Technical Package Cover Page

This file contains the following documents:

1. Summary of application (in plain language)
   - English
   - Alternative Language (Spanish)
2. First notice (NORI-Notice of Receipt of Application and Intent to Obtain a Permit)
   - English
   - Alternative Language (Spanish)
3. Second notice (NAPD-Notice of Preliminary Decision)
   - English
   - Alternative Language (Spanish)
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
   - Idioma alternativo (español)
3. Segundo aviso (NAPD, Aviso de Decisión Preliminar)
   - Inglés
   - Idioma alternativo (español)
4. Materiales de la solicitud
5. Proyecto de permiso
6. Resumen técnico u hoja de datos

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: - BOUMA, MAIKO HESSEL
2. Enter Customer Number: CN601231814
3. Name of facility: BOUMA DAIRY FARM
4. Enter Regulated Entity Number: RN102334539
5. Provide your permit Number: WQ0005477000
6. Facility Business: DAIRY MILK PRODUCTION. THIS FACILITY CONFINES 999 HEAD DAIRY CATTLE, OF WHICH 999 HEAD ARE MILKING COWS. THE FACILITY PRODUCTION AREA IS LOCATED 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. THE DAIRY FACILITY HAS 9 LAND MANAGEMENT UNITS (LMUS) WITH THE FOLLOWING ACREAGE: LMU #1 - 75, LMU # LMU #2 - 44, LMU #3 - 39, LMU #4 - 64, LMU #5 - 30, LMU #5 - 30, LMU #6 - 41, LMU #7 - 38, LMU #8 - 37, AND LMU #9 - 101, AND 2 RETENTION CONTROL STRUCTURES (RCSS), AND A CONCRETE SETTLING BASINS. THE RCSS TOTAL REQUIRED CAPACITIES WITHOUT FREEBOARD (ACRE-FEET) ARE RCS #1 - 5.56 AND RCS #2 - 6.92. THERE ARE ONSITE 3 WATER WELLS (WELLS #1- #3). THE FACILITY IS LOCATED IN THE DRAINAGE AREA OF SEGMENT NO. 0514 OF BIG SANDY CREEK
7. Facility Location: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100
8. Application Type: NEW
9. Description of your request: APPLYING FOR A NEW IP
10. Potential pollutant sources at the facility include (list the pollutant sources): Manure, Wastewater, Dust, lubricants, Feed, Fuel Storage, Medicines, Cleaning Chemicals
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): MANURE WILL BE STORED WITHIN THE DRAINAGE AREA OF RCS #1. WASTEWATER WILL BE STORED IN RCS #1, AND RCS #2. UNTIL PROPERLY IRRIGATED THROUGH A DRAGHOSE SYSTEM IRRIGATION SYSTEMS. MANURE WILL BE HAULED TO THE APPROPRIATE LMUS, OFFSITE, IN ACCORDANCE WITH THE NUTRIENT MANAGEMENT PLAN. RCS #1, AND RCS #2 ARE DESIGNED TO STORE AND MAINTAIN THE SLUDGE AND 25YR-24HR RAINFALL. ALL OTHER CLEANERS, LUBRICANTS, FUELS AND MEDICINES WILL BE MAINTAINED AND ALL MANUFACTURERS' DIRECTIONS FOLLOWED. DEAD COWS WILL BE BURIED WITHIN 72 HOURS

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.

PLANTILLA DE IDIOMA ESPAÑOL PARA SOLICITUDES DE PERMISO CAFO

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

1. Nombre del Solicitante: BOUMA, MAIKO HESSEL
2. Introduzca el Número de Cliente: CN601231814
3. Nombre de la Instalación: BOUMA DAIRY FARM
4. Introduzca el Número de Entidad Regulada: RN102334539.
5. Proporcione su Número de Permiso: WQ0005477000
6. Negocio de Instalación: PRODUCCIÓN DE LECHE. ESTA INSTALACIÓN CONFINA 999 CABEZAS DE GANADO LECHERO, DE LAS CUALES 999 CABEZAS SON VACAS DE ORDEÑO. EL ÁREA DE PRODUCCIÓN DE LA INSTALACIÓN ESTÁ UBICADA EN 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. LA INSTALACIÓN LÁCTEA TIENE 9 UNIDADES DE GESTIÓN DE TIERRAS (LMUS) CON LA SIGUIENTE SUPERFICIE: LMU N.º 1 - 75, LMU N.º 2 - 44, LMU N.º 3 - 39, LMU N.º 4 - 64, LMU N.º 5 - 30, LMU N.º 5 - 30, LMU N.º 6 - 41, LMU N.º 7 - 38, LMU N.º 8 - 37 Y LMU N.º 9 - 101, Y 2 ESTRUCTURAS DE CONTROL DE RETENCIÓN (RCSS) Y CUENCAS DE SEDIMENTACIÓN DE CONCRETO. LAS CAPACIDADES TOTALES REQUERIDAS POR RCSS SIN FRANCOBORDO (ACRE-PIES) SON RCS N.° 1: 5,56 Y RCS N.° 2: 6,92. HAY 3 POZOS DE AGUA EN EL LUGAR (POZOS N.° 1 A N.° 3). LA INSTALACIÓN ESTÁ UBICADA EN EL ÁREA DE DRENAJE DEL SEGMENTO N.° 0514 DE BIG SANDY CREEK
7. Ubicación de la Instalación: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100.
8. Tipo de Solicitud: NUEVO
9. Descripción de su solicitud: SOLICITUD DE NUEVA IP
10. Las fuentes potenciales de contaminantes en la instalación incluyen (liste las fuentes contaminantes): ESTIÉRCOL, AGUAS RESIDUALES, POLVO, LUBRICANTES, PIENSOS, ALMACENAMIENTO DE COMBUSTIBLE, MEDICAMENTOS, PRODUCTOS QUÍMICOS DE LIMPIEZA
11. Las siguientes mejores prácticas de gestión se implementarán en el sitio para gestionar los contaminantes de las fuentes contaminantes listadas (describa las mejores prácticas de gestión que se utilizan): EL ESTIÉRCOL SE ALMACENARÁ DENTRO DEL ÁREA DE DRENAJE DE RCS #1, Y RCS #2. LAS AGUAS RESIDUALES SE ALMACENARAN EN RCS #1 Y RCS #2 HASTA QUE SE RIGUEN CORRECTAMENTE A TRAVÉS DE UN SISTEMA DE RIEGO DE PIVOTE CENTRAL Y DE ARRASTRE. EL ESTÉRICO SERÁ TRANSPORTADO A LOS LMUS APROPIADOS, FUERA DEL SITIO, DE ACUERDO CON EL PLAN DE MANEJO DE NUTRIENTES. Los RCS #1 y RCS #2 ESTARÁN DISEÑADOS PARA ALMACENAR Y MANTENER LOS LODOS Y LAS LLUVIAS DE 25 A 24 HORAS. TODOS LOS DEMÁS LIMPIADORES, LUBRICANTES, COMBUSTIBLES Y

