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Schofield, R.K. and A.W. Taylor. 1955. The measurement of soil pH. Soil Sci. Soc. Am. Proc. 19:164-167.

Soil Conductivity 2:1 DI Water:Soil SOIL pH AND CONDUCTIVITY - SWFTL0015R1.SOP

Rhoades, J.D. 1982. Soluble salts. p. 167-178. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil Nitrate-N KCl Extractable with Cd-Reduction Analyses NO3-N EXTRACTION - SWFTL0014R5.SOP/NO3-N ANALYSIS - SWFTL0089R1.SOP

Keeney, D.R. and D.W. Nelson. 1982. Nitrogen - inorganic forms. p. 643-687. In: A.L. Page, et al. (ed.). Methods of Soil Analysis: Part 2. Agronomy Monogr. 9. 2nd ed. ASA and SSSA, Madison, WI.

Soil P, K, Ca, Mg, S and Na -- Mehlich III by ICP M3 EXTRACTION - SWFTL0079R1.SOP/M3 ANALYSIS - SWFTL0081R2.SOP

Mehlich-3 soil test extractant: a modification of Mehlich-2 extractant. Commun. Soil Sci. Plant Anal. 15(12):1409-1416

Report ID: 055661b-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg units	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12701	55661-04	346	ppm	471	ppm	7539	ppm	370	ppm	55.6	ppm	31.2	ppm
12702	55661-05	303	ppm	932	ppm	7263	ppm	487	ppm	49.7	ppm	39.7	ppm
12703	55661-06	83.7	ppm	903	ppm	10287	ppm	418	ppm	62.0	ppm	52.7	ppm
12704	55661-07	137	ppm	356	ppm	3539	ppm	232	ppm	31.3	ppm	27.6	ppm
12705	55661-08	9.80	ppm	188	ppm	7060	ppm	228	ppm	48.5	ppm	83.2	ppm
12706	55661-09	86.7	ppm	308	ppm	4298	ppm	173	ppm	33.0	ppm	30.3	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	TCEQ/client Sample ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
12701	55661-04	5/30/2023	FMR	5/30/2023	JLP
12702	55661-05	5/30/2023	FMR	5/30/2023	JLP
12703	55661-06	5/30/2023	FMR	5/30/2023	JLP
12704	55661-07	5/30/2023	FMR	5/30/2023	JLP
12705	55661-08	5/30/2023	FMR	5/30/2023	JLP
12706	55661-09	5/30/2023	FMR	5/30/2023	JLP

Report ID: 055661b-45091 Print Date: 14-Jun-23

Standard Sample Report TCEQ COC# 055661

Laboratory ID:	TCEQ/client Sample ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
12701	55661-04	6.94	NA	0.228	dS/M	79.62	ppm
12702	55661-05	7.53	NA	0.097	dS/M	14.917	ppm
12703	55661-06	7.77	NA	0.106	dS/M	18.415	ppm
12704	55661-07	7.06	NA	0.106	dS/M	48.368	ppm
12705	55661-08	7.57	NA	0.095	dS/M	21.035	ppm
12706	55661-09	7.26	NA	0.061	dS/M	14.804	ppm

Laboratory ID:	pH	pH units	Conductivity	Conductivity units	Nitrate-N	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	TCEQ/client	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Sample ID:	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
12701	55661-04	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12702	55661-05	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12703	55661-06	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12704	55661-07	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12705	55661-08	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
12706	55661-09	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

Report ID: 055661b-45091 Print Date: 14-Jun-23

Quality Control Report TCEQ COC# 055661

Laboratory ID:		Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
12719	IC935	43.4	ppm	284	ppm	2054	ppm	323	ppm	34.4	ppm	42.0	ppm
12720	IC936	41.2	ppm	276	ppm	1993	ppm	315	ppm	33.6	ppm	40.3	ppm
	Mean IC	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm	0	ppm
	IC Lower	39.0	ppm	265.0	ppm	1857.0	ppm	292.0	ppm	26.0	ppm	30.0	ppm
	IC Upper	47.1	ppm	310.0	ppm	2315.0	ppm	359.0	ppm	45.1	ppm	52.0	ppm
	blk202	-0.338	ppm	-0.979	ppm	-2.22	ppm	-0.503	ppm	0.293	ppm	-0.0438	ppm

Laboratory ID:	Mehlich III P conc.	Mehlich III P units	Mehlich III K conc.	Mehlich III K units	Mehlich III Ca conc.	Mehlich III Ca units	Mehlich III Mg conc.	Mehlich III Mg conc.	Mehlich III S conc.	Mehlich III S units	Mehlich III Na conc.	Mehlich III Na units
Detection Limit	0.0051	ppm	0.0446	ppm	0.1602	ppm	0.0698	ppm	0.0221	ppm	0.0530	ppm
Reporting Limit	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm	1	ppm

Laboratory ID:	Mehlich III Extract Date	Mehlich III Extract Tech	Mehlich III Anal.Date	Mehlich III Anal. Tech
IC935	5/30/2023	FMR	5/30/2023	JLP
IC936	5/30/2023	FMR	5/30/2023	JLP
blk202	5/30/2023	FMR	5/30/2023	JLP

Report ID: 055661b-45091 Print Date: 14-Jun-23

Quality Control Report TCEQ COC# 055661

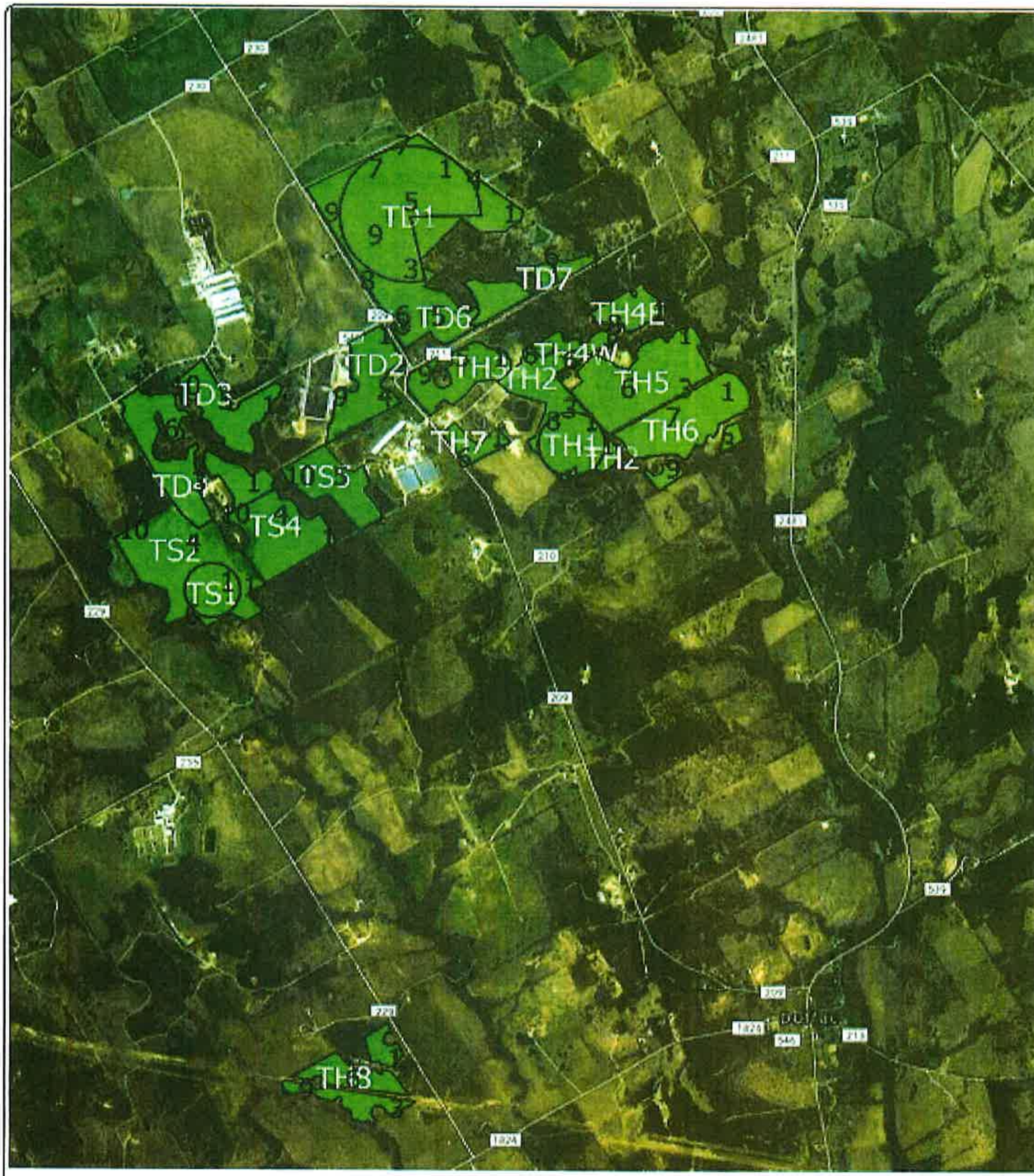
Laboratory ID:		pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units	Nitrate-N % recovery
12719	IC935	5.8	na	0.253	dS/M	5.134	ppm	
12720	IC936	5.8	na	0.252	dS/M	5.171	ppm	
	Mean IC	5.835	na	0.2525	dS/M	5.1525	ppm	
12720spike	Spiked sample	-	-	-	-	4.7	ppm	86.3
	IC lower	5.750	na	0.239	dS/M	4.7	ppm	
	IC Upper	5.940	na	0.310	dS/M	7.2	ppm	
	blk202	-	na	0	dS/M	-0.066	ppm	

Laboratory ID:	pH	pH units	Conducitity conc.	Conducitity units	Nitrate-N conc.	Nitrate-N units
Detection Limit	0.01	na	0.001	dS/M	0.01	ppm
Reporting Limit	0.1	na	0.001	dS/M	1	ppm

Laboratory ID:	pH/Conductivity prep		pH Analysis		Conductivity		Nitate-N Extract		Nitrate-N Analysis	
	Date	Tech	Date	Tech	Date	Tech	Date	Tech	Date	Tech
IC935	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
IC936	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW
blk202	5/25/2023	DEC	5/25/2023	DEC	5/25/2023	DEC	5/30/2023	FMR	6/1/2023	JW

g Crane Dairy3502 CR 209, Hico, TX 76457**Oct. 26, 2018**

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been



Dancing Crane Dairy**LMU TH 8**Oct. 26, 2018 Permit

This map was generated by the Region 4 Stephenville Office of the Texas Commission on Environmental Quality. This product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only th

Attachment F

TCEQ STAFF CONTACT INFORMATION

TCEQ - BOSQUE 1255-1226 SOIL SAMPLES

Date: 27 MAR 2023 COC#: 55661

Should you need to contact TCEQ regarding this sample, please contact the following staff as appropriate:

Primary Contact	Investigator	Phone #	Email Address
	Vanessa Gardner	254-552-1903	Vanessa.Gardner@tceq.texas.gov
	Michael Martin	254-552-1901	Michael.Martin@tceq.texas.gov
	Cody Christian	254-552-1912	Cody.Christian@tceq.texas.gov
	Chris Pearson	254-552-1905	Chris.Pearson@tceq.texas.gov

If the primary investigator cannot be reached within one business day, the following persons may be contacted:

Michael Martin, Team Leader, Stephenville Off.	254-552-1901	Michael.Martin@tceq.texas.gov
Rebecca Stephens, Administrative Assistant	254-552-1900	Rebecca.Stephens@tceq.texas.gov
Jeff Tate, Water Section Manager, Dallas/Ft. Worth Regional Office	817-588-5875	Jeff.Tate@tceq.texas.gov
Cassandra Derrick, Project Manager, Field Operations Support Div., Austin Central Office	512-239-5304	Cassandra.Derrick@tceq.texas.gov

Mailing Addresses:

Stephenville Special Project Office 580-D W. Lingleville Rd. Stephenville , Texas 76401 Main: 254-552-1900 or 1-800-687-7078 Fax: 254-552-1922	**Dallas/Ft. Worth Regional Office** 2309 Gravel Drive Fort Worth, Texas 76118 Main: 817-588-5800 Fax: 817-588-5701

5.0 RECHARGE FEATURE CERTIFICATION

CERTIFICATION

I certify that potential Recharge Features in the form of artificial penetrations and natural features exist on property utilized under this application as defined in 30 TAC §321.32(50). The protective measures in the form of best management practices identified in this report, when implemented, are designed to avoid adverse impacts to these features and associated groundwater formations.

All information presented on this page and in the following supporting documents is true and accurate to the best of my knowledge.

STATE OF TEXAS
NORMAN H. MULLIN
66107
LICENSED
PROFESSIONAL ENGINEER

8/26/24

Norman Mullin, P.E.

Enviro-Ag Engineering, Inc.

Firm #F-2507

5.1 General

This recharge feature certification report was authorized by Mr. Tony Martins representing TMC Dairies Hico. The findings and recommendations contained herein were compiled by Ms. Jourdan Mullin and Mr. Norman Mullin, P.E., of Enviro-Ag Engineering, Inc., Amarillo, Texas.

5.2 Purpose of Report

Dancing Crane Dairy is applying for a major amendment of current TPDES #3190 under 30 TAC, Chapter 321, Subchapter B, Concentrated Animal Feeding Operations. The purpose of this report is to determine if the subject property has any natural or artificial features, either on or beneath the ground surface, which would provide a significant pathway for effluent or solids from the facility into the underlying aquifer. At a minimum, the records and/or maps of the following entities/agencies were reviewed to locate any artificial recharge features: A) Texas Railroad Commission, B) local water district, C) Texas Water Development Board, D) TCEQ, E) Natural Resource Conservation Service (NRCS), F) current landowners and G) onsite inspection. The TCEQ Regulatory Guidance RG-433 was followed to identify recharge features and recommend best management practices.

5.3 Property Under Evaluation

The property under evaluation consists of approximately 1,536 acres in Erath County, Texas. The area is within the jurisdiction of Middle Trinity Ground Water Conservation District.

5.4 Definition of Waste Production

The sources of process-generated wastewater is wash water form the milking parlors operations and the water generated from the production of biogas. The flow of the process-generated wastewater can be found on Figure 2.1 A-B.

The second process of wastewater production involves the accumulation of manure solids in the open confinement lots. Rain falling on the open lots comes into contact with the manure layer and absorbs some of the excreted nutrients present in manure. The nutrient enriched runoff is considered wastewater, which flows by designed slopes from the open lots toward the settling basins and into the RCSs.

Manure solids accumulated in the open confinement lots are collected at least annually and hauled off-site to farmland by a waste transporter. While in the open lots, manure becomes compacted and slowly permeable due to hoof action by the cattle. This compacted manure layer results in an increase of the overall runoff volume during rainfall events. Infiltration of nutrients downward through the manure layer into the underlying soils is considered minimal as a result of pen surface compaction (Sweeten, 1990).

5.5 Definition of Recharge Feature

TCEQ rules define a "Recharge Feature" as: "*Those natural or artificial features either on or beneath the ground surface at the site under evaluation that provide or create a significant hydrologic connection between the ground surface and the underlying groundwater within an aquifer. Significant artificial features include, but are not limited to, wells and excavation or material pits. Significant natural hydrologic connections include, but are not limited to: faults, fractures, sinkholes or other macro pores that allow direct surface infiltration; a permeable or shallow soil material that overlies and aquifer; exposed geologic formations that are identified as an aquifer; or a water course bisecting an aquifer.*" (30 TAC §321.32(50))

The TCEQ Regulatory Guidance RG-433 further defines a "recharge feature" as: "*A natural or artificial feature either on or beneath the ground surface that provides or creates a significant hydrologic connection (or pathway) between the ground surface and the underlying groundwater within an aquifer.*"

The guidance document also defines a "significant pathway" as: "*A significant pathway between the land surface and the subsurface has the ability to transmit waste, wastewater, or precipitation mixed with waste to groundwater. The wastewater may impact the groundwater quality within an aquifer or migrate laterally to discharge as seeps that may impact surface water quality. Recharge features with significant pathways include geomorphologic, geologic, soil, and artificial features. Agricultural practices may also enhance existing recharge features.*"

EVALUATION OF NATURAL FEATURES

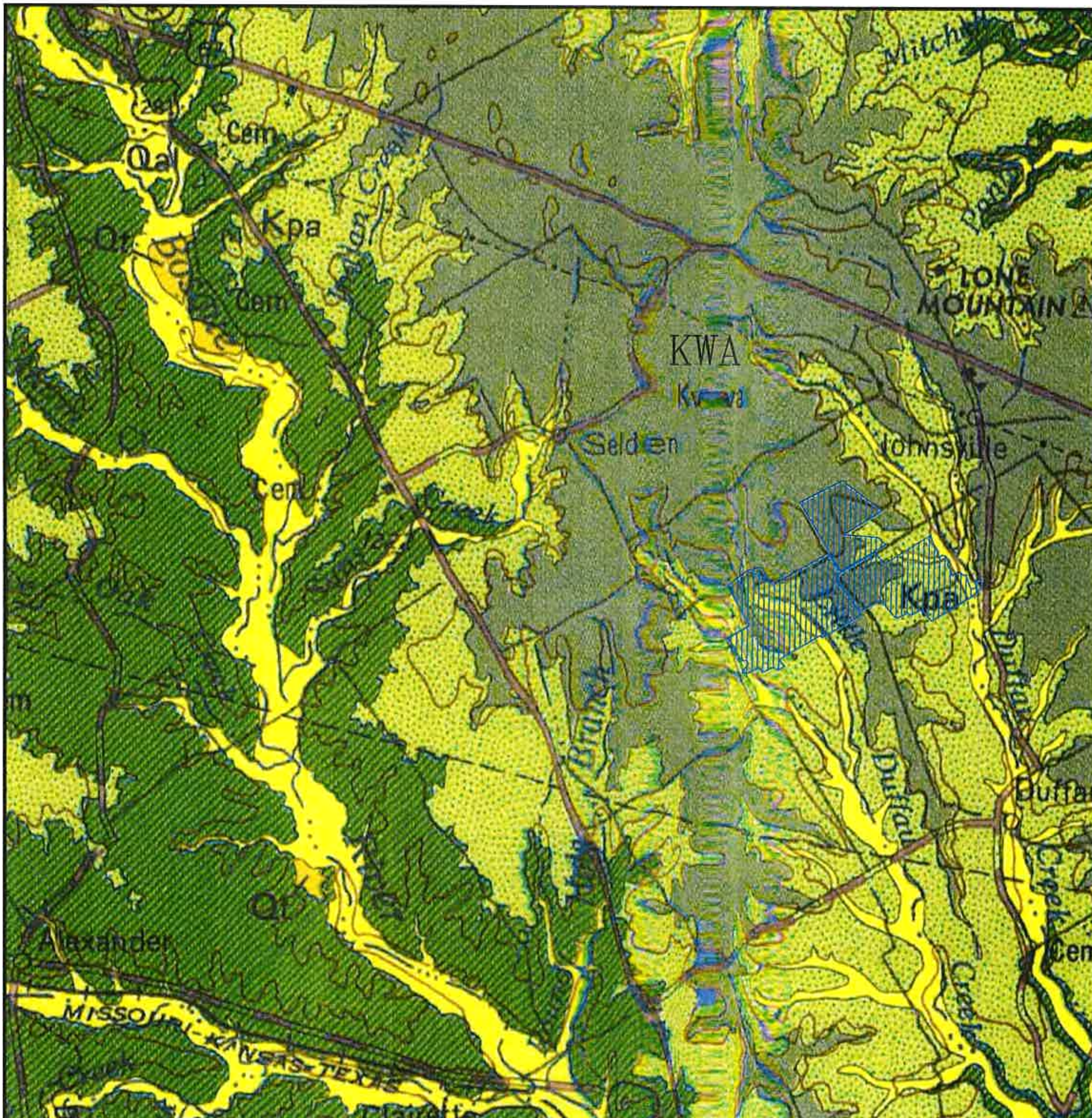
5.6 Geomorphologic/Geologic Features

The Windthorst-Duffau and Maloterre-Dugout soils in this area of Erath County are immediately underlain by the Paluxy and Walnut Formations and by recently deposited Alluvium in the area of the North Bosque River, as shown in Figure 5.1, Geologic Atlas. Allluvium consists of floodplain deposits, including low terrace deposits near floodplain level and bedrock locally in stream channels; gravel, sand, silt, clay and organic matter up to 35 feet thick. The Paluxy Formation consists of sandstone interbedded with claystone and siltstone, up to 100 feet thick, thinning southward.

Forming the upper unit of the Trinity Group, the Paluxy Formation consists of up to 400 feet of predominantly fine to coarse-grained sand interbedded with clay and shale. Underlying the Paluxy, the Glen Rose Formation forms a gulfward-thickening wedge of marine carbonates consisting primarily of limestone. Paluxy bedrock outcrops along the northeast portion of this site. Limiting application rates of wastewater and manure will protect this feature form adverse impacts.

The Walnut Formation comprises the beds of clay and nonchalky limestones at the base of the Fredericksburg division. They consist of alternations of calcareous laminated clays, weathering yellow on oxidation, semicrystalline limestone flags, and shell agglomerate, all of which grade upward without break into the more chalky beds of the Edwards limestones. In places they weather into rich black soils and make extensive agricultural belts (Hill, 1901.)

The basal unit of the Trinity Group consists of the Twin Mountains and Travis Peak formations, which are laterally separated by a facies change. To the north, the Twin Mountains Formation consists mainly of medium-to coarse-grained sands, silty clays, and conglomerates (Ashworth, 1995).



Map Revised 7/31/2024

Legend:
Qal – Quaternary Alluvium Formation
Kpa – Cretaceous Paluxy Formation
Kwa – Cretaceous Walnut Formation

Source: Geologic Atlas of Texas, Abilene Sheet, 1972.

N
W E
S

NO SCALE

TMC Dairies Hico Hico, Texas Erath County	Geologic Atlas of Texas Figure 5.1 Page 38	ENVIRO–AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

5.6.1 Outcrops/Stream Interception

An inspection of the CAFO property and review of the USGS topographic map indicated the presence of two unnamed tributaries to the Duffau Creek, Little Duffau Creek and numerous freshwater ponds located on the property. No land application is proposed in these areas and required buffer zones will be maintained. A grassed waterway is present in LMUs #1 & 1A which is established in permanent vegetative cover. The grassed waterway was designed and is maintained according to NRCS Practice Standard Code 412. Two sand pits are also located on-site. The natural topography around the sand pits diverts rainwater runoff from adjacent LMUs away from the pits, therefore no buffer zone is currently needed. If the conditions change from mining the pits where there is a potential for run-on, diversion berms will be installed to divert water around the pits.

5.6.2 Excessive Slopes

No slopes of greater than 8 percent are present on the property.

5.6.3 Other Large-Scale Conduits

No faults, fractured sediments, caves, sinkholes, solution cavities, vugs or concentrated or extensive animal burrowing was observed during an on-site visit, nor is identified on the geologic atlas, soil surveys or USGS maps.

5.6.4 Surface Water

The "water in the state" designation is based on Enviro-Ag Engineering, Inc., site inspections, the permittee's knowledge of the property and the USDA-FSA aerial photograph (2015). The buffer zones and LMU boundaries in Figure 6.1 (Refer to Section 6) are submitted with this application for TCEQ approval.

5.6.5 Aquifer

The Trinity aquifer consist of early Cretaceous age formations of the Trinity Group where they occur in a band extending through the central part of the state in all or parts of 55 counties, from the Red River in North Texas to the Hill Country of South-Central Texas.

Formations comprising the Trinity Group are (from youngest to oldest) the Paluxy, Glen Rose, and Twin Mountains-Travis peak. Updip, where the Glen Rose thins or is missing, the Paluxy and Twin Mountains coalesce to form the Antlers Formation. The Antlers consists of up to 900 feet of sand and gravel, with clay beds in the middle section. Water from the Antlers is mainly used for irrigation in the outcrop area of North and Central Texas (Ashworth and Hopkins, 1995).

The aquifer is underlain and confined by low-permeability rocks that range in age from Precambrian to Jurassic. Where the aquifer does not crop out, it is confined above by the Walnut Formation in most of the area.

Recharge to the Trinity aquifer is generally as precipitation that falls on aquifer outcrop areas and as seepage from streams and ponds where the head gradient is downward.

In the Hill Country, water might flow laterally into the Trinity aquifer form the adjacent Edwards-Trinity aquifer. The aquifer discharges by evapotranspiration, spring discharges, diffuse lateral or upward leakage into shallower aquifers, and withdrawals from wells (USGS, 2003). Land application at agronomic rates and maintain permanent cover crops will protect the feature from adverse impacts associated with this operation.

5.7 Soil Features

Soil mapping units included in this section for the production area and land application areas were taken from the electronic NRCS Soil Survey for Erath County. Soils descriptions are included in the supporting documentation and were obtained from the most current version of the NRCS electronic soil information database for Erath County available on the NRCS Web Soil Survey.

5.7.1 Production Area

Soils underlying the pen and pond areas are predominately of the Blanket (BaB), Fairy-Hico (FhC2), Hico-Windthorst (HwD3), Maloterre (Ma) and Purves-Dugout-Maloterre (Pd)series. The RCSs have been certified as meeting TCEQ guidelines for soil liner (30 TAC §321.38(g). Best management practices pertaining to surface drainage, surface compaction and manure management within the open lot confinement area will be followed. Steve Evans, Ph.D., soil physicist with the USDA Agricultural Research Service in Bushland, Texas, stated that his work with lysimeters and potential evapotranspiration indicated limited infiltration and even less deep percolation will occur on areas with sloped surfaces (1996). Work performed by the NRCS calculated the feedlot surface curve number (potential for runoff) as 90 on a scale of 100.

5.7.2 Land Application Areas

Soils underlying the land application areas are primarily of the Blanket (BaB), Clairette-Hassee (CtB), Fairy-Hico (FhC2), Slidell (HoB), Hico-Windthorst (HwD3), Maloterre (Ma), Nimrod (NdC), Purves-Dugout-Maloterre (Pd), Selden (SdC), Hassee (WaB and WkA) and Windthorst (WnC) series. The application of wastewater and/or manure will be performed at agronomic rates according to an approved NUP/NMP. No pooling or ponding is anticipated due to application through sprinklers.

Figure 5.2 shows the soils underlying the property as delineated from the electronic NRCS Soil Survey map for Erath County. The electronic version of the soil survey is considered the most current soils information available. Table 5.1 is a summary of the estimated physical properties of the soils in the subject area, obtained from the NRCS Web Soil Survey.