MEDICAMENTOS SE MANTENDRÁN Y SE SEGUIRÁN TODAS LAS INSTRUCCIONES DEL FABRICANTE. LAS VACAS MUERTAS SERÁN ENTERRADAS EN 72 HORASMEDICAMENTOS SE MANTENDRÁN Y SE SEGUIRÁN TODAS LAS INSTRUCCIONES DEL FABRICANTE. LAS VACAS MUERTAS SERÁN ENTERRADAS EN 72 HORASA

A menos que se limite lo contrario, el estiércol, los lodos o las aguas residuales no se descargarán de una unidad de gestión de la tierra (LMU, por sus siglas en inglés) o una estructura de control de retención (RCS, por sus siglas en inglés) hacia o adyacente al agua en el estado de una CAFO, excepto como resultado de cualquiera de las siguientes condiciones:

1) una descarga de estiércol, lodos o aguas residuales que el permisionario no pueda 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 crónico/catastrófico; o

3) una descarga de lluvia crónica/catastrófica de una LMU que ocurre porque el permisionario toma medidas para desaguar 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

PROPOSED PERMIT NO. WQ0005477000

APPLICATION. Maiko Hessel Bouma, 4252 County Road 2408, Winnsboro, Texas 75494, has applied to the Texas Commission on Environmental Quality (TCEQ) for proposed Wastewater Permit No. WQ0005477000 for a Concentrated Animal Feeding Operation (CAFO) to authorize the operation of a 999 head count dairy facility. The facility is located at 4252 County Road 2408, near the city of Winnsboro, in Hopkins County, Texas 75494. TCEQ received this application on December 31, 2024. The permit application will be available for viewing and copying at Texas A&M AgriLife Extension Service, 1200 West Houston Street, Sulphur Springs, 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=-95.32861,32.980555&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 Maiko Hessel Bouma at the address stated above or by calling Mr. Maiko Bouma, Owner, at 903-855- 2748.

Issuance Date: February 13, 2025

Comisión de Calidad Ambiental del Estado de Texas

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

PERMISO NO. WQ0005477000

SOLICITUD. Maiko Hessel Bouma, 4252 County Road 2408, Winnsboro, Texas 75494, ha solicitado a la Comisión de Calidad Ambiental de Texas (TCEQ) la propuesta de Permiso de Aguas Residuales No. WQ0005477000 para una Operación de limentación Concentrada de Animales (CAFO) para autorizar la operación de una instalación lechera con 999 cabezas de ganado. La instalación está ubicada en 4252 County Road 2408, cerca de la ciudad de Winnsboro, en el condado de Hopkins, Texas 75494. La TCEQ recibió esta solicitud el 31 de diciembre de 2024. La solicitud de permiso estará disponible para ver y copiar en Texas A&M AgriLife Extension Service, 1200 West Houston Street, Sulphur Springs, 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 instalación se proporciona como cortesía pública y no forma parte de la solicitud o aviso. Para conocer la ubicación exacta, consulte la aplicación**.** 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. 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 DE LA TCEQ. Todos los comentarios escritos del público y los para pedidos una reunión deben ser presentados a la Oficina del Secretario Principal, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 o por el internet at www.tceq.texas.gov/about/comments.html. 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. Si necesita más información en Español sobre esta solicitud para un permiso o el proceso del permiso, por favor llame a El Programa de Educación Pública de la TCEQ, sin cobro, al 1-800-687-4040. La información general sobre la TCEQ puede ser encontrada en nuestro sitio de la red: www.tceq.texas.gov.

También se puede obtener más información de Maiko Hessel Bouma en la dirección indicada anteriormente o llamando al Sr. Maiko Bouma, propietario, al 903-855-2748.

Fecha de emisión not isssued 13 de febrero de 2025

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

COMBINED

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

AND

NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR CAFO WATER QUALITY PERMIT NEW

PERMIT NO. WQ0005477000

APPLICATION AND PRELIMINARY DECISION. Maiko Hessel Bouma, 4252 County Road 2408, Winnsboro, Texas, 75494 has applied to the Texas Commission on Environmental Quality (TCEQ) for a new Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005477000, for a Concentrated Animal Feeding Operation (CAFO), to authorize the applicant to operate an existing dairy cattle facility at a maximum capacity of 999 head, all of which are milking cows, with a total land application area of 538 acres, and a list of alternative crops that includes Coastal, Corn, Common Grass, Ryegrass, Small Grain, and Sorghum with their various yield goals. This dairy facility is currently operating under the CAFO general permit with authorization number TXG920057. TCEQ received this application on December 31, 2024.

The Applicant is issuing this combined notice because a revised application was submitted to remove a previously proposed land management unit (LMU) #7 – 38 acres that was located south of LMU #1 and propose another location south of LMU #5 and west of LMU #6 for LMU #7 – 113 acres. The original Notice of Receipt and Intent to Obtain a Water Quality Permit was mailed on February 18, 2025, and was published on March 1, 2025.

The facility is located at 4252 County Road 2408, Winnsboro, Hopkins County, Texas 75494. The facility is located in the drainage area of the Big Sandy Creek in Segment No. 0514 of the Sabine River Basin, and the Lake Cypress Springs in Segment No. 0405 of the Cypress Creek 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. *https://gisweb.tceq.texas.gov/LocationMapper/?marke r=- 95.328611,32.980555&level=18.* For the exact location, refer to the application.

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, 1200 W Houston, Sulphur Springs, Texas 75482.** 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 material, or significant public comments**.**

Unless the application is directly referred to 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. 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 Mr. Maiko Hessel Bouma at the address stated above or by calling Mr. Jim Wyrick, East Texas Environmental Services at (903)243-0400. Issuance Date. Senate Bill 709 (84th Legislative Session, 2015) amended the Texas Water Code by adding new Section 5.5553, which requires the Texas Commission on Environmental Quality (TCEQ) to provide written notice to you at least thirty (30) days prior to the TCEQ's issuance of draft permits for applications that are located in your district.

Maiko Hessel Bouma, 4252 County Road 2408, Winnsboro, Texas, 75494 has applied to the Texas Commission on Environmental Quality (TCEQ) for a new Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0005477000 (EPA I.D. No. TX0148253), for a Concentrated Animal Feeding Operation (CAFO), to authorize the applicant to operate an existing dairy cattle facility at a maximum capacity of 999 head, all of which are milking cows, with a total land application area of 538 acres, and a list of alternative crops that includes Coastal, Corn, Common Grass, Ryegrass, Small Grain, and Sorghum with their various yield goals. This dairy facility is currently operating under the CAFO general permit with authorization number TXG920057. TCEQ received this application on December 31, 2024. The facility is located at 4252 County Road 2408, Winnsboro in Hopkins County, Texas 75494. The facility is located in the drainage area of the Big Sandy Creek in Segment No. 0514 of the Sabine River basin, and the Lake Cypress Springs in Segment No. 0405 of the Cypress Creek Basin. The permit application is available for viewing and copying at the Texas A&M AgriLife Extension, 1200 W Houston, Sulphur Springs, Texas 75482.

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: *https://gisweb.tceq.texas.gov/LocationMapper/?marker=- 95.328611,32.980555&level=18*. TCEQ is preparing the initial draft permit. At the time the draft permit is issued, the applicant will be required to publish notice in a newspaper of general circulation, and the TCEQ will provide a copy of the notice of draft permit to persons who have requested it to be on a mailing list.
Questions regarding this application may be directed *to* Gregg W. Easley by calling 512- 239-4539.