Table 5.1: Estimated Soil Properties

Soil Series (Map ID)	Slope (%)	HSG	Depth (in)	USDA Soil Texture	Permeability / Infiltration Rate (in/hr)	Available Water Capacity (in/in of soil)
Blanket – BaB	1-3	C	0-14 14-40	Clay Loam	0.6-2.0 0.06-0.6	0.15-0.20 0.12-0.20
Bolar – BdC Denton	3-5	C D	0-16 16-32 0-10 10-28	Clay Loam Silty Clay	0.6-2.0 0.6-2.0 0.06-0.20 0.06-0.20	0.17-0.21 0.16-0.20 0.11-0.15 0.09-0.14
Bunyan – Bu	------	B	0-10 10-46	Fine Sandy Loam	2.0-6.0 0.6-2.0	0.11-0.15 0.15-0.19
Clairette – CtB Hassee	1-3	C D	0-4 4-10 10-26 0-5 5-14 14-35	Fine Sandy Loam Fine Sandy Loam	2.0-6.0 0.6-2.0 0.20-0.6 0.6-2.0 0.6-2.0 0.001-0.06	0.10-0.17 0.15-0.19 0.10-0.18 0.10-0.14 0.07-0.12 0.06-0.10
Clairette – CtC	3-5	C	0-4 4-10 10-26	Loam	0.6-2.0 0.6-2.0 0.20-0.6	0.15-0.19 0.15-0.19 0.10-0.18
Fairy – FhC2 Hico	1-5	B B	0-13 13-45 0-12 12-51	Very Fine Sandy Loam Fine Sandy Loam	2.0-6.0 0.6-2.0 2.0-6.0 0.6-2.0	0.10-0.17 0.05-0.17 0.10-0.15 0.05-0.17
FriA – Frio	0-1	C	0-22 22-40	Clay	0.20-0.6 0.20-0.6	0.12-0.20 0.08-0.16
Hico – HfD2 Fairy	3-8	B B	0-12 12-51 0-13 13-45	Fine Sandy Loam Very Fine Sandy Loam	2.0-6.0 0.6-2.0 2.0-6.0 0.6-2.0	0.10-0.15 0.05-0.17 0.10-0.17 0.05-0.17
Slidell – HoB	1-3	D	0-19 19-32	Clay	0.001-0.06 0.001-0.06	0.10-0.18 0.10-0.18
Hico – HwD3 Windthorst	1-8	B C	0-7 7-44 0-6 6-16	Sandy Clay Loams	0.6-6.0 0.6-2.0 0.20-2.0 0.20-2.0	0.11-0.13 0.11-0.13 0.11-0.14 0.15-0.19
Maloterre – Ma	1-8	D	0-5 5-20	Gravelly Clay Loam	0.6-2.0 0.06-2.0	0.14-0.16 ------
Nimrod – NdC	0-5	A	0-4 4-27	Fine Sand	6.0-20 6.0-20	0.09-0.13 0.08-0.12
Purves – PcC	3-5	D	0-7 7-12 12-17 17-40	Clay	0.06-0.20 0.06-0.6 0.06-0.6 0.06-2.0	0.12-0.20 0.08-0.18 0.04-0.07 ------
Purves – Pd	------	D	0-8 8-12 12-14	Stony Clay	0.06-0.20 0.06-0.6 0.06-0.6	0.11-0.20 0.08-0.18 0.04-0.07

Dugout		D	14-24 0-8 8-18 18-28	Gravelly Clay Loam	0.06-2.0 0.20-0.6 0.20-0.6 0.06-2.0	------ 0.06-0.15 0.07-0.16 ------
Maloterre		D	0-8 8-18	Gravelly Clay Loam	0.6-2.0 0.001-0.06	0.06-0.11 ------
Selden – SdC	1-5	C	0-10 10-24	Fine Sand	2.0-6.0 0.20-0.6	0.05-0.09 0.12-0.17
Hassee – WaB	1-3	D	0-12 12-50	Fine Sandy Loam	0.6-2.0 0.001-0.06	0.11-0.17 0.12-0.18
Hassee – WkA	0-2	D	0-18 18-55	Fine Sandy Loam	0.6-2.0 0.001-0.06	0.11-0.17 0.12-0.18
Windthorst – WnC	1-5	C	0-10 10-38	Loamy Fine Sand	6.0-20 0.20-0.6	0.06-0.13 0.10-0.20
Windthorst – WoB	1-5	C	0-8 8-33	Very Fine Sandy Loam	2.0-6.0 0.20-0.6	0.10-0.17 0.10-0.20
Windthorst – WoB2	1-5	C	0-4 4-33	Fine Sandy Loam	2.0-6.0 0.20-0.6	0.10-0.17 0.10-0.20

The major soil series within each LMU are identified in Table 5.2. All soils at the site that have been identified by NRCS as being at high risk for various limitations are presented in Table 5.3. Associated best management practices will be implemented, as appropriate, based on physical and economic conditions.

Table 5.2: Major Soil Types

LMU ID	Major Soil Type
1, 1A, 2, 14	Maloterre (Ma)
7, 7A, 12, 12A	Purves-Dugout-Maloterre (Pd)
13	Fairy-Hico (FhC2)
5, 5A, 8, 8A	Blanket (BaB)
6	Purves (PcC)
3, 10A	Hico-Windthorst – (HwD3)
4A	Nimrod (NdC)
4	Selden (SdC)
9, 9A, 10, 11	Hassee (WaB)

Table 5.3: Potential Soil Limitations for Land Application

Soil Series	Potential Soil Limitations	Best Management Practices
BdC	Depth to Hard Bedrock Slow Water Movement	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
Bu, FriA	Flooding	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.

Soil Series	Potential Soil Limitations	Best Management Practices
CtB, WaB, WkA	Slow Water Movement Depth to Saturated Zone	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
FhC2, HfD2	Slow Water Movement Seepage	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
HoB	Slow Water Movement	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
HwD3	Depth to Soft Bedrock	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
Ma	Depth to Bedrock Droughty	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). – Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that Land Management Unit. -No land application to inundated soils.
NdC,	Filtering Capacity Seepage	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
WnC	Filtering Capacity	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.
PcC	Droughty Depth to Bedrock Slow Water Movement	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). – Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that Land Management Unit. -No land application to inundated soils.
Pd	Droughty Depth to Bedrock Slow Water Movement Large Surface Stones	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). – Irrigation events will be managed to assist in maintaining soil moisture levels within the range of the available water holding capacity of that Land Management Unit. -No land application to inundated soils.
SdC	Depth to Saturated Zone	– Land Application not to exceed agronomic rates for nutrients and soil hydraulic rates (refer to NMP). -No land application to inundated soils.

5.7.3 Erosion

LMUs will be protected with typical conservation farming practices within the standards of the NRCS. The following methods will be used to control/prevent erosion of exposed soils in the production area:

- Seeding/sprigging exposed areas with forage or cover crops,
- Constructing terraces or berms (shortening the length and steepness of slopes),
- Covering erosive areas with road surfacing materials,
- Implementing reduced tillage practices,
- Maintaining a cover of plants or crop residue.

Map Revised 8/2/2024

SOIL LEGEND:
For specific soil data, refer to Table 5.1

MAP LEGEND:
Denotes Production Area

N
W E
S

1000' 0 1000' 2000'

SCALED AS SHOWN

Source: USDA-NRCS Soil Survey, Soil Survey Geographic Database for (Erath County, TX). Available at: http://soildatamart.nrcs.usda.gov. Accessed August, 2024

• Refer to Figures 1.3 A-B & 1.4 A-D for overall facility maps.

TMC Dairies Hico Hico, Texas Erath County	NRCS Soils Map Figure 5.2 Page 45	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

ARTIFICIAL FEATURES

5.8 Railroad Commission Records

A search of the RRC database files was performed, and a search of the online RRC map viewer was conducted. No proposed locations or existing penetrations for oil and gas were identified on the subject property. Railroad Commission database information is included as an attachment to this document.

5.9 Ground Water Conservation District Records

A search of the Middle Trinity Groundwater Conservation District online data viewer was conducted. Should an abandoned penetration be encountered anywhere on the subject property at any time, the penetration will be marked, inspected and properly sealed to prevent a potential impact to the underlying aquifer. Appropriate well plugging reports shall be submitted as required to the Texas Department of Licensing and Regulation (TDLR) and will be maintained in the onsite PPP.

5.10 GeoSearch

GeoSearch was not utilized in this application.

5.11 Texas Water Development Board Water Data Interactive (WDI)

The TWDB WIID online database was reviewed for artificial penetrations. The database revealed water wells registered with the TWDB as being located on the subject property. The wells that could be correlated with onsite wells are shown on Table 5.4.

5.12 Natural Resource Conservation Service

The historical NRCS Soil Survey of Erath County (1973) was reviewed for locations of potential recharge features. No potential recharge features were identified.

5.13 Other Artificial Features

Numerous features, such as irrigation tail water pits and stock ponds, exist on the subject property and are shown to be buffered on Figures 5.3A-B. These areas shall be buffered during land application events or backfilled prior to the first land application event.

5.14 Previous/Current Landowner

Mr. Klaas Talsma, the previous landowner was contacted regarding the presence of any potential recharge features on the property. Mr. Talsma confirmed the locations of all active water wells.

5.15 Onsite Inspection

The property has been inspected both on the ground and by historical mapping. All active water wells were documented on the property during the onsite inspection and are shown on Figures 5.3A-B. The BMPs for all wells are listed in Table 5.4. Should any open well or test hole be encountered, it will be marked, reported to the Engineer, included on

Figures 5.3A-B, and properly plugged (30 TAC §321.34(f)(3)(B)). Well plugging reports shall be submitted as required to the Texas Department of Licensing and Registration (Well Drillers Board) and will be maintained in the onsite PPP.

All well data listed in Table 5.4 is based on information received from the water district, TCEQ and TWDB files, onsite inspection, and interviews of persons knowledgeable of the property. The map number corresponds to the location shown in Figures 5.3A-B. The well identification number corresponds to the database number or drilling report number used by the water district, TCEQ or TWDB Commission.

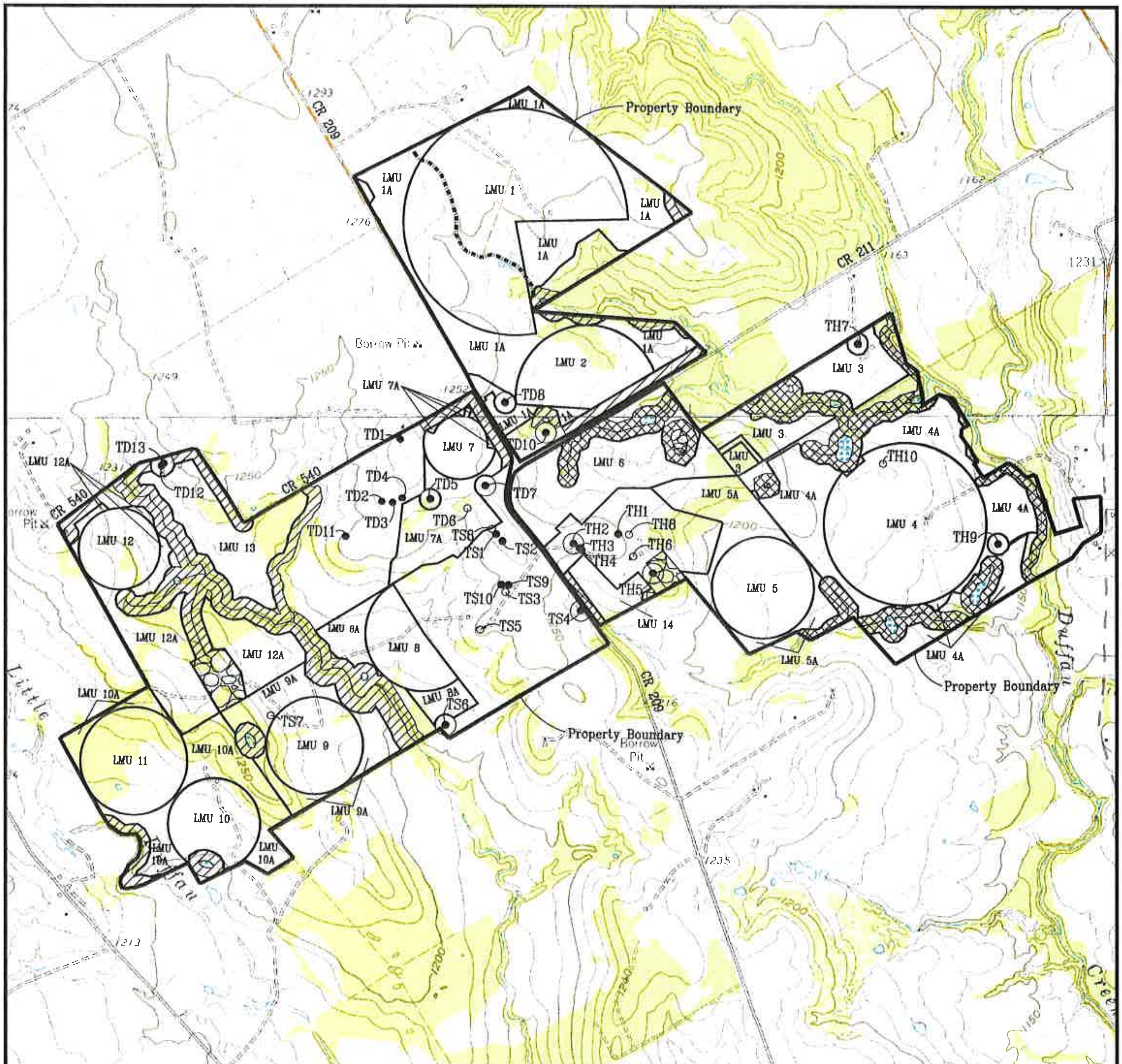
Table 5.4: Well Information

Map No.	Well ID	Best Management Practices
TD1	19425	• See Attached Approved Well Buffer Exception
TD2	19422	• See Attached Approved Well Buffer Exception
TD3	19424	• See Attached Approved Well Buffer Exception
TD4	-----	• See Attached Approved Well Buffer Exception
TD5	19430	• Maintain 150-foot buffer
TD6	98795	• See Attached Plugging Report
TD7	19421	• Maintain 150-foot buffer
TD8	19427	• Maintain 150-foot buffer
TD10	19426	• Maintain 150-foot buffer
TD11	19428	• See Attached Well Buffer Exception (Phase1) • To Be Plugged (Phase 2)
TD12	-----	• Maintain 150-foot buffer
TD13	19431	• Maintain 150-foot buffer
TH1	19410	• See Attached Approved Well Buffer Exception
TH2	19409	• Maintain 150-foot buffer
TH3	19408	• See Attached Approved Well Buffer Exception
TH4	19407	• See Attached Approved Well Buffer Exception
TH5	19411	• Maintain 150-foot buffer
TH6	28001	• See Attached Plugging Report
TH7	16283	• Maintain 150-foot buffer
TH8	-----	• No evidence of well: see attached due diligence
TH9	-----	• Maintain 150-foot buffer
TS1	16278	• See Attached Approved Well Buffer Exception
TS2	98799	• See Attached Approved Well Buffer Exception
TS3	98799	• See Attached Plugging Report
TS4	16280	• Maintain 150-foot buffer
TS5	-----	• To Be Plugged
TS6	16282	• Maintain 150-foot buffer
TS7	98796	• See Attached Plugging Report
TS8	98798	• See Attached Plugging Report
TS9	16281	• See Attached Approved Well Buffer Exception
TS10	-----	• See Attached Approved Well Buffer Exception
TH10	98797	• See Attached Plugging Report

Note: A copy of the well logs for onsite wells are attached.

No public water supply wells are located within 500 feet of the property boundary. All off-site wells within the required buffer distances required by this authorization are shown (on the Site Map) with their appropriate buffers. Wells outside the required buffer distances are shown for reference only.

All irrigation systems or water distribution systems into which any type of chemical or foreign substance, such as wastewater, is distributed into the water pumped from the well are required by 16 TAC §76 to install an in-line, automatic quick-closing check valve capable of preventing pollution of groundwater.



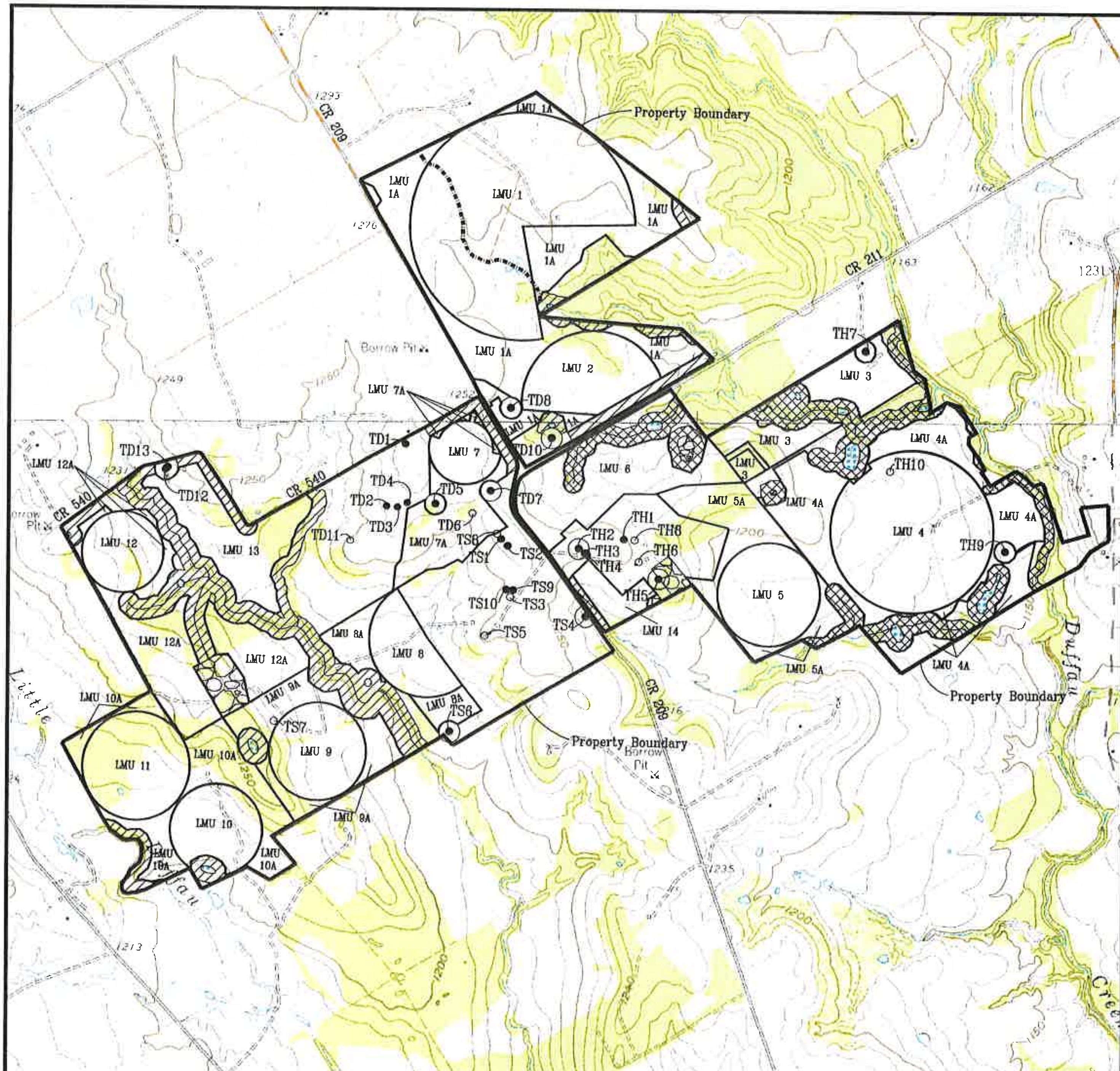
LEGEND:

- Denotes Plugged Water Well
- Denotes Water Well
- Denotes Well w/150-ft Buffer
- Denotes Grassed Waterway
- Denotes 142-ft Buffer Zone
- Denoted 133-ft Buffer Zone
- Denotes Fresh Water Pond
- Denotes Pit

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS - Accessed May 2013.

Refer to Figures 1.4A-D for detailed production area maps.

TMC Dairies Hico Hico, TX Erath County	Recharge Feature Map Phase I Figure 5.3A Page 49	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132



Map Revised 8/2/2024

LEGEND:

- ○ Denotes Plugged Water Well
- ● Denotes Water Well
- Denotes Well w/150-ft Buffer
- Denotes Grassed Waterway
- Denotes 142-ft Buffer Zone
- Denoted 133-ft Buffer Zone
- Denotes Fresh Water Pond
- Denotes Pit

N
W E
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1000' 0 1000' 2000'

SCALED AS SHOWN

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS - Accessed May 2013.

Refer to Figures 1.4A-D for detailed production area maps.

TMC Dairies Hico Hico, TX Erath County	Recharge Feature Map Phase II Figure 5.3B Page 50	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

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Supporting Documentation

USDA Soil Descriptions & Limitations

Texas Railroad Commission Map

Water District Well Location Map (if available)

Onsite Well Logs (if available)

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Report—Physical Soil Properties

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
BaB—Blanket clay loam, 1 to 3 percent slopes														
Blanket	0-14	20-25- 45	28-44- 53	27-31- 35	1.30-1.50	4.00-14.00	0.15-0.20	3.4-5.3	1.0-3.0	.32	.32	5	6	48
	14-40	5-24- 40	13-38- 60	35-38- 50	1.35-1.55	0.42-4.00	0.12-0.20	4.8-8.6	0.5-2.0	.32	.32			
	40-56	5-28- 40	10-39- 68	27-33- 50	1.35-1.55	1.40-14.00	0.12-0.20	2.6-7.9	0.3-1.0	.37	.37			
	56-80	5-35- 40	10-37- 66	27-28- 50	1.35-1.55	1.40-14.00	0.12-0.20	2.6-7.9	0.1-0.8	.43	.43			
BdC—Bolar-Denton complex 3 to 5 percent slopes														
Bolar	0-16	20-34- 45	17-36- 53	27-30- 40	1.21-1.38	4.00-14.00	0.17-0.21	2.4-6.8	1.0-4.0	.20	.20	2	4L	86
	16-32	15-34- 45	15-36- 50	20-30- 40	1.34-1.46	4.00-14.00	0.16-0.20	0.4-5.9	0.5-2.0	.28	.28			
	32-36	15-34- 45	15-36- 50	20-30- 40	1.38-1.56	4.00-14.00	0.12-0.16	0.3-5.5	0.3-1.0	.17	.32			
	36-80	—	—	—	—	0.42-14.00	—	—	—					
Denton	0-10	3- 6- 15	40-48- 57	40-46- 57	1.16-1.34	0.42-1.40	0.11-0.15	5.0-11.1	1.0-4.0	.17	.17	2	4	86
	10-28	5- 7- 25	28-48- 60	35-45- 55	1.28-1.41	0.42-1.40	0.09-0.14	3.7-10.3	1.0-4.0	.20	.20			
	28-32	5- 7- 25	28-48- 60	35-45- 55	1.31-1.41	0.42-1.40	0.09-0.13	2.7-9.4	0.5-2.0	.32	.32			
	32-38	5- 7- 30	40-63- 83	12-30- 40	1.36-1.45	4.00-14.00	0.08-0.12	0.0-5.2	0.1-1.0	.43	.43			
	38-80	—	—	—	—	0.42-14.00	—	—	—					