Issuance Date: October 2, 2025

COMISIÓN DE CALIDAD AMBIENTAL DE TEXAS

COMBINADO

AVISO DE RECEPCIÓN DE LA SOLICITUD E INTENCIÓN DE OBTENER UN PERMISO DE CALIDAD DEL AGUA

Y

NOTIFICACIÓN DE LA DEMANDA Y DECISIÓN PRELIMINAR PARA EL PERMISO DE CALIDAD DEL AGUA CAFO NUEVO

PERMISO Nº WQ0005477000

SOLICITUD Y DECISIÓN PRELIMINAR. Maiko Hessel Bouma, 4252 County Road 2408, Winnsboro, Texas, 75494 ha solicitado a la Comisión de Calidad Ambiental de Texas (TCEQ) un nuevo Permiso del Sistema de Eliminación de Descargas Contaminantes (TPDES) de Texas No. WQ0005477000, para que una Operación Concentrada de Alimentación Animal (CAFO, por sus siglas en inglés) autorice al solicitante a operar una instalación de ganado lechero existente a una capacidad máxima de 999 cabezas, todas las cuales son vacas lecheras, con un área total de aplicación de tierra de 538 acres, y una lista de cultivos alternativos que incluye Coastal, Maíz, Pasto Común, Raigrás, Grano Pequeño, y sorgo con sus diversos objetivos de rendimiento. Esta instalación lechera está operando actualmente bajo el permiso general CAFO con el número de autorización TXG920057. La TCEQ recibió esta solicitud el 31 de diciembre de 2024.

El solicitante emite este aviso combinado porque se presentó una solicitud revisada para eliminar una unidad de manejo de tierras (LMU) propuesta anteriormente, la LMU #7 - 38 acres, que estaba ubicada al sur de la LMU #1, y proponer otra ubicación al sur de la LMU #5 y al oeste de la LMU #6 para la LMU #7 - 113 acres. El aviso original de recepción e intención de obtener un permiso de calidad de agua fue enviado el 18 de febrero de 2025 y se publicó el 1 de marzo de 2025.

La instalación está ubicada en 4252 County Road 2408, Winnsboro, Hopkins County, Texas 75494. La instalación está ubicada en el área de drenaje del Big Sandy Creek en el Segmento No. 0514 de la Cuenca del Río Sabine, y el Lago Cypress Springs en el Segmento No. 0405 de la Cuenca del Arroyo Cypress. Este enlace a un mapa electrónico de la ubicación general del sitio o instalación se proporciona como cortesía pública y no forma parte de la solicitud o aviso.
https://gisweb.tceq.texas.gov/LocationMapper/?marke r=-95.328611,32.980555&level=18. Para conocer la ubicación exacta, consulte la solicitud.

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, 1200 West Houston Street, Sulphur Springs, Texas 75483**.

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.

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 Chieck 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 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. Maiko Hessel Bouma en la dirección indicada anteriormente o llamando a Sr. Jim Wyrick, East Texas Environmental Services a (903)243-0400.

Fecha de Emisión: el 2 de octubre de 2025

EAST TEXAS ENVIRONMENTAL SERVICES

ENVIRONMENTAL CONSULTANTS

Executive Director
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

RECEIVED
DEC 31 2024
WATER QUALITY DIVISION
TCEQ

Subject: Delegation of Signatories to Reports

Facility/Company/Site Name: Bouma Dairy

Texas General Permit Number: not issued yet

Dear Executive Director:

This letter serves to designate the following people or positions as authorized personnel for Electronic STEERS signature(s), signing reports, stormwater pollution prevention plans, Pollution Prevention Plans, Core Data Forms, Annual Reporting Forms, Soil Monitoring Report Forms, Discharge Monitoring Report Forms, certifications or other information requested by the Executive Director or required by the general or water quality permit(s), as set forth by 30 TAC §305.128.

Name or Position	Jim C. Wyrick, PG, Environmental Consultant

I understand that this authorization does extend to the STEERS Electronic Signatory Authority but does not extend to the signing of the paper copies of the Notice of Intent, Notice of Change, or Change in Permittee for obtaining coverage under a TCEQ Water Quality or Texas General Permit offered by the TCEQ.

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in 30 TAC §305.44 .

Sincerely,

M Bouma

Signature

Owner

Title

12-18-24

Date

MAIKO BOUMA

Printed Name

RELEVANT PROVISIONS

305.128(a) All reports requested by permits and other information requested by the executive director shall be signed by a person described in §305.44(a) of this title (relating to Signatories to Applications) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) the authorization is made in writing by a person described in §305.44(a) of this title (relating to Signatories to Applications);

(2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity or for environmental matters for the applicant, such as the position of plant manager, operator of a well or well field, environmental manager, or a position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

(3) the written authorization is submitted to the executive director.

(b) If an authorization under this section is no longer accurate because of a change in individuals or position, a new authorization satisfying the requirements of this section must be submitted to the executive director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(c) Any person signing a report required by a permit shall make the certification set forth in §305.44(b) of this title (relating to Signatories to Applications).

305.44(a) All applications shall be signed as follows.

(1) For a corporation, the application shall be signed by a responsible corporate officer. For purposes of this paragraph, a responsible corporate officer means a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. Corporate procedures governing authority to sign permit or post-closure order applications may provide for assignment or delegation to applicable corporate positions rather than to specific individuals.

(2) For a partnership or sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal, or other public agency, the application shall be signed by either a principal executive officer or a ranking elected official. For purposes of this paragraph, a principal executive officer of a federal agency includes the chief executive officer of the agency, or a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., regional administrator of the EPA).

(b) A person signing an application shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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.

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application.)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 601180649		RN 103920385

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy) 9/3/2024

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

NICO JAAP DEBOER

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☒ Sole Proprietorship ☐ Other:

12. Number of Employees ☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated? ☒ Yes ☐ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator ☐ Other:
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant

15. Mailing Address: 19008 FM 3079 CHANDLER TX 75758 7667

City	CHANDLER	State	TX	ZIP	75758	ZIP + 4	7667

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(903) 521-3095		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

HILLTOP JERSEY FARM

23. Street Address of the Regulated Entity: *(No PO Boxes)*	19008 FM 3079							
	City	CHANDLER	**State**	TX	**ZIP**	75758	**ZIP + 4**	7667
24. County	HOPKINS							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:					
26. Nearest City			**State**		**Nearest ZIP Code**
CHANDLER			TX		75758

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	32.2635		**28. Longitude (W) In Decimal:**	-95.537716	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
0241			

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

MILK PRODUCTION

34. Mailing Address:	**19008 FM 3079**							
	City	**CHANDLER**	**State**	**TX**	**ZIP**	**75758**	**ZIP + 4**	**7667**

35. E-Mail Address:	**hilltopjersey@gmail.com**

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(903) 855-2748		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☒ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Jim C. Wyrick	**41. Title:**	Consultant

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(903) 521-3095		( ) -	wyrick@suddenlink.net

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	East Texas Environmental Services	**Job Title:**	Consultant
Name *(In Print):*	Jim C, Wyrick	**Phone:**	(903) 243- 400
Signature:	Jim C Wyrick	**Date:**	8/3/2024

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: 24665
	Check/Money Order Amount: $350.00
	Name Printed on Check: Maiko Bouma DBA Bouma Dairy
EPAY	Voucher Number:
	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:

E. For existing permits:
What is the permit number?
What is the EPA I.D. Number? TX

SECTION 3. FACILITY OWNER (APPLICANT) INFORMATION

A. What is the legal name of the facility owner?
- BOUMA, MAIKO HESSEL

B. If the applicant is an existing TCEQ customer, provide the Customer Number (CN) issued to this entity? CN 601231814

C. What is the contact information for the owner?

Mailing Address: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO, TX 75494 4100

Phone Number: 903 855 2748 Fax Number: na

E-mail Address: boumadairy@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:

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:

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

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?