Physical Soil Properties–Erath County, Texas

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
[redacted]														
	[redacted]													
	[redacted]	—	—	—	—	[redacted]	—	—	—					
[redacted]	[redacted]													
	[redacted]						—	—	—					
Bu—Bunyan fine sandy loam, occasionally flooded														
Bunyan	0-10	-70-	-16-	8-14- 20	1.40-1.60	14.00-42.00	0.11-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	10-46	-56-	-18-	18-27- 35	1.30-1.50	4.00-14.00	0.15-0.19	0.0-2.9	0.1-1.0	.20	.20			
	46-62	-35-	-38-	18-27- 35	1.40-1.60	4.00-14.00	0.18-0.22	0.0-2.9	0.1-1.0	.32	.32			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
CtB—Clairette-Hassee very fine sandy loams, 1 to 3 percent slopes														
Clairette, very fine sandy loam	0-4	52-68- 80	2-21- 42	5-11- 18	1.42-1.60	14.00-42.00	0.10-0.17	0.2-1.5	0.5-2.0	.49	.49	5	3	86
	4-10	35-49- 75	5-32- 50	10-19- 24	1.44-1.57	4.00-14.00	0.15-0.19	0.7-2.3	0.5-1.5	.37	.37			
	10-26	20-31- 60	0-31- 48	32-38- 55	1.42-1.66	1.40-4.00	0.10-0.18	3.7-8.7	0.3-1.0	.28	.28			
	26-56	25-40- 60	0-27- 53	18-33- 45	1.46-1.54	4.00-14.00	0.16-0.20	1.1-6.3	0.1-0.8	.24	.24			
	56-74	25-47- 70	0-27- 53	15-26- 45	1.54-1.64	4.00-14.00	0.12-0.13	0.8-6.2	0.1-0.6	.28	.28			
	74-80	10-56- 75	0-27- 73	10-17- 45	1.50-1.70	14.00-42.00	0.12-0.17	0.4-6.3	0.1-0.5	.32	.32			
Hassee, very fine sandy loam	0-5	52-68- 80	0-19- 38	10-13- 20	1.54-1.58	4.00-14.00	0.10-0.14	0.4-2.4	0.5-1.5	.55	.55	5	3	86
	5-14	35-68- 75	5-17- 45	10-15- 20	1.41-1.52	4.00-14.00	0.07-0.12	0.4-2.4	0.2-1.2	.55	.55			
	14-35	25-30- 50	7-27- 40	35-43- 50	1.40-1.53	0.01-0.42	0.06-0.10	5.8-10.4	0.5-1.2	.32	.32			
	35-45	25-32- 55	0-24- 45	30-44- 50	1.45-1.52	0.01-0.42	0.06-0.10	3.8-10.2	0.2-1.0	.28	.28			
	45-79	25-35- 55	4-26- 45	30-39- 45	1.40-1.53	0.01-0.42	0.05-0.10	3.7-8.5	0.1-0.5	.32	.32			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
CtC—Clairette loam, 3 to 5 percent slopes														
Clairette, loam	0-4	35-44- 75	9-36- 50	10-20- 24	1.47-1.62	4.00-14.00	0.15-0.19	0.7-2.3	0.5-1.5	.37	.37	5	6	48
	4-10	35-49- 75	5-32- 50	10-19- 24	1.44-1.57	4.00-14.00	0.15-0.19	0.7-2.3	0.5-1.5	.37	.37			
	10-26	20-31- 60	0-31- 48	32-38- 55	1.42-1.66	1.40-4.00	0.10-0.18	3.7-8.7	0.3-1.0	.28	.28			
	26-56	25-40- 60	0-27- 53	18-33- 45	1.46-1.54	4.00-14.00	0.16-0.20	1.1-6.3	0.1-0.8	.24	.24			
	56-74	25-47- 70	0-27- 53	15-26- 45	1.54-1.64	4.00-14.00	0.12-0.13	0.8-6.2	0.1-0.6	.28	.28			
	74-80	10-56- 75	0-27- 73	10-17- 45	1.50-1.70	14.00-42.00	0.12-0.17	0.4-6.3	0.1-0.5	.32	.32			
FhC2—Fairy-Hico complex, 1 to 5 percent slopes, moderately eroded														
Fairy, moderately eroded	0-13	52-68- 80	6-26- 43	5- 6- 18	1.47-1.51	14.00-42.00	0.10-0.17	0.3-1.8	0.5-2.0	.55	.55	5	3	86
	13-45	30-55- 75	0-21- 52	17-24- 34	1.40-1.60	4.00-14.00	0.05-0.17	1.3-4.6	0.3-1.3	.24	.24			
	45-68	40-45- 90	0-33- 56	4-22- 31	1.50-1.66	4.00-42.00	0.05-0.17	0.0-2.8	0.1-0.5	.32	.32			
	68-80	5-15- 75	0-43- 53	5-42- 45	1.60-1.76	0.42-42.00	0.12-0.18	0.0-6.1	0.0-0.5	.32	.32			
Hico, moderately eroded	0-12	55-65- 80	6-24- 39	6-11- 18	1.46-1.51	14.00-42.00	0.10-0.15	0.4-2.0	0.5-2.0	.28	.28	5	3	86
	12-51	30-55- 75	0-17- 48	17-28- 34	1.44-1.64	4.00-14.00	0.05-0.17	1.7-4.4	0.3-1.3	.20	.20			
	51-80	40-60- 90	0-24- 50	4-16- 31	1.53-1.64	4.00-42.00	0.05-0.17	0.1-3.5	0.1-0.5	.28	.28			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
FriA—Frio silty clay, 0 to 1 percent slopes, occasionally flooded														
Frio, occasionally flooded	0-22	2-10- 20	40-46- 58	40-44- 50	1.15-1.35	1.40-4.00	0.12-0.20	6.8-10.2	1.0-4.0	.20	.20	5	4	86
	22-40	2-15- 40	18-47- 68	30-38- 50	1.30-1.55	1.40-4.00	0.08-0.16	3.6-10.0	1.0-2.0	.32	.32			
	40-80	2- 9- 40	18-47- 68	30-44- 50	1.30-1.55	1.40-4.00	0.08-0.16	3.2-9.7	0.1-1.0	.32	.32			
HfD2—Hico-Fairy complex, 3 to 8 percent slopes, moderately eroded														
Hico, moderately eroded	0-12	55-65- 80	6-24- 39	6-11- 18	1.46-1.51	14.00-42.00	0.10-0.15	0.4-2.0	0.5-2.0	.28	.28	5	3	86
	12-51	30-55- 75	0-17- 48	17-28- 34	1.44-1.64	4.00-14.00	0.05-0.17	1.7-4.4	0.3-1.3	.20	.20			
	51-80	40-60- 90	0-24- 50	4-16- 31	1.53-1.64	4.00-42.00	0.05-0.17	0.1-3.5	0.1-0.5	.28	.28			
Fairy, moderately eroded	0-13	52-68- 80	6-26- 43	5- 6- 18	1.47-1.51	14.00-42.00	0.10-0.17	0.3-1.8	0.5-2.0	.55	.55	5	3	86
	13-45	30-55- 75	0-21- 52	17-24- 34	1.40-1.60	4.00-14.00	0.05-0.17	1.3-4.6	0.3-1.3	.24	.24			
	45-68	40-45- 90	0-33- 56	4-22- 31	1.50-1.66	4.00-42.00	0.05-0.17	0.0-2.8	0.1-0.5	.32	.32			
	68-80	5-15- 75	0-43- 53	5-42- 45	1.60-1.76	0.42-42.00	0.12-0.18	0.0-6.1	0.0-0.5	.32	.32			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
HoB—Slidell clay, 1 to 3 percent slopes														
Slidell	0-19	0-22- 35	20-28- 40	40-50- 60	1.10-1.45	0.01-0.42	0.10-0.18	7.0-16.0	1.0-4.0	.17	.17	5	4	86
	19-32	0-22- 35	20-28- 60	40-50- 60	1.10-1.45	0.01-0.42	0.10-0.18	6.6-17.0	1.0-3.0	.24	.24			
	32-49	0-22- 35	20-28- 60	40-50- 60	1.20-1.55	0.01-0.42	0.10-0.18	4.9-13.0	0.1-1.0	.24	.24			
	49-80	0-22- 35	20-28- 60	40-50- 60	1.20-1.55	0.01-0.42	0.10-0.18	4.9-10.8	0.1-1.0	.24	.24			
HwD3—Hico and Windthorst sandy clay loams, 1 to 8 percent slopes, severely eroded														
Hico, severely eroded	0-7	59-64- 70	10-11- 18	20-25- 30	1.46-1.60	4.00-42.00	0.11-0.13	2.1-3.8	0.4-2.0	.24	.24	4	5	56
	7-44	43-57- 61	11-18- 23	18-25- 39	1.48-1.60	4.00-14.00	0.11-0.13	1.9-5.1	0.2-0.6	.32	.32			
	44-60	33-66- 81	12-15- 42	4-19- 32	1.55-1.61	4.00-42.00	0.13-0.15	0.1-3.7	0.1-0.3	.37	.37			
	60-79	26-61- 85	8-27- 57	7-12- 25	1.76-1.88	0.42-4.00	0.01-0.03	0.5-2.7	0.0-0.2	.64	.64			
Windthorst, severely eroded	0-6	46-62- 66	14-15- 27	20-23- 34	1.47-1.56	1.40-14.00	0.11-0.14	0.7-5.3	0.5-1.0	.43	.43	4	5	56
	6-16	32-40- 43	16-24- 33	26-36- 43	1.35-1.51	1.40-4.00	0.15-0.19	3.8-5.6	0.5-1.0	.37	.37			
	16-25	31-41- 52	16-26- 39	27-33- 38	1.39-1.55	1.40-4.00	0.16-0.20	3.2-5.6	0.3-0.8	.37	.37			
	25-33	36-46- 59	19-32- 41	14-22- 30	1.35-1.60	1.40-4.00	0.15-0.19	2.0-5.0	0.1-0.4	.55	.55			
	33-79	26-61- 85	8-27- 57	7-12- 25	1.76-1.88	0.42-4.00	0.01-0.03	0.5-2.6	0.0-0.2	.64	.64			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
Ma—Maloterre gravelly clay loam, 1 to 8 percent slopes														
Maloterre	0-5	20-31- 45	20-35- 45	30-34- 40	1.37-1.39	4.00-14.00	0.14-0.16	2.6-5.6	0.5-1.0	.15	.28	1	5	56
	5-20	—	—	—	—	0.42-14.00	—	—	—					
[redacted]														
NdC—Nimrod fine sand, 0 to 5 percent slopes														
Nimrod, fine sand	0-4	88-90- 95	2- 8- 12	0- 2- 5	1.55-1.57	42.00-141.00	0.09-0.13	0.0-0.7	0.9-1.2	.10	.10	5	1	250
	4-27	85-95- 97	2- 4- 10	0- 1- 10	1.58-1.61	42.00-141.00	0.08-0.12	0.0-0.9	0.1-0.2	.10	.10			
	27-40	62-65- 72	2- 6- 18	20-29- 35	1.61-1.68	1.40-4.00	0.11-0.20	1.5-3.2	0.2-0.6	.20	.20			
	40-68	62-67- 72	2- 6- 20	17-27- 35	1.62-1.66	1.40-4.00	0.09-0.18	1.3-3.8	0.0-0.2	.15	.15			
	68-80	52-85- 87	2- 4- 20	9-11- 29	1.53-1.63	14.00-42.00	0.08-0.12	0.7-3.5	0.0-0.2	.10	.10			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
PcC—Purves clay, 3 to 5 percent slopes														
Purves	0-7	8-25- 40	7-28- 40	40-48- 55	1.15-1.45	0.42-1.40	0.12-0.20	5.4-10.9	1.0-5.0	.15	.15	1	4	86
	7-12	8-26- 40	20-29- 54	35-45- 55	1.20-1.45	0.42-4.00	0.08-0.18	5.0-10.3	1.0-4.0	.17	.17			
	12-17	8-26- 40	20-29- 54	35-45- 55	1.20-1.45	0.42-4.00	0.04-0.07	1.0-6.9	1.0-3.0	.05	.17			
	17-40	—	—	—	—	0.42-14.00	—	—	—					
Pd—Purves-Dugout-Maloterre complex, 1 to 20 percent slopes														
Purves, stony clay	0-8	8-25- 40	7-28- 40	40-48- 55	1.16-1.35	0.42-1.40	0.11-0.20	4.1-9.3	1.0-5.0	.05	.10	1	5	56
	8-12	8-26- 40	20-29- 54	35-45- 55	1.17-1.47	0.42-4.00	0.08-0.18	2.9-10.8	1.0-4.0	.15	.15			
	12-14	8-26- 40	20-29- 54	35-45- 55	1.21-1.47	0.42-4.00	0.04-0.07	1.0-7.3	1.0-3.0	.05	.17			
	14-24	—	—	—	—	0.42-14.00	—	—	—					
Dugout, gravelly clay loam	0-8	22-30- 42	28-42- 51	27-28- 35	1.31-1.47	1.40-4.00	0.06-0.15	1.9-5.4	1.0-2.0	.15	.28	1	5	56
	8-18	20-23- 40	28-48- 60	15-29- 35	1.40-1.53	1.40-4.00	0.07-0.16	0.0-4.9	0.1-1.2	.28	.28			
	18-28	—	—	—	—	0.42-14.00	—	—	—					
Maloterre, gravelly clay loam	0-8	30-35- 45	24-36- 43	27-29- 35	1.18-1.40	4.00-14.00	0.06-0.11	1.8-6.0	1.0-7.0	.15	.24	1	5	56
	8-18	—	—	—	—	0.01-0.42	—	—	—					

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
SdC—Selden fine sand, 1 to 5 percent slopes														
Selden, fine sand	0-10	85-92- 95	0- 2- 10	3- 6- 10	1.54-1.57	14.00-42.00	0.05-0.09	0.1-0.9	0.9-1.2	.10	.10	5	1	250
	10-24	35-56- 65	0-17- 40	20-27- 35	1.47-1.64	1.40-4.00	0.12-0.17	2.1-4.5	0.2-0.6	.24	.24			
	24-62	35-56- 65	0-17- 40	20-27- 35	1.51-1.65	1.40-4.00	0.12-0.17	2.0-4.4	0.0-0.2	.24	.24			
WaB—Hassee fine sandy loam, 1 to 3 percent slopes														
Hassee	0-12	-69-	-16-	10-15- 20	1.50-1.65	4.00-14.00	0.11-0.17	0.0-2.9	0.5-2.0	.32	.32	5	3	86
	12-50	-18-	-29-	45-53- 60	1.30-1.55	0.01-0.42	0.12-0.18	6.0-8.9	0.5-1.0	.24	.24			
	50-60	-24-	-29-	35-48- 60	1.30-1.55	0.01-0.42	0.12-0.18	6.0-8.9	0.0-0.5	.28	.28			
WkA—Hassee fine sandy loam, thick surface, 0 to 2 percent slopes														
Hassee	0-18	-69-	-16-	10-15- 20	1.50-1.65	4.00-14.00	0.11-0.17	0.0-2.9	0.5-2.0	.32	.32	5	3	86
	18-55	-18-	-29-	45-53- 60	1.30-1.55	0.01-0.42	0.12-0.18	6.0-8.9	0.5-1.0	.24	.24			
	55-65	-24-	-29-	35-48- 60	1.30-1.55	0.01-0.42	0.12-0.18	6.0-8.9	0.0-0.5	.28	.28			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
WnC—Windthorst loamy fine sand, 1 to 5 percent slopes														
Windthorst	0-10	73-82- 90	0-12- 24	3- 6- 15	1.40-1.65	42.00-141.00	0.06-0.13	0.2-1.2	0.5-2.0	.28	.28	5	2	134
	10-38	30-46- 60	5-16- 35	35-38- 50	1.43-1.60	1.40-4.00	0.10-0.20	3.7-6.5	0.2-1.0	.32	.32			
	38-50	30-46- 70	5-18- 35	25-36- 50	1.38-1.60	1.40-14.00	0.10-0.20	2.3-6.5	0.2-1.0	.37	.37			
	50-80	30-50- 75	5-25- 40	15-25- 45	1.43-1.70	1.40-42.00	0.11-0.18	1.0-5.5	0.0-0.5	.49	.49			
WoB—Windthorst very fine sandy loam, 1 to 5 percent slopes														
Windthorst, very fine sandy loam	0-8	52-68- 80	5-21- 40	5-11- 18	1.42-1.60	14.00-42.00	0.10-0.17	0.2-1.5	0.5-2.0	.43	.43	5	3	86
	8-33	30-46- 60	5-16- 35	35-38- 50	1.43-1.60	1.40-4.00	0.10-0.20	4.4-7.6	0.2-1.0	.28	.28			
	33-46	30-46- 70	5-18- 35	25-36- 50	1.38-1.60	1.40-14.00	0.10-0.20	2.4-7.6	0.2-1.0	.32	.32			
	46-80	30-65- 75	0-25- 53	5-10- 45	1.45-1.70	1.40-42.00	0.11-0.18	0.1-6.5	0.0-0.5	.55	.55			

Physical Soil Properties–Erath County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
WoB2—Windthorst fine sandy loam, 1 to 5 percent slopes, moderately eroded														
Windthorst, moderately eroded	0-4	52-67- 80	5-21- 40	5-12- 18	1.42-1.60	14.00-42.00	0.10-0.17	0.3-1.5	0.5-2.0	.28	.28	5	3	86
	4-33	30-46- 60	5-16- 35	35-38- 50	1.43-1.60	1.40-4.00	0.10-0.20	4.4-7.6	0.2-1.0	.28	.28			
	33-46	30-46- 70	5-18- 35	25-36- 50	1.38-1.60	1.40-14.00	0.10-0.20	2.4-7.6	0.2-1.0	.32	.32			
	46-80	30-65- 75	0-25- 53	5-10- 45	1.45-1.70	1.40-42.00	0.11-0.18	0.1-6.5	0.0-0.5	.55	.55			

Data Source Information

Soil Survey Area: Erath County, Texas
Survey Area Data: Version 20, Sep 5, 2023

RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factor Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the mineral surface horizon. Missing surface data may indicate the presence of an organic layer.

Report—RUSLE2 Related Attributes

Soil properties and interpretations for erosion runoff calculations. The surface mineral horizon properties are displayed or the first mineral horizon below an organic surface horizon. Organic horizons are not displayed.

RUSLE2 Related Attributes–Erath County, Texas								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
BaB—Blanket clay loam, 1 to 3 percent slopes								
Blanket	90	298	C	.32	5	25.0	44.0	31.0
BdC—Bolar-Denton complex 3 to 5 percent slopes								
Bolar	55	180	C	.20	2	34.0	36.0	30.0
Denton	35	200	D	.17	2	6.0	48.0	46.0
[redacted]								
[redacted]	~~40~~	~~48~~	~~D~~	~~.28~~	~~2~~	~~37.1~~	~~40.4~~	~~22.5~~
[redacted]	~~[illegible]~~	~~121~~	~~D~~	~~.21~~	~~1~~	~~34.2~~	~~32.3~~	~~33.5~~
Bu—Bunyan fine sandy loam, occasionally flooded								
Bunyan	80	98	B	.28	5	69.6	16.4	14.0
CtB—Clairette-Hassee very fine sandy loams, 1 to 3 percent slopes								
Clairette, very fine sandy loam	50	200	C	.49	5	68.0	21.0	11.0
Hassee, very fine sandy loam	40	200	D	.55	5	68.0	19.0	13.0
CtC—Clairette loam, 3 to 5 percent slopes								
Clairette, loam	90	180	C	.37	5	44.0	36.0	20.0

RUSLE2 Related Attributes–Erath County, Texas								
Map symbol and soil name	**Pct. of map unit**	**Slope length (ft)**	**Hydrologic group**	**Kf**	**T factor**	**Representative value**		
						% Sand	**% Silt**	**% Clay**
FhC2—Fairy-Hico complex, 1 to 5 percent slopes, moderately eroded								
Fairy, moderately eroded	45	180	B	.55	5	68.0	26.0	6.0
Hico, moderately eroded	35	200	B	.28	5	65.0	24.0	11.0
FriA—Frio silty clay, 0 to 1 percent slopes, occasionally flooded								
Frio, occasionally flooded	85	98	C	.20	5	10.0	46.0	44.0
HfD2—Hico-Fairy complex, 3 to 8 percent slopes, moderately eroded								
Hico, moderately eroded	55	180	B	.28	5	65.0	24.0	11.0
Fairy, moderately eroded	30	180	B	.55	5	68.0	26.0	6.0
HoB—Slidell clay, 1 to 3 percent slopes								
Slidell	85	298	D	.17	5	22.0	28.0	50.0
HwD3—Hico and Windthorst sandy clay loams, 1 to 8 percent slopes, severely eroded								
Hico, severely eroded	50	180	B	.24	4	64.0	11.0	25.0
Windthorst, severely eroded	40	200	C	.43	4	62.0	15.0	23.0
Ma—Maloterre gravelly clay loam, 1 to 8 percent slopes								
Maloterre	80	161	D	.28	1	31.0	35.0	34.0
[redacted]								
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
NdC—Nimrod fine sand, 0 to 5 percent slopes								
Nimrod, fine sand	75	298	A	.10	5	90.0	8.0	2.0
PcC—Purves clay, 3 to 5 percent slopes								
Purves	89	180	D	.15	1	25.0	27.5	47.5
Pd—Purves-Dugout-Maloterre complex, 1 to 20 percent slopes								
Purves, stony clay	37	200	D	.10	1	25.0	27.5	47.5
Dugout, gravelly clay loam	25	161	D	.28	1	30.0	42.0	28.0
Maloterre, gravelly clay loam	22	180	D	.24	1	35.0	36.0	29.0

RUSLE2 Related Attributes–Erath County, Texas								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
SdC—Selden fine sand, 1 to 5 percent slopes								
Selden, fine sand	85	298	C	.10	5	92.0	2.0	6.0
WaB—Hassee fine sandy loam, 1 to 3 percent slopes								
Hassee	100	200	D	.32	5	68.8	16.2	15.0
WkA—Hassee fine sandy loam, thick surface, 0 to 2 percent slopes								
Hassee	80	200	D	.32	5	68.8	16.2	15.0
WnC—Windthorst loamy fine sand, 1 to 5 percent slopes								
Windthorst	90	200	C	.28	5	82.0	12.0	6.0
WoB—Windthorst very fine sandy loam, 1 to 5 percent slopes								
Windthorst, very fine sandy loam	85	298	C	.43	5	68.0	21.0	11.0
WoB2—Windthorst fine sandy loam, 1 to 5 percent slopes, moderately eroded								
Windthorst, moderately eroded	85	298	C	.28	5	67.0	21.0	12.0

Data Source Information

Soil Survey Area: Erath County, Texas
Survey Area Data: Version 20, Sep 5, 2023

Selected Soil Interpretations

This report allows the customer to produce a report showing the results of the soil interpretation(s) of his or her choice. It is useful when a standard report that displays the results of the selected interpretation(s) is not available.

When customers select this report, they are presented with a list of interpretations with results for the selected map units. The customer may select up to three interpretations to be presented in table format.

For a description of the particular interpretations and their criteria, use the "Selected Survey Area Interpretation Descriptions" report.

Report—Selected Soil Interpretations

Selected Soil Interpretations–Erath County, Texas							
Map symbol and soil name	Pct. of map unit	AWM - Irrigation Disposal of Wastewater		AWM - Land Application of Municipal Sewage Sludge		ENG - Sewage Lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
BaB—Blanket clay loam, 1 to 3 percent slopes							
Blanket	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.37	Slow water movement	0.37	Seepage	0.50
BdC—Bolar-Denton complex 3 to 5 percent slopes							
Bolar	55	Somewhat limited		Somewhat limited		Very limited	
		Seepage, porous bedrock	0.50	Slow water movement	0.37	Depth to hard bedrock	1.00
		Slow water movement	0.37	Depth to bedrock	0.07	Seepage	0.50
		Too steep for surface application	0.08			Slope	0.32
		Depth to bedrock	0.07				
Denton	35	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Depth to hard bedrock	1.00
		Droughty	0.44	Droughty	0.44	Seepage	0.50
		Depth to bedrock	0.01	Depth to bedrock	0.01	Slope	0.08

Selected Soil Interpretations–Erath County, Texas							
Map symbol and soil name	Pct. of map unit	AWM - Irrigation Disposal of Wastewater		AWM - Land Application of Municipal Sewage Sludge		ENG - Sewage Lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
[redacted]							
[redacted]	[redacted]	[redacted]		[redacted]		[redacted]	
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]				
		[redacted]	[redacted]				
[redacted]	[redacted]	[redacted]		[redacted]		[redacted]	
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
		[redacted]	[redacted]	[redacted]	[redacted]		
Bu—Bunyan fine sandy loam, occasionally flooded							
Bunyan	80	Somewhat limited		Very limited		Very limited	
		Flooding	0.60	Flooding	1.00	Flooding	1.00
						Seepage	0.50
CtB—Clairette-Hassee very fine sandy loams, 1 to 3 percent slopes							
Clairette, very fine sandy loam	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.37	Slow water movement	0.37	Seepage	0.50
		Too acid	0.08	Too acid	0.08		
Hassee, very fine sandy loam	40	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
		Droughty	0.01	Droughty	0.01		

Selected Soil Interpretations–Erath County, Texas							
Map symbol and soil name	Pct. of map unit	AWM - Irrigation Disposal of Wastewater		AWM - Land Application of Municipal Sewage Sludge		ENG - Sewage Lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
CtC—Clairette loam, 3 to 5 percent slopes							
Clairette, loam	90	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.37	Slow water movement	0.37	Seepage	0.50
		Too steep for surface application	0.08			Slope	0.32
FhC2—Fairy-Hico complex, 1 to 5 percent slopes, moderately eroded							
Fairy, moderately eroded	45	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Seepage	1.00
		Seepage, porous bedrock	0.50			Slope	0.32
		Too steep for surface application	0.08				
Hico, moderately eroded	35	Not limited		Not limited		Very limited	
						Seepage	1.00
						Slope	0.08
FriA—Frio silty clay, 0 to 1 percent slopes, occasionally flooded							
Frio, occasionally flooded	85	Somewhat limited		Very limited		Very limited	
		Flooding	0.60	Flooding	1.00	Flooding	1.00
		Slow water movement	0.37	Slow water movement	0.37		
		Seepage, porous bedrock	0.30				

Selected Soil Interpretations–Erath County, Texas							
Map symbol and soil name	Pct. of map unit	AWM - Irrigation Disposal of Wastewater		AWM - Land Application of Municipal Sewage Sludge		ENG - Sewage Lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
HfD2—Hico-Fairy complex, 3 to 8 percent slopes, moderately eroded							
Hico, moderately eroded	55	Somewhat limited		Not limited		Very limited	
		Too steep for surface application	0.08			Seepage	1.00
						Slope	0.32
Fairy, moderately eroded	30	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Seepage	1.00
		Seepage, porous bedrock	0.50			Slope	0.32
		Too steep for surface application	0.08				
HoB—Slidell clay, 1 to 3 percent slopes							
Slidell	85	Very limited		Very limited		Not limited	
		Slow water movement	1.00	Slow water movement	1.00		
HwD3—Hico and Windthorst sandy clay loams, 1 to 8 percent slopes, severely eroded							
Hico, severely eroded	50	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.96	Slow water movement	0.96	Seepage	0.50
		Too steep for surface application	0.08			Slope	0.32
Windthorst, severely eroded	40	Somewhat limited		Somewhat limited		Very limited	
		Slow water movement	0.96	Slow water movement	0.96	Depth to soft bedrock	1.00
		Depth to bedrock	0.18	Depth to bedrock	0.18	Slope	0.08
		Too acid	0.08	Shallow to densic materials	0.18		
		Droughty	0.03	Too acid	0.08		
				Droughty	0.03		

Selected Soil Interpretations–Erath County, Texas

Map symbol and soil name	Pct. of map unit	AWM - Irrigation Disposal of Wastewater		AWM - Land Application of Municipal Sewage Sludge		ENG - Sewage Lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Ma—Maloterre gravelly clay loam, 1 to 8 percent slopes							
Maloterre	80	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Droughty	1.00	Droughty	1.00	Slope	0.68
		Seepage, porous bedrock	0.50			Seepage	0.21
		Too steep for surface application	0.32				
[redacted]							
[redacted]	[redacted]	[redacted]		[redacted]		[redacted]	
						[redacted]	[redacted]
NdC—Nimrod fine sand, 0 to 5 percent slopes							
Nimrod, fine sand	75	Very limited		Very limited		Very limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Seepage	1.00
		Depth to saturated zone	0.95	Depth to saturated zone	0.95	Depth to saturated zone	0.44
		Slow water movement	0.37	Slow water movement	0.37		
PcC—Purves clay, 3 to 5 percent slopes							
Purves	89	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	0.32
		Slow water movement	1.00	Slow water movement	1.00		
		Seepage, porous bedrock	0.50				
		Too steep for surface application	0.08				

Selected Soil Interpretations–Erath County, Texas							
Map symbol and soil name	Pct. of map unit	AWM - Irrigation Disposal of Wastewater		AWM - Land Application of Municipal Sewage Sludge		ENG - Sewage Lagoons	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
Pd—Purves-Dugout-Maloterre complex, 1 to 20 percent slopes							
Purves, stony clay	37	Very limited		Very limited		Very limited	
		Droughty	1.00	Droughty	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	0.08
		Slow water movement	1.00	Slow water movement	1.00		
		Large stones on the surface	1.00	Large stones on the surface	1.00		
		Seepage, porous bedrock	0.50				
Dugout, gravelly clay loam	25	Very limited		Very limited		Very limited	
		Depth to bedrock	1.00	Depth to bedrock	1.00	Depth to hard bedrock	1.00
		Droughty	1.00	Droughty	1.00	Slope	0.68
		Seepage, porous bedrock	0.50	Slow water movement	0.37	Seepage	0.21
		Slow water movement	0.37				
		Too steep for surface application	0.32				
Maloterre, gravelly clay loam	22	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Depth to hard bedrock	1.00
		Depth to bedrock	1.00	Depth to bedrock	1.00	Slope	0.32
		Droughty	1.00	Droughty	1.00		
		Seepage, porous bedrock	0.50				
		Too steep for surface application	0.08				
SdC—Selden fine sand, 1 to 5 percent slopes							
Selden, fine sand	85	Somewhat limited		Somewhat limited		Very limited	
		Depth to saturated zone	0.99	Depth to saturated zone	0.99	Depth to saturated zone	1.00
		Slow water movement	0.37	Slow water movement	0.37		

Selected Soil Interpretations–Erath County, Texas							
Map symbol and soil name	**Pct. of map unit**	**AWM - Irrigation Disposal of Wastewater**		**AWM - Land Application of Municipal Sewage Sludge**		**ENG - Sewage Lagoons**	
		Rating class and limiting features	**Value**	**Rating class and limiting features**	**Value**	**Rating class and limiting features**	**Value**
WaB—Hassee fine sandy loam, 1 to 3 percent slopes							
Hassee	100	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00		
WkA—Hassee fine sandy loam, thick surface, 0 to 2 percent slopes							
Hassee	80	Very limited		Very limited		Very limited	
		Slow water movement	1.00	Slow water movement	1.00	Depth to saturated zone	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00	Seepage	0.50
WnC—Windthorst loamy fine sand, 1 to 5 percent slopes							
Windthorst	90	Very limited		Very limited		Somewhat limited	
		Filtering capacity	1.00	Filtering capacity	1.00	Seepage	0.50
		Slow water movement	0.37	Slow water movement	0.37	Slope	0.08
		Too acid	0.08	Too acid	0.08		
WoB—Windthorst very fine sandy loam, 1 to 5 percent slopes							
Windthorst, very fine sandy loam	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.37	Slow water movement	0.37	Depth to soft bedrock	0.77
		Too acid	0.08	Too acid	0.08	Seepage	0.50
WoB2—Windthorst fine sandy loam, 1 to 5 percent slopes, moderately eroded							
Windthorst, moderately eroded	85	Somewhat limited		Somewhat limited		Somewhat limited	
		Slow water movement	0.37	Slow water movement	0.37	Depth to soft bedrock	0.77
		Too acid	0.08	Too acid	0.08	Seepage	0.50

Data Source Information

Soil Survey Area: Erath County, Texas
Survey Area Data: Version 20, Sep 5, 2023

August 13, 2024

1:36,112

0 0.25 0.5 1 mi

0 0.4 0.8 1.6 km

Maxar

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 10, 2008

91 7108 2133 3935 2153 5858

CERTIFIED MAIL

Ms. Anneke Talsma
Two Sisters Dairy
235 Private Road 1266
Hico, Texas 76457

Re: Well Buffer Exception Request, Two Sisters Dairy, Permit Number WQ00004866-000 CN603059130; RN104994611)

Dear Ms. Talsma:

The Water Quality Assessment (WQA) Team has reviewed the well buffer exception request for wells identified as Well #1, Well #2, Well #3, and Well #9 in a document dated August 8, 2008. The well buffer exception document was signed and certified by Mr. Norman Mullin, P.E., and requested an exception to the 150-foot buffer requirement for these existing facility wells. Additional protective measures for the wells identified by Mr. Mullin include: a concrete slab and being up-gradient of the pollution sources for Well #1 and Well #2, and a concrete slab and a concrete retaining wall preventing runoff from flowing near the wellhead for Well #3 and Well #9.