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

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

Mailing Address:

City, State and Zip Code:

Phone Number: Fax Number:

E-mail Address:

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:

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:

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

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: Jim Wyrick

Title: Consultant Credentials: Professional Geoscientist

Company Name: East Texas Environmental Services

Mailing Address: 317 Highland Dr,

City, State and Zip Code: Sulphur Springs, TX 75482

Phone Number: 903 243-0400 Fax Number:

E-mail Address: wyrick@suddenlink.net

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: Jim Wyrick

Title: Consultant Credentials: PG

Company Name: East Texas Environmental Services

Mailing Address: 317 Highland Dr.

City, State and Zip Code: Sulphur Springs, TX 75482

Phone Number: 903-243-0400 Fax Number: na E-mail Address: wyrick@suddenlink.net

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

Permit Contact First and Last Name: MAIKO BOUMA

Title: Owner Credentials:

Company Name: BOUMA DAIRY

Mailing Address: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO, TX 75494 4100

Phone Number: 903 855 2748 Fax Number: E-mail Address: boumadairy@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)

MAIKO HESSEL BOUMA

☐ No, complete this section

Prefix (Mr., Ms., Miss):

First and Last Name:

Title: Credentials:

Company Name:

Mailing Address:

City, State and Zip Code:

Phone Number: Fax Number: E-mail Address:

SECTION 8. LANDOWNER INFORMATION

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

Landowner Name: MAIKO HESSEL BOUMA

B. Landowner of the land management units (LMUs)

Landowner Name: MAIKO HESSEL BOUMA

SECTION 9. PUBLIC NOTICE INFORMATION

A. Individual responsible for publishing the notices in the newspaper

Prefix (Mr., Ms., Miss): Mr. First and Last Name: JIM WYRICK

Title: Consultant Credentials: PG

Company Name: EAST TEXAS ENVIRONMENTAL SERVICES

Mailing Address: 317 HIGHLAND DR.

City, State and Zip Code: SULPHUR SPRINGS, TX 75482

Phone Number: 903-243-0400 Fax Number: _____ E-mail Address: wyrick@suddenlink.net

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

☐ E-mail:

☐ Fax Number:

☒ Regular Mail:

Mailing Address: 317 Highland Dr.

City, State and Zip Code: Sulphur Springs, TX 75482

C. Contact person to be listed in the notice

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

First and Last Name: MAIKO BOUMA

Title: OWNER Credentials:

Company Name: BOUMA DAIRY

Phone Number: 903 855 2748

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: Texas A&M AgriLife extension Service

Physical Address of Building: 1200 W Houston

City: Sulphur Springs County: TX

Phone Number: 903-885-3443

E. Bilingual Notice Requirement

For new, major amendment, and renewal applications. This information can be obtained by

Texas Commission on Environmental Quality

Template and Instructions for the Plain Language Summary for a Concentrated Animal Feeding Operation (CAFO) Permit Application

This template is a guide for developing a plain language summary for a CAFO permit application as required by the TCEQ Public Participation Plan and Language Access Plan. You may modify the template as necessary to accurately describe your facility as long as the summary includes the following information: (1) the function of the proposed site or facility; (2) the expected output of the proposed site or facility; (3) the expected pollutants that may be emitted or discharged by the proposed site or facility; and (4) how the applicant will control those pollutants, so that the proposed or existing CAFO facility will not have an adverse impact on human health or the environment.

Complete the plain language summary templates in English and Spanish below to describe your facility and application in plain language. Instructions and examples are provided below. Make any other edits necessary to improve readability or grammar and to comply with the rule requirements.

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, and the alternative language is not Spanish, you must provide a translated copy of the completed English plain language summary in the appropriate alternative language as part of your application package for CAFO Permit Applications.

If you have any questions about this template, contact the TCEQ Water Quality Division at (512) 239-4671.

You must submit this template with any of these applications or forms:

1. CAFO General Permit Notice of Intent Application, for a new or significant expansion (form number TCEQ 20111)

2. Notice of Change, for substantial change (form number TCEQ 20511)

3. CAFO Individual Permit Application for new, renewal, or major amendment (form number TCEQ 000728.)

Plantilla e instrucciones para el resumen en lenguaje sencillo para una solicitud de permiso de operación concentrada de alimentación animal (CAFO, sigla en inglés).

Esta plantilla es una guía para desarrollar un resumen en lenguaje sencillo para una solicitud de permiso CAFO según lo requerido por el Plan de Participación Pública y el Plan de Acceso Lingüístico de TCEQ. Puede modificar la plantilla según sea necesario para describir con precisión su instalación, siempre y cuando el resumen incluya la siguiente información: (1) la función del sitio o instalación propuestos; (2) la producción esperada del sitio o instalación propuestos; (3) los contaminantes esperados que pueden ser emitidos o descargados por el sitio o instalación propuestos; y (4) cómo el solicitante controlará esos contaminantes, de modo que la instalación CAFO propuesta o existente no tenga un impacto adverso en la salud humana o el medio ambiente.

Complete las plantillas de resumen en lenguaje sencillo en inglés y español a continuación para describir su instalación y aplicación en lenguaje sencillo. A continuación se proporcionan instrucciones y ejemplos. Realice cualquier otra edición necesaria para mejorar la legibilidad o la gramática y para cumplir con los requisitos de la regla.

Si el Código de Educación de Texas requiere un programa de educación bilingüe en la escuela primaria o intermedia más cercana a la instalación o instalación propuesta, y el idioma alternativo no es el español, debe proporcionar una copia traducida del resumen completo en inglés en el idioma alternativo apropiado como parte de su paquete de solicitud para las solicitudes de permisos CAFO.

Si tiene alguna pregunta sobre esta plantilla, comuníquese con la División de Calidad del Agua de TCEQ al (512) 239-4671.

Debe enviar esta plantilla con cualquiera de estas solicitudes o formularios:

1. Solicitud de Aviso de Intención de Permiso General de CAFO, para una expansión nueva o significativa (número de formulario TCEQ 20111)
2. Aviso de cambio, para cambios sustanciales (número de formulario TCEQ 20511)
3. Solicitud de Permiso Individual CAFO para una enmienda nueva, renovable o importante (número de formulario TCEQ 000728.)

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: - BOUMA, MAIKO HESSEL
2. Enter Customer Number: CN601231814
3. Name of facility: BOUMA DAIRY
4. Enter Regulated Entity Number: RN102334539
5. Provide your permit Number: NOT ISSUED YET
6. Facility Business: DAIRY MILK PRODUCTION. THIS FACILITY CONFINES 999 HEAD DAIRY CATTLE, OF WHICH 999 HEAD ARE MILKING COWS. THE FACILITY PRODUCTION AREA IS LOCATED 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. THE DAIRY FACILITY HAS 9 LAND MANAGEMENT UNITS (LMUS) WITH THE FOLLOWING ACREAGE: LMU #1 - 75, LMU # LMU #2 - 44, LMU #3 - 39, LMU #4 – 64, LMU #5 – 30, LMU #5 – 30, LMU #6 – 41, LMU #7 – 38, LMU #8 – 37, AND LMU #9 – 101, AND 2 RETENTION CONTROL STRUCTURES (RCSS), AND A CONCRETE SETTLING BASINS. THE RCSS TOTAL REQUIRED CAPACITIES WITHOUT FREEBOARD (ACRE-FEET) ARE RCS #1 – 5.56 AND RCS #2 – 6.92. THERE ARE ONSITE 3 WATER WELLS (WELLS #1- #3). THE FACILITY IS LOCATED IN THE DRAINAGE AREA OF SEGMENT NO. 0514 OF BIG SANDY CREEK
7. Facility Location: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100
8. Application Type: NEW
9. Description of your request: APPLYING FOR A NEW IP
10. Potential pollutant sources at the facility include (list the pollutant sources): Manure, Wastewater, Dust, lubricants, Feed, Fuel Storage, Medicines, Cleaning Chemicals
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): MANURE WILL BE STORED WITHIN THE DRAINAGE AREA OF RCS #1. WASTEWATER WILL BE STORED IN RCS #1, AND RCS #2. UNTIL PROPERLY IRRIGATED THROUGH A DRAGHOSE SYSTEM IRRIGATION SYSTEMS. MANURE WILL BE HAULED TO THE APPROPRIATE LMUS, OFFSITE, IN ACCORDANCE WITH THE NUTRIENT MANAGEMENT PLAN. RCS #1, AND RCS #2 ARE DESIGNED TO STORE AND MAINTAIN THE SLUDGE AND 25YR-24HR RAINFALL. ALL OTHER CLEANERS, LUBRICANTS, FUELS AND MEDICINES WILL BE MAINTAINED AND ALL MANUFACTURERS' DIRECTIONS FOLLOWED. DEAD COWS WILL BE BURIED WITHIN 72 HOURS

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.

PLANTILLA DE IDIOMA ESPAÑOL PARA SOLICITUDES DE PERMISO CAFO

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

1. Nombre del Solicitante: BOUMA, MAIKO HESSEL
2. Introduzca el Número de Cliente: CN601231814
3. Nombre de la Instalación: BOUMA DAIRY
4. Introduzca el Número de Entidad Regulada: RN102334539.
5. Proporcione su Número de Permiso: AÚN NO EMITIDO
6. Negocio de Instalación: PRODUCCIÓN DE LECHE. ESTA INSTALACIÓN CONFINA 999 CABEZAS DE GANADO LECHERO, DE LAS CUALES 999 CABEZAS SON VACAS DE ORDEÑO. EL ÁREA DE PRODUCCIÓN DE LA INSTALACIÓN ESTÁ UBICADA EN 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. LA INSTALACIÓN LÁCTEA TIENE 9 UNIDADES DE GESTIÓN DE TIERRAS (LMUS) CON LA SIGUIENTE SUPERFICIE: LMU N.º 1 - 75, LMU N.º 2 - 44, LMU N.º 3 - 39, LMU N.º 4 - 64, LMU N.º 5 - 30, LMU N.º 5 - 30, LMU N.º 6 - 41, LMU N.º 7 - 38, LMU N.º 8 - 37 Y LMU N.º 9 - 101, Y 2 ESTRUCTURAS DE CONTROL DE RETENCIÓN (RCSS) Y CUENCAS DE SEDIMENTACIÓN DE CONCRETO. LAS CAPACIDADES TOTALES REQUERIDAS POR RCSS SIN FRANCOBORDO (ACRE-PIES) SON RCS N.° 1: 5,56 Y RCS N.° 2: 6,92. HAY 3 POZOS DE AGUA EN EL LUGAR (POZOS N.° 1 A N.° 3). LA INSTALACIÓN ESTÁ UBICADA EN EL ÁREA DE DRENAJE DEL SEGMENTO N.° 0514 DE BIG SANDY CREEK
7. Ubicación de la Instalación: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100.
8. Tipo de Solicitud: NUEVO
9. Descripción de su solicitud: SOLICITUD DE NUEVA IP
10. Las fuentes potenciales de contaminantes en la instalación incluyen (liste las fuentes contaminantes): ESTIÉRCOL, AGUAS RESIDUALES, POLVO, LUBRICANTES, PIENSOS, ALMACENAMIENTO DE COMBUSTIBLE, MEDICAMENTOS, PRODUCTOS QUÍMICOS DE LIMPIEZA
11. Las siguientes mejores prácticas de gestión se implementarán en el sitio para gestionar los contaminantes de las fuentes contaminantes listadas (describa las mejores prácticas de gestión que se utilizan): EL ESTIÉRCOL SE ALMACENARÁ DENTRO DEL ÁREA DE DRENAJE DE RCS #1, Y RCS #2. LAS AGUAS RESIDUALES SE ALMACENARAN EN RCS #1 Y RCS #2 HASTA QUE SE RIGUEN CORRECTAMENTE A TRAVÉS DE UN SISTEMA DE RIEGO DE PIVOTE CENTRAL Y DE ARRASTRE. EL ESTÉRICO SERÁ TRANSPORTADO A LOS LMUS APROPIADOS, FUERA DEL SITIO, DE ACUERDO CON EL PLAN DE MANEJO DE NUTRIENTES. Los RCS #1 y RCS #2 ESTARÁN DISEÑADOS PARA ALMACENAR Y MANTENER LOS LODOS Y LAS LLUVIAS DE 25 A 24 HORAS. TODOS LOS DEMÁS LIMPIADORES, LUBRICANTES, COMBUSTIBLES Y

MEDICAMENTOS SE MANTENDRÁN Y SE SEGUIRÁN TODAS LAS INSTRUCCIONES DEL FABRICANTE. LAS VACAS MUERTAS SERÁN ENTERRADAS EN 72 HORASMEDICAMENTOS SE MANTENDRÁN Y SE SEGUIRÁN TODAS LAS INSTRUCCIONES DEL FABRICANTE. LAS VACAS MUERTAS SERÁN ENTERRADAS EN 72 HORASA

A menos que se limite lo contrario, el estiércol, los lodos o las aguas residuales no se descargarán de una unidad de gestión de la tierra (LMU, por sus siglas en inglés) o una estructura de control de retención (RCS, por sus siglas en inglés) hacia o adyacente al agua en el estado de una CAFO, excepto como resultado de cualquiera de las siguientes condiciones:

1) una descarga de estiércol, lodos o aguas residuales que el permisionario no pueda 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 crónico/catastrófico; o

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

Instructions to Complete the Summary - English

1. Enter the name of applicant in this section. The applicant name should match the name associated with the customer number.
2. Enter the Customer Number in this section. Each Individual or Organization is issued a unique 11-digit identification number called a CN (e.g. CN123456789). You may search for your CN from this web address: Customer Number.
3. Enter the name of the facility in this section. The facility name should match the name associated with the regulated entity number.
4. Enter the Regulated Entity number in this section. Each site location is issued a unique 11-digit identification number called an RN (e.g. RN123456789). You may search for your RN from this web address: Regulated Entity Number
5. Provide the permit number that the TCEQ assigned to your site. GP starts with TXG92 and four numbers. IPs start with WQ000xxxx000.
6. Enter a description of the facility in this section. For example, Dairy cattle milk production facility; dairy heifer replacement production facility; beef cattle production facility; young calves production facility or cow/calf operation; chicken egg laying production facility; chicken broiler production facility; sheep/goat production facility; swine production facility.
7. Enter the location of the facility in this section. If the site has a physical address such as 12100 Park 35 Circle, Austin, TX 78753 enter it in this section, but if not provide the location description in the space.
8. Provide the application type in this section.
1. CAFO general permit authorization: select the applicable type from the following list:
1. New authorization for a facility not currently authorized
2. Significant expansion
3. Substantial change
4. CAFO Individual Permit: select the applicable type from the following list:
    1. New
    2. Renewal
    3. Major Amendment
4. Provide a detailed description of the proposed changes to the site to be authorized if you are already authorized and you are proposing some changes to your permit (IP) or authorization (GP).

    If you are requesting a new permit or authorization, provide the number of animals, the number of acres that will be available for land application, list of main crops, and number of lagoons to be authorized.
5. List all potential pollutant sources expected at the facility in this section. For example, you may refer to page one of the technical information packet in this application.
6. Enter a description of the best management practices used at your facility. Include a description of each process, starting with initial treatment and finishing with the point of

disposal. For example, process generated wastewater and stormwater are stored in a 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.

Example of a Completed Plain Language Summary - English

Individual Permit Application for a Concentrated Animal Feeding Operation- English

The following summary is provided for this water quality permit application being submitted for review by the Texas Commission on Environmental Quality as required by 30 Texas Administrative Code Chapter 39. 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. Spotted Cow Dairy, LLC
2. CN600000000
3. Spotted Cow Dairy
4. RN1000000000
5. WQ0000000000
6. This facility confines 4,100 head dairy cattle, of which 3,500 head are milking cows. The facility main production area is located on the west side of County Road 8000, approximately one mile south of the intersection of County Road 60 and Highway 11, east of Hico in Hamilton County, Texas. The dairy facility has twelve (12) land management units (LMUs) with the following acreage: LMU #1 - 25, LMU #1A - 45, LMU #2 - 19, LMU #3 - 15, LMU #4 - 59, LMU #5 - 54, LMU #6 - 48, LMU #7 - 35, LMU #8 - 44, LMU #9 - 7, LMU #10 - 6, and LMU #14 - 26; and two (2) retention control structures (RCSs), one Earthen Slurry Basin, one Concrete Slurry Basin, three Earthen Settling Basins, and two Concrete Settling Basins. The RCSs total required capacities without freeboard (acre-feet) are RCS #1 - 67.84 and RCS #2 - 5.24. There are ten onsite water wells (Wells #1 through #10), of which Wells #1, #5 and #6 are plugged. The facility also owns a calf ranch facility and one retention control structure (RCS) RCS #3. The facility is located in the drainage area of the North Bosque River in Segment No. 1226 of the Brazos River Basin.
7. The facility main production area is located on the west side of County Road 80, approximately one mile south of the intersection of County Road 2361 and Highway 6, east of Hico in Hamilton County, Texas.
8. This application is for a major amendment to the permit.
9. The changes include the increase in the number of milking cows from 3500 to 4100 head, the addition of a cross ventilated barn a pen area.
10. Potential pollutant sources at the site include: manure and manure stockpiles, wastewater, sludge, dust, inorganic fertilizers, fuel storage tanks, and compost.
11. The following best management practices will be implemented at the site to manage pollutants from the listed pollutant sources: process generated wastewater and stormwater are stored in a 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, sludge, and wastewater 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; and wastewater will be contained in RCSs properly designed ((25-year frequency 10-day duration (25 year/10 day), constructed, operated and maintained according to the provisions of the permit.

Manure, sludge, or wastewater will not be discharged from a LMU or a retention control structure (RCS) into or adjacent to water in the state except under 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 it is in danger of imminent overflow.

Any discharges initiated under the above conditions will be sampled for the following potential pollutants: 5 Day Biochemical Oxygen Demand (BOD5), Escherichia coli, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), Nitrate (N), Total Phosphorus, Ammonia Nitrogen and Pesticides.

Instrucciones para completar el resumen – Español

1) Introduzca el nombre del solicitante en esta sección. El nombre del solicitante debe coincidir con el nombre asociado con el número de cliente.
2) Introduzca el número de cliente en esta sección. A cada individuo u organización se le emite un número de identificación único de 11 dígitos llamado CN (por ejemplo, CN123456789). Puede buscar su CN desde esta dirección web: Número de cliente.
3) Introduzca el nombre de la instalación en esta sección. El nombre de la instalación debe coincidir con el nombre asociado con el número de entidad regulada.
4) Introduzca el número de Entidad Regulada en esta sección. Cada ubicación del sitio recibe un número de identificación único de 11 dígitos llamado RN (por ejemplo, RN123456789). Puede buscar su RN desde esta dirección web: Número de entidad regulada
5) Proporcione el número de permiso que la TCEQ asignó a su sitio. GP comienza con TXG92 y cuatro números. Las direcciones IP comienzan con WQ000____000.
6) Introduzca una descripción de la instalación en esta sección. Por ejemplo, la planta de producción de leche para ganado lechero; instalación de producción de reemplazo de novillas lecheras; instalaciones de producción de ganado vacuno; instalación de producción de terneros jóvenes u operación de vacas/terneros; planta de producción de puesta de huevos de gallina; planta de producción de pollos de engorde; planta de producción de ovino y caprino; planta de producción porcina.
7) Introduzca la ubicación de la instalación en esta sección. Si el sitio tiene una dirección física como 12100 Park 35 Circle, Austin, TX 78753, introdúzcala en esta sección, pero si no proporciona la descripción de la ubicación en el espacio.
8) Proporcione el tipo de aplicación en esta sección.
   a) Autorización de permiso general CAFO: seleccione el tipo aplicable de la siguiente lista:
      - Nueva autorización para una instalación no autorizada actualmente
      - Expansión significativa
      - Cambio sustancial
   b) Permiso Individual CAFO: seleccione el tipo aplicable de la siguiente lista:
      - Nuevo
      - Renovación
      - Modificación importante
9) Proporcione una descripción detallada de los cambios propuestos al sitio que se autorizará si ya está autorizado y está proponiendo algunos cambios a su permiso (IP) o autorización (GP).