The WQA Team approves the well buffer exception request for wells Well #1, Well #2, Well #3 and Well #9 provided all additional protective measures listed above are maintained and the casings and well heads are non-deteriorated. Regular inspections around the wells shall be made in order to ensure that no runoff or wastes are encroaching upon the well heads.

This letter and all supporting documentation must be kept on-site and made available to Texas Commission on Environmental Quality (TCEQ) personnel upon request. If you have any questions, please contact me by phone at (512) 239-3567.

Sincerely,

April Hoh, P.G.
Water Quality Assessment Team (MC 150)
Water Quality Division

AH/gv

cc: Mr Norman Mullin, P.E., 5404 Airway Blvd., Amarillo, Texas 79118

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 25, 2008

CERTIFIED MAIL 91 7108 2133 3935 2153 9597

Klaas Talsma
Talsma Dairy
7469 County Road 209
Hico, Texas 76457

Re: Well Buffer Exception Request, Talsma Dairy, Permit Number WQ00003145000 (CN 601214265) (RN 102313384)

Dear Mr. Talsma:

The Water Quality Assessment (WQA) Team has reviewed the well buffer exception request for the water wells identified as Well #1, Well #2, Well #3, Well #4, and Well #11. The request was certified by Mr. Norman Mullin, P.E., of Enviro-Ag Engineering on May 30, 2008, and requested an exception to the 150 foot buffer requirement for the existing facility wells. Protective measures for the wells identified by Mr. Mullin include: a concrete surface slab around each well head, and the fact that each well is situated away from the drainage area of the confinement pens. In addition, Well #2 and has a steel sleeve, and Well #11 is identified as having a surface sleeve cemented up to ground level.

Supporting documentation, including a photograph of the well, a location map, and a description of existing protective measures, was supplied in the exception request which supports a decrease from the required 150 foot buffer from the pen areas. Mr. Mullin, P.E. states "The well head protective measures (BMPs) currently in place for these wells are shown on the attached photograph. These protective measures, in lieu of the required buffer distances for existing wells are protected from the activities of the CAFO."

Based on the above statement and other information provided, the well buffer exception request for Well #1, Well #2, Well #3, Well #4, and Well #11 is granted. Regular inspections around the wells shall be made in order to ensure that no runoff or wastes are encroaching upon the well heads. This approval letter and all supporting documentation must be kept on-site and made available to the Texas Commission on Environmental Quality (TCEQ) personnel upon request. If you have any questions, please contact me by phone at (512) 239-3555.

Sincerely,

Stephanie Saldaña

Stephanie Saldaña, P.G.
Water Quality Assessment Team (MC 148)
Water Quality Division

SS/gv

cc: Mr. Norman Mullin, P.E.; Enviro-Ag Engineering, 3404 Airway Blvd., Amarillo, TX 79118

TMC Dairies Hico

Texas Water Development Board

August 12, 2024

Plugging Reports
Well Reports
TWDB Groundwater

0 0.15 0.3 0.6 mi
0 0.25 0.5 1 km
1:18,056

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

TEXAS WATER DEVELOPMENT BOARD

STATE OF TEXAS PLUGGING REPORT for Tracking #98795

Owner:	**Klaas Talsma**	Owner Well #:	**No Data**
Address:	**7469 CR 209** **Hico, TX 76457**	Grid #:	**31-64-2**
Well Location:	**CR 209** **Hico, TX 76457**	Latitude:	**32° 07' 19" N**
		Longitude:	**098° 03' 14" W**
Well County:	**Erath**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data**

Date Drilled: **No Data**

Driller: **No Data**

License Number: **No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **12/9/2014**

Plugger: **Melton Phillips**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
6		

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**2**	**1 Cement**
2	**487**	**120 Bentonite**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Dowell Water Well Service**

1491 W South Loop
Stephenville, TX 76401

Driller Name: **Jarrell Dale Dowell**

License Number: **4353**

Comments: **No Data**

Well TH10

STATE OF TEXAS PLUGGING REPORT for Tracking #98797

Owner:	**Klaas Talsma**	Owner Well #:	**No Data**
Address:	**7469 CR 209** **Hico, TX 76457**	Grid #:	**31-64-3**
Well Location:	**CR 209** **Hico, TX 76457**	Latitude:	**32° 07' 24" N**
		Longitude:	**098° 01' 59" W**
Well County:	**Erath**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data**

Date Drilled: **No Data**

Driller: **No Data**

License Number: **No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **12/8/2014**

Plugger: **Melton Phillips**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4		

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**2**	**1 Cement**
2	**525**	**60 Bentonite**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Dowell Water Well Service**

1491 W South Loop
Stephenville, TX 76401

Driller Name: **Jarrell Dale Dowell**

License Number: **4353**

Comments: **No Data**

STATE OF TEXAS PLUGGING REPORT for Tracking #28001

Owner:	**Grady Wyly**	Owner Well #:	**No Data**
Address:	**3502 CR 209 Hico, TX 76457**	Grid #:	**31-64-2**
Well Location:	**CR 209 Hico, TX 76457**	Latitude:	**32° 07' 11" N**
		Longitude:	**098° 02' 41" W**
Well County:	**Erath**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data** Date Drilled: **No Data**

Driller: **No Data** License Number: **No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **10/6/2005** Plugger: **Dowell Water Well Service**

Plug Method: **Tremmie pipe bentonite from bottom to 2 feet from surface, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4	0	74

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	2	1 Sack of Cement
2	74	9 Sacks of Bentonite

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Dowell Water Well Service**

1491 W. South Loop
Stephenville, TX 76401

Driller Name: **Jarrell Dowell II** License Number: **4353**

Comments: **No Data**

ENVIRO-AG
EAE
ENGINEERING, INC.

November 15, 2010

Wyly#2 Dairy
Due Diligence Report

As per Special Provision Item L. of the permit, a best management practice of due diligence must be performed to locate Well#8. A front-end loader tractor was brought to the assumed location of the well and bladed the surface to possibly find the buried well casing of Well#8. No evidence of a buried well casing was found.

3404 AIRWAY BLVD • AMARILLO, TEXAS 79118 • TEL (806) 353-6123 • FAX (806) 353-4132
www.enviroag.com

STATE OF TEXAS PLUGGING REPORT for Tracking #98799

Owner:	Two Sister's Dairy	Owner Well #:	No Data
Address:	5040 CR 209 Hico, TX 76457	Grid #:	31-64-2
Well Location:	CR 209 Hico, TX 76457	Latitude:	32° 07' 06" N
		Longitude:	098° 03' 01" W
Well County:	Erath	Elevation:	No Data

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data**

Date Drilled: **No Data**

Driller: **No Data**

License Number: **No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **12/8/2014**

Plugger: **Melton Phillips**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
6		

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	2	1 Cement
2	525	45 Bentonite

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Dowell Water Well Service**

1491 W South Loop
Stephenville, TX 76401

Driller Name: **Jarrell Dale Dowell**

License Number: **4353**

Comments: **No Data**

STATE OF TEXAS PLUGGING REPORT for Tracking #98796

Owner:	**Two Sister's Dairy**	Owner Well #:	**No Data**
Address:	**5040 CR 209 Hico, TX 76457**	Grid #:	**31-64-2**
		Latitude:	**32° 06' 47" N**
Well Location:	**CR 209 Hico, TX 76457**	Longitude:	**098° 03' 41" W**
Well County:	**Erath**	Elevation:	**No Data**

Well Type: **Withdrawal of Water**

Drilling Information

Company: **No Data**

Date Drilled: **No Data**

Driller: **No Data**

License Number: **No Data**

Borehole: **No Data**

Plugging Information

Date Plugged: **12/8/2014**

Plugger: **Melton Phillips**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4		

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	2	1 Cement
2	35	4 Bentonite

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Dowell Water Well Service**

1491 W South Loop
Stephenville, TX 76401

Driller Name: **Jarrell Dale Dowell**

License Number: **4353**

Comments: **No Data**

STATE OF TEXAS PLUGGING REPORT for Tracking #98798

Owner:	Two Sister's Dairy	Owner Well #:	No Data
Address:	5040 CR 209 Hico, TX 76457	Grid #:	31-64-2
Well Location:	CR 209 Hico, TX 76457	Latitude:	32° 07' 15" N
		Longitude:	098° 03' 04" W
Well County:	Erath	Elevation:	No Data

Well Type: **Withdrawal of Water**

Drilling Information

Company:	No Data	Date Drilled:	No Data
Driller:	No Data	License Number:	No Data

Borehole: **No Data**

Plugging Information

Date Plugged: **12/8/2014** Plugger: **Melton Phillips**

Plug Method: **Pour in 3/8 bentonite chips when standing water in well is less than 100 feet depth, cement top 2 feet**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4		

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	2	1 Cement
2	70	8 Bentonite

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Dowell Water Well Service**

1491 W South Loop
Stephenville, TX 76401

Driller Name: **Jarrell Dale Dowell** License Number: **4353**

Comments: **No Data**

6.0 SURFACE WATER & TMDL ASSESSMENT

6.1 Surface Water Assessment

Figure 6.1, Aerial Photograph, shows the existing land features, production area, Land Management Unit boundaries, and areas designated as "water in the state," as defined by 30 TAC §321.32(63). Buffer zones between waters in the state and LMUs will be maintained as required in 30 TAC §321.40(h) plus additional filter strips specified by NRCS Code 393, as required in 30 TAC §321.42(w)(2). Based on NRCS Code 393, Appendix 3, Table 1, and LMU slope and soil types, the buffer zones shown in the attached map will be maintained. According to NRCS, Codes 601 (applied to severely eroded areas) and 332 (applied to cropland) are not currently applicable to the LMUs at this facility. Should field conditions or cropping systems change, Codes 601 and 332 will be implemented as necessary.

The "water in the state" designation is based on Enviro-Ag Engineering, Inc., site inspections, the permittee's knowledge of the property and the USDA-FSA aerial photograph (2015). The buffer zones and LMU boundaries in Figure 6.1 are submitted with this application for TCEQ approval.

6.2 TMDL Assessment

TMC Dairies Hico is located in Segment 1226, Upper North Bosque River, Brazos River Basin, which is a 303(d)-listed watershed. To demonstrate that TMC Dairies Hico is designed and will be constructed and operated in a manner that is consistent with the Phosphorus Total Maximum Daily Load (TMDL) and Implementation Plan approved in 2001 and to address the other listed impairments for this segment, the following practices have been or will be implemented:

1. Implement a Nutrient Utilization Plan that limits P application to crop requirement and incorporates a P reduction component on fields over 200 ppm P.
2. Limit maximum P level in soils to 200 ppm.
3. Perform annual soil sampling in accordance with the provisions of 30 TAC §321.42(k)-(m) and with Texas Cooperative Extension guidelines for composite sampling.
4. Implement a certified Comprehensive Nutrient Management Plan that meets the NRCS requirements for a whole-farm Resource Management System.
5. Maintain contracts with owners of third-party fields in accordance with 30 TAC §321.42(j)(1)-(4) and with applicable requirements of 30 TAC §321.36 and §321.40.
6. Operate the facility in accordance with 30 TAC §321.42 with additional Best Management Practices as follows:
    a. Scrape freestalls and cattle lanes to reduce or eliminate the need for flushing.
    b. Excluding extraneous drainage areas from the RCSs (roof areas, etc.).

c. Reduce the potential for soil erosion and downgradient sediment deposition by maintaining permanent pastures and additional filter strips adjacent to waters in the state, as described above in Section 6.1.

LEGEND:

Map Revised 7/31/2024

- Denotes Plugged Water Well
- Denotes Water Well
- Denotes Well w/150-ft Buffer
- Denotes Grassed Waterway
- Denotes 142-ft Buffered Zone
- Denoted 133-ft Buffered Zone
- Denotes Fresh Water Pond
- Denotes Pit
- * Denotes Proposed Structure

N W E S

1000' 0 1000' 2000'

SCALED AS SHOWN

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS - Accessed October, 2015.

Refer to Figures 1.4 A, B & D for detailed production area maps.

TMC Dairies Hico Hico, TX Erath County	Aerial Photograph Figure 6.1 Page 55	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

7.0 AIR STANDARD PERMIT REQUIREMENTS

7.1 Permit Requirements

This facility was constructed prior to August 19, 1998. The facility is designed, and will be operated, in accordance with the provisions and emissions limitations of the air standard permit in 30 TAC §321.43(j) regarding abatement of nuisance conditions, wastewater treatment, dust control and maintenance and housekeeping procedures. The facility uses an anaerobic treatment pond to minimize odors from process generated wastewater in accordance with §321.43(j)(3).

An Area Land Use Map (Figure 7.1) is attached depicting the locations of all occupied residences or business structures, schools (including associated recreational areas), churches, or public parks within 1 mile of the permanent odor sources of the facility. The map includes a north arrow, direction of prevailing wind, and scale. For the purposes of this application, the measurement of buffer distances is from the nearest edge of the permanent odor source to the occupied structure or designated recreational area identified on the Area Land Use Map (30 TAC §321.32(43)).

7.2 Odor control Plan

Per 30 TAC §321.43(j)(2)(F), the following Best Management Practices have been or will be implemented to control and reduce odors, dust and other air contaminants at TMC Dairies Hico.

- Pen surfaces will be maintained to reduce ponding.
- The manure in the confinement pens will be removed on a regular basis (at least once annually) to prevent the manure from building up in the pens.
- Removal of manure and pond solids will be done in favorable wind conditions carrying odors away from nearby receptors. The TCEQ must be notified prior to RCS cleanout.
- Land application shall only occur from one hour after sunrise until one hour before sunset, unless written consent is obtained from current occupants of all residences within ¼-mile of the LMU boundary that receives waste or wastewater.
- Dust will be controlled on facility roads with the use of a portable water truck on an as-needed basis to minimize fugitive dust emissions.
- Dead animals will be collected within 24-hours and composted on-site within 3 days.
- Maintain treatment volume in the treatment pond.

Legend:
Denotes Occupied Structure
Denotes Facility Owned Structure

Site Visit - 7/16/2024
Map Generated - 8/2/2024

N
W E
S

1500' 0 1500' 3000'

SCALED AS SHOWN

Note:
Hatched area represents permanent odor sources. These include, but are not limited to, pens, confinement buildings, lagoons, RCSs, manure stockpile areas, separators. Permanent odor sources do not include any feed handling facilities, land application equipment or fields.

Source: USDS-NRCS. Geospatial Data Gateway. Available at: http://datagateway.nrcs.usda.gov/. Digital Raster Graphic County Mosaic by NRCS - Accessed October, 2015.

TMC Dairies Hico Hico, TX Erath County	Area Land Use Map Figure 7.1 Page 57	ENVIRO-AG EAE ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

Leah Whallon

From:	Jourdan Mullin <jmullin@enviroag.com>
Sent:	Monday, September 9, 2024 2:08 PM
To:	WQDecopy
Cc:	Corey Mullin; Leah Whallon
Subject:	FW: TMC Dairies Hico - Major Amendment Application (WQ0003190000)
Attachments:	TMC Dairies Hico Major Amendment 2024.pdf

From: Jourdan Mullin
Sent: Monday, September 09, 2024 2:07 PM
To: mailto:WQDeCopy@tceq.texas.gov
Cc: Corey Mullin <cmullin@enviroag.com>; 'leah.whallon@tceq.texas.gov' <Leah.Whallon@Tceq.Texas.Gov>
Subject: TMC Dairies Hico - Major Amendment Application (WQ0003190000)

To Whom It May Concern,

Attached is the 2024 Major Amendment Application for TMC Dairies Hico.

Respectfully,
Jourdan Mullin

Enviro-Ag Engineering, Inc.
9855 FM 847
Dublin, TX 76446

254/965-3500 – Work
806/679-5570 - Mobile

Leah Whallon

From: Jourdan Mullin <jmullin@enviroag.com>
Sent: Thursday, September 12, 2024 2:07 PM
To: Leah Whallon; Corey Mullin
Subject: RE: Application to Amend Permit No. WQ0003190000; 3T Martins Farm Hico, LLC and TMC Dairies LLC
Attachments: 3T Martins Farm Hico wq cafo amend Spanish.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Good Thursday Afternoon Leah,

Attached is the requested Spanish NORI for TMC Dairies Hico. I have also uploaded the electronic copy of the application using the TCEQ FTP server and I emailed a copy to WQDeCopy@tceq.texas.gov. Please let me know if you have any questions or require any additional information.

Thank you,
Jourdan Mullin

From: Leah Whallon <Leah.Whallon@Tceq.Texas.Gov>
Sent: Monday, September 09, 2024 1:24 PM
To: Corey Mullin <cmullin@enviroag.com>
Cc: Jourdan Mullin <jmullin@enviroag.com>
Subject: Application to Amend Permit No. WQ0003190000; 3T Martins Farm Hico, LLC and TMC Dairies LLC

Good Afternoon,

Please see the attached Notice of Deficiency letter dated September 9, 2024 requesting additional information needed to declare the application administratively complete. Please send the complete response by September 23, 2024.

Please let me know if you have any questions.

Thank you,

Leah Whallon
Texas Commission on Environmental Quality
Water Quality Division
512-239-0084
leah.whallon@tceq.texas.gov

Comisión de Calidad Ambiental del Estado de Texas

AVISO DE RECEPCIÓN DE LA SOLICITUD Y LA INTENCIÓN DE OBTENER CALIDAD DEL AGUA PERMISO MODIFICACION

PERMISO NO. WQ0004028000

SOLICITUD. 3T Martins Farm Hico, LLC and TMC Dairies LLC, P.O. Box 599, Hico, Texas 76457, que posee y opera una instalación de ganado lechero, ha solicitado a la Comisión de Calidad Ambiental de Texas (TCEQ) modificar el Permiso de Aguas Residuales No. WQ0003190000 para una Operación de Alimentación Concentrada para Animales (CAFO) para autorizar los cambios propuestos en dos fases. La primera fase incluirá un aumento de el conteo de cabezas a 10,000 en total con 8,000 lecheras, la adición de la raza Jersey de ganado lechero junto con la raza Holstein, la adición de un digestor anaeróbico y equipo asociado, cambio en los límites de la propiedad, reconfiguración de las LMU, eliminación de LMU #TH8 y #TD7, remoción de los pozos #TD9, #TF1 y TF2 y reconfiguración del área de drenaje en la Figura 1.4A (adición de área de abono de estiércol, adición de granero con ventilación cruzada, adición de sala de estar, pozo de tapón #TSS, ampliación de RCS #TS1). La segunda fase incluirá un aumento del conteo de cabezas a 13,500 en total con 10,000 lecheras, la reconfiguración del área de drenaje en la Figura 1.4D (adición de un granero con ventilación cruzada, corrales de eliminación, graneros de establos libres, estanques de sedimentación y tapón del pozo #TD11) y reconfiguración de la sala. La instalación está ubicada en 3618 County Road 540, cerca de la ciudad de Hico, en el Condado de Erath, Texas 76457. La TCEQ recibió esta solicitud el 28 de agosto de 2024. La solicitud de permiso estará disponible para ver y copiar en la Oficina de Extensión del Condado de Erath, Palacio de Justicia del Condado de Erath, 100 Washington Street, Cuarto 206, Stephenville, en el Condado de Erath, Texas, antes de la fecha de publicación de este aviso en el periódico. La solicitud, incluidas las actualizaciones y los avisos asociados, están disponibles electrónicamente en la siguiente página web: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/cafo-applications

Este enlace a un mapa electrónico de la ubicación general del sitio o de la instalación es proporcionado como una cortesía y no es parte de la solicitud o del aviso. Para la ubicación exacta, consulte la solicitud. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-98.047777,32.116944&level=18

Include the following non-italicized sentence if the facility is located in the Coastal Management Program boundary and is an application for a major amendment which will increase the pollutant loads to coastal waters or would result in relocation of an outfall to a critical areas, or a renewal with such a major amendment. The Coastal Management Program boundary is *the area along the Texas Coast of the Gulf of México as depicted on the map in 31 TAC §503.1 and includes part or all of the following counties: Cameron, Willacy, Kenedy, Kleberg, Nueces, San Patricio, Aransas, Refugio, Calhoun, Victoria, Jackson, Matagorda, Brazoria, Galveston, Harris, Chambers, Jefferson y Orange. If the application is for amendment that does not meet the above description, do not include the sentence:* El Director Ejecutivo de la TCEQ ha revisado esta medida para ver si está de acuerdo con los objetivos y las regulaciones del Programa de Administración Costero de Texas (CMP) de acuerdo con las regulaciones del Consejo Coordinador de la Costa (CCC) y ha determinado que la acción es conforme con las metas y regulaciones pertinentes del CMP.

AVISO ADICIONAL. El Director Ejecutivo de la TCEQ ha determinado que la solicitud es administrativamente completa y conducirá una revisión técnica de la solicitud. Después de completar la revisión técnica, el Director Ejecutivo puede preparar un borrador del permiso y emitirá una Decisión Preliminar sobre la solicitud. **El aviso de la solicitud y la decisión preliminar serán publicados y enviado a los que están en la lista de correo de las personas a lo largo del condado que desean recibir los avisos y los que están en la lista de correo que desean recibir avisos de esta solicitud. El aviso dará la fecha límite para someter comentarios públicos.**

COMENTARIO PUBLICO / REUNION PUBLICA. Usted puede presentar comentarios públicos o pedir una reunión pública sobre esta solicitud. El propósito de una reunión pública es dar la oportunidad de presentar comentarios o hacer preguntas acerca de la solicitud. La TCEQ realiza una reunión pública si el Director Ejecutivo determina que hay un grado de interés público suficiente en la solicitud o si un legislador local lo pide. Una reunión pública no es una audiencia administrativa de lo contencioso.

OPORTUNIDAD DE UNA AUDIENCIA ADMINISTRATIVA DE LO CONTENCIOSO. Después del plazo para presentar comentarios públicos, el Director Ejecutivo considerará todos los comentarios apropiados y preparará una respuesta a todo los comentarios públicos esenciales, pertinentes, o significativos. **A menos que la solicitud haya sido referida directamente a una audiencia administrativa de lo contencioso, la respuesta a los comentarios y la decisión del Director Ejecutivo sobre la solicitud serán enviados por correo a todos los que presentaron un comentario público y a las personas que están en la lista para recibir avisos sobre esta solicitud. Si se reciben comentarios, el aviso también proveerá instrucciones para pedir una reconsideración de la decisión del Director Ejecutivo y para pedir una audiencia administrativa de lo contencioso.** Una audiencia administrativa de lo contencioso es un procedimiento legal similar a un procedimiento legal civil en un tribunal de distrito del estado.

PARA SOLICITAR UNA AUDIENCIA DE CASO IMPUGNADO, USTED DEBE INCLUIR EN SU SOLICITUD LOS SIGUIENTES DATOS: su nombre, dirección, y número de teléfono; el nombre del solicitante y número del permiso; la ubicación y distancia de su propiedad/actividad con respecto a la instalación; una descripción específica de la forma cómo usted sería afectado adversamente por el sitio de una manera no común al público en general; una lista de todas las cuestiones de hecho en disputa que usted presente durante el período de comentarios; y la declaración "[Yo/nosotros] solicito/solicitamos una audiencia de caso impugnado". Si presenta la petición para una audiencia de caso impugnado de parte de un grupo o asociación, debe identificar una persona que representa al grupo para recibir correspondencia en el futuro; identificar el nombre y la dirección de un miembro del grupo que sería afectado adversamente por la planta

o la actividad propuesta; proveer la información indicada anteriormente con respecto a la ubicación del miembro afectado y su distancia de la planta o actividad propuesta; explicar cómo y porqué el miembro sería afectado; y explicar cómo los intereses que el grupo desea proteger son pertinentes al propósito del grupo.

Después del cierre de todos los períodos de comentarios y de petición que aplican, el Director Ejecutivo enviará la solicitud y cualquier petición para reconsideración o para una audiencia de caso impugnado a los Comisionados de la TCEQ para su consideración durante una reunión programada de la Comisión. La Comisión sólo puede conceder una solicitud de una audiencia de caso impugnado sobre los temas que el solicitante haya presentado en sus comentarios oportunos que no fueron retirados posteriormente. Si se concede una audiencia, el tema de la audiencia estará limitado a cuestiones de hecho en disputa o cuestiones mixtas de hecho y de derecho relacionadas a intereses pertinentes y materiales de calidad del agua que se hayan presentado durante el período de comentarios.

LISTA DE CORREO. Si somete comentarios públicos, un pedido para una audiencia administrativa de lo contencioso o una reconsideración de la decisión del Director Ejecutivo, la Oficina del Secretario Principal enviará por correo los avisos públicos en relación con la solicitud. Ademas, puede pedir que la TCEQ ponga su nombre en una or mas de las listas correos siguientes (1) la lista de correo permanente para recibir los avisos de el solicitante indicado por nombre y número del permiso específico y/o (2) la lista de correo de todas las solicitudes en un condado especifico. Si desea que se agrega su nombre en una de las listas designe cual lista(s) y envia por correo su pedido a la Oficina del Secretario Principal de la TCEQ.

CONTACTOS E INFORMACIÓN A LA AGENCIA. Todos los comentarios públicos y solicitudes deben ser presentadas electrónicamente vía http://www14.tceq.texas.gov/epic/eComment/ o por escrito dirigidos a la Comisión de Texas de Calidad Ambiental, Oficial de la Secretaría (Office of Chief Clerk), MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Tenga en cuenta que cualquier información personal que usted proporcione, incluyendo su nombre, número de teléfono, dirección de correo electrónico y dirección física pasarán a formar parte del registro público de la Agencia. Para obtener más información acerca de esta solicitud de permiso o el proceso de permisos, llame al programa de educación pública de la TCEQ, gratis, al 1-800-687-4040. Si desea información en Español, puede llamar al 1-800-687-4040.

También se puede obtener información adicional de 3T Martins Farm Hico, LLC and TMC Dairies LLC a la dirección indicada arriba o llamando al Sr. Tony Martins, Miembro Gerente, 3T Martins Farm Hico, LLC, al 208-320-2134.

Fecha de emisión ___________ *[Date notice issued]*