   Si está solicitando un nuevo permiso o autorización, proporcione el número de animales, el número de acres que estarán disponibles para la aplicación en tierra, la lista de cultivos principales y el número de lagunas que se autorizarán.
10) Enumere todas las fuentes potenciales de contaminantes que se esperan en la instalación en esta sección. Por ejemplo, puede consultar la página uno del paquete de información técnica de esta aplicación.

11) Introduzca una descripción de las mejores prácticas de gestión utilizadas en sus instalaciones. Incluya una descripción de cada proceso, comenzando con el tratamiento inicial y terminando con el punto de eliminación. Por ejemplo, las aguas residuales y pluviales generadas por el proceso se almacenan en una laguna (RCS) hasta que la tierra se aplica a través del riego, y el estiércol y el lodo se almacenan en el área de drenaje del RCS hasta que la tierra se aplica o se transporta fuera del sitio para un uso beneficioso.

Ejemplo de un resumen completo en lenguaje sencillo - Español

Solicitud de Permiso Individual para una Operación de Alimentación Animal Concentrada-Español

Se proporciona el siguiente resumen para esta solicitud de permiso de calidad del agua que se presenta para su revisión por la Comisión de Calidad Ambiental de Texas según lo requerido por 30 Código Administrativo de Texas, Capítulo 39. La información proporcionada en este sumario puede cambiar durante la revisión técnica de la solicitud y no es una representación ejecutable federal de la solicitud de permiso.

1) Spotted Cow Dairy, LLC

2) CN600000000

3) Vaca lechera manchada

4) RN1000000000

5) WQ0000000000

6) Esta instalación confina 4.100 cabezas de ganado lechero, de las cuales 3.500 cabezas son vacas de ordeño. El área de producción principal de la instalación está ubicada en el lado oeste de County Road 8000, aproximadamente una milla al sur de la intersección de County Road 60 y Highway 11, al este de Hico en el condado de Hamilton, Texas. La instalación lechera tiene doce (12) unidades de manejo de tierras (LMU) con la siguiente superficie: LMU # 1 - 25, LMU #1A - 45, LMU # 2 - 19, LMU # 3 - 15, LMU # 4 - 59, LMU # 5 - 54, LMU # 6 - 48, LMU # 7 - 35, LMU # 8 - 44, LMU # 9 - 7, LMU # 10 - 6 y LMU # 14 - 26; y dos (2) estructuras de control de retención (RCS), una cuenca de lodo de tierra, una cuenca de lodo de concreto, tres cuencas de sedimentación de tierra y dos cuencas de sedimentación de concreto. Las capacidades totales requeridas de RCS sin francobordo (acres-pies) son RCS # 1 - 67.84 y RCS # 2 - 5.24. Hay diez pozos de agua en el sitio (pozos # 1 a # 10), de los cuales los pozos # 1, # 5 y # 6 están tapados. La instalación también posee una instalación de rancho de terneros y una estructura de control de retención (RCS) RCS # 3. La instalación está ubicada en el área de drenaje del río Bosque Norte en el Segmento No. 1226 de la Cuenca del Río Brazos.

7) El área de producción principal de la instalación está ubicada en el lado oeste de County Road 80, aproximadamente una milla al sur de la intersección de County Road 2361 y Highway 6, al este de Hico en el condado de Hamilton, Texas.

8) Esta solicitud es para una modificación importante del permiso.

9) Los cambios incluyen el aumento en el número de vacas de ordeño de 3500 a 4100 cabezas, la adición de un establo ventilado cruzado y un área de corral.

10) Las fuentes potenciales de contaminantes en el sitio incluyen: estiércol y estiércol, aguas residuales, lodos, polvo, fertilizantes inorgánicos, tanques de almacenamiento de combustible y compost.

11) Las siguientes mejores prácticas de gestión se implementarán en el sitio para manejar los

contaminantes de las fuentes contaminantes enumeradas: las aguas residuales generadas por el proceso y las aguas pluviales se almacenan en una laguna (RCS) hasta que la tierra se aplica a través del riego, y el estiércol y el lodo se almacenan en el área de drenaje del RCS hasta que la tierra se aplica o se transporta fuera del sitio para un uso beneficioso.

El estiércol, lodo y aguas residuales generados por la CAFO serán retenidos y utilizados de manera apropiada y beneficiosa de acuerdo con un plan certificado de manejo de nutrientes específico del sitio; y las aguas residuales estarán contenidas en RCS debidamente diseñados ((frecuencia de 25 años 10 días de duración (25 años / 10 días), construidos, operados y mantenidos de acuerdo con las disposiciones del permiso.

El estiércol, los lodos o las aguas residuales no se descargarán de una LMU o una estructura de control de retención (RCS) en o adyacentes al agua en el estado, excepto bajo las siguientes condiciones:

· una descarga de estiércol, lodo o aguas residuales que el permisionario no puede prevenir o controlar razonablemente como resultado de una condición catastrófica que no sea un evento de lluvia;

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

· una descarga de lluvia crónica/catastrófica de una LMU que ocurre porque el permisionario toma medidas para deshidratar el RCS si está en peligro de desbordamiento inminente.

Cualquier descarga iniciada en las condiciones anteriores se muestreará para los siguientes contaminantes potenciales: demanda bioquímica de oxígeno (DBO5) de 5 días, Escherichia coli, sólidos disueltos totales (TDS), sólidos suspendidos totales (TSS), nitrato (N), fósforo total, nitrógeno amoniacal y pesticidas.

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.

Application for an Individual Permit.

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.

Sulphur Springs

(City)

Hopkins

(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

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

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

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

(e) Languages commonly spoken in area by percentage

(f) Community and/or Stakeholder Groups

(g) Historic public interest or involvement

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) County Extension Office

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) Local Newspaper

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: Bouma Dairy

B. If this is an existing permitted site, provide the Regulated Entity Number (RN) issued to this site? RN 102334539

C. Site Address/Location:

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: 4252 COUNTY ROAD 2408 4100

City, State and Zip Code: WINNSBORO TX 75494

Item 2: Site Location Description:

Location description:

City where the site is located or, if not in a city, what is the nearest city:

Zip Code where the site is located:

D. County or counties if more than 1:

E. Latitude: 32.980666 Longitude: -95.328666

F. Animal Type:

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

G. Existing Maximum Number of Animals: 1200

Proposed Maximum Number of Animals: 999

H. What is the total LMU acreage? 469

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):

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).

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.

Bouma Dary Land Owners Map

A	R000027529 R000019171	AISE J & CHARLOTTE BOUMA 902 MAIN ST HALSTEAD, KS 67056
B	R000021921	DUSTIN BRODY ALLEN 2430 CR 2410 WINNSBORO, TX 75494
C	R000021920	MISTY GAYLE & JEFFERY ALAN ETAL MCBRIDE 3259 CR 2408 WINNSBORO, TX 75494
D	R000021923	SHANE NICHOLS 2745 CR 2403 WINNSBORO, TX 75494
E	R000021918	CARL & KATHERINE KASTNER 1195 CR 2403 WINNSBORO, TX 75494
F	R000021279	JODY W & ROSE M RIOJAS 3999 CR 2408 WINNSBORO, TX 75494
G	R000021278	JOHN P & LESLIE A MOORE P O BOX 724 WINNSBORO, TX 75494
H	R000013292	GEORGE JAMES PIERCE 20343 HWY 11 E WINNSBORO, TX 7549
I	R000013308	LAUZON PETER G & SHEILA M REVOCABLE LIVING TRUST PETER G LAUZON & SHEILA M LAUZON AS CO TRUSTEES 20262 HWY 11 E WINNSBORO, TX 75494
J	R000013310	PHILLIP GILBREATH 7750 LYNDON B JOHNSON FWY 201 DALLAS, TX 75251
K	R000022685	BLAKE C & REGINA BAIN 4360 CR 2310 SULPHUR SPRINGS, TX 75482
L	R000022705 R000022704	DENNIS RAY & SHERRY G NICHOLS 2342 CR 2403 WINNSBORO, TX 75494

Bouma Dary Land Owners Map

M	R000022703	ROYCE EUGENE & VERA LEE CARTER P O BOX 941 VAN ALSTYNE, TX 75495
N	R000019900	RAGSDALE LAND COMPANY LLC PO BOX 822 WINNSBORO, TX 75494
O	R000028423 R000019895 R000019897	AISE & CHARLOTTE BOUMA 902 MAIN ST HALSTEAD, KS 67056
P	R000019224	DUSTIN BRODY ALLEN 2430 CR 2410 WINNSBORO, TX 75494
Q	R000028089 R000028180	SHIRLEY JACKSON MAY 2822 CR 2408 WINNSBORO, TX 75494-4136
R	R000015060 R000015064 R000015064	TEMPLEMAN LIVING TUST TRUSTEE IRIS ANNETTE TEMPLEMAN 1901 WISTERIA WAY MCKINNEY, TX 75071
S	R000021272	RIDDLES ELLEN GRUBBS & GARY NEAL GRUBBS 1205 CEDARWOOD DR FLOWER MOUND, TX 75028
U	R000027893	KARI GAYE NOLEN 1577 CR 2393 WINNSBORO, TX 75494
W	R000021274	CHARLESTON DAVID GREEN 203 E CEDAR ST WINNSBORO, TX 75494
X	R000027089	JOHN DAVID & ANNA LAURISSA STONE 1923 CR 2399 WINNSBORO, TX 75494-4241
Y	R000019838	AMELIA ANN L/E GREEN LAQUITA RACHELLE SAVAGE 1801 CR 2399 WINNSBORO, TX 7549
Z	R000019834	RICHARD & TAMMY SMITH 1671 CR 2399 WINNSBORO, TX 75494

Bouma Dary Land Owners Map

AA R000019842 ANTHONY TY & TAMMY LYNNE MARLER
1179 CR 2399
WINNSBORO, TX 75494

BB R000019824 ANTHONY TY & TAMMY LYNNE MARLER
1179 CR 2399
WINNSBORO, TX 75494

CC R000026415 PHUONG LAN T TRAN
1394 CR 2393
WINNSBORO, TX 75494

DD R000029985 WIEPIE & JENNIFER SANDLIN JONGSMA
4705 CR 2390
WINNSBORO, TX 75494

EE R000019836 ANASTASIA & MATTHEW PERRY
PO BOX 917
WINNSBORO, TX 75494

FF R000015984 RAMONA L LONG
1143 CR 2393
WINNSBORO, TX 75494

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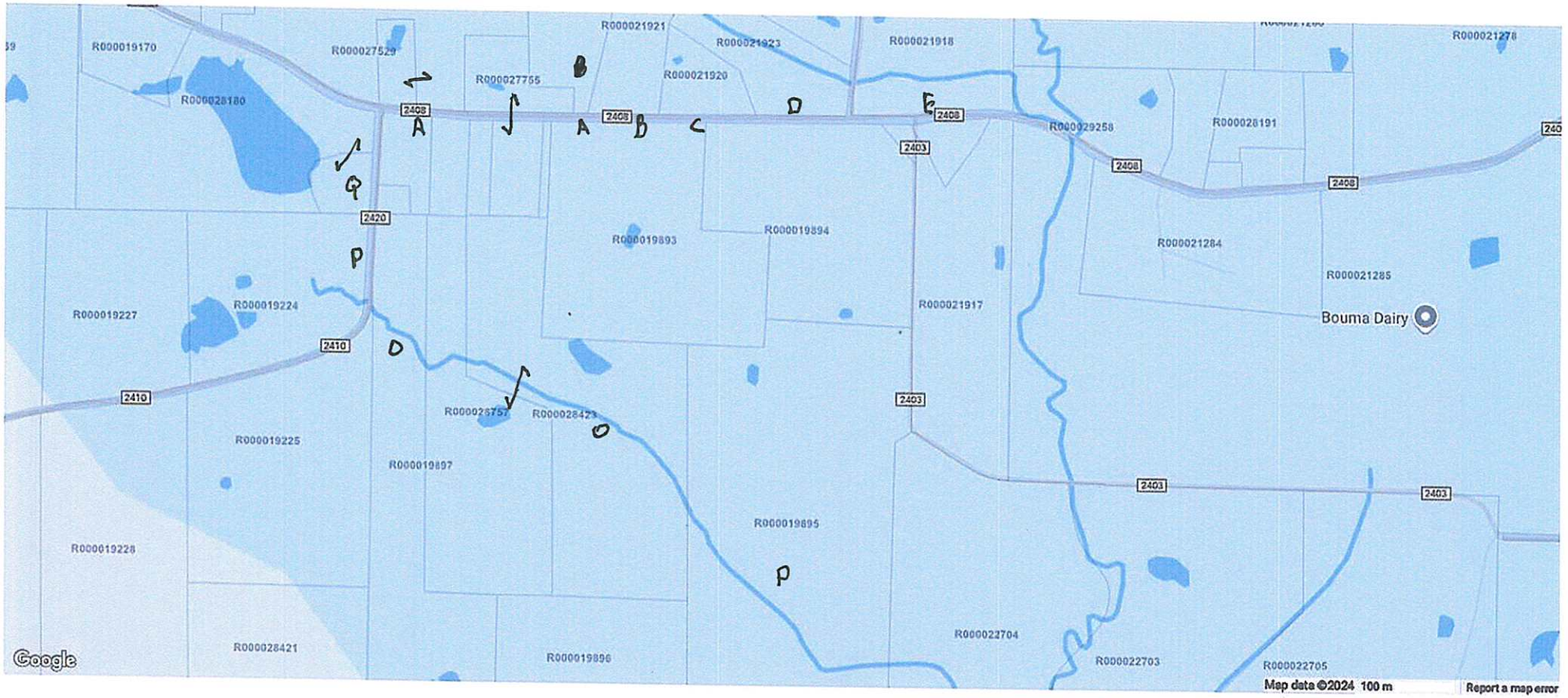
Property Year 2024 Map/GIS

Property ID: R000013309 Geo ID: 65.0307.000.013.01

MAP A

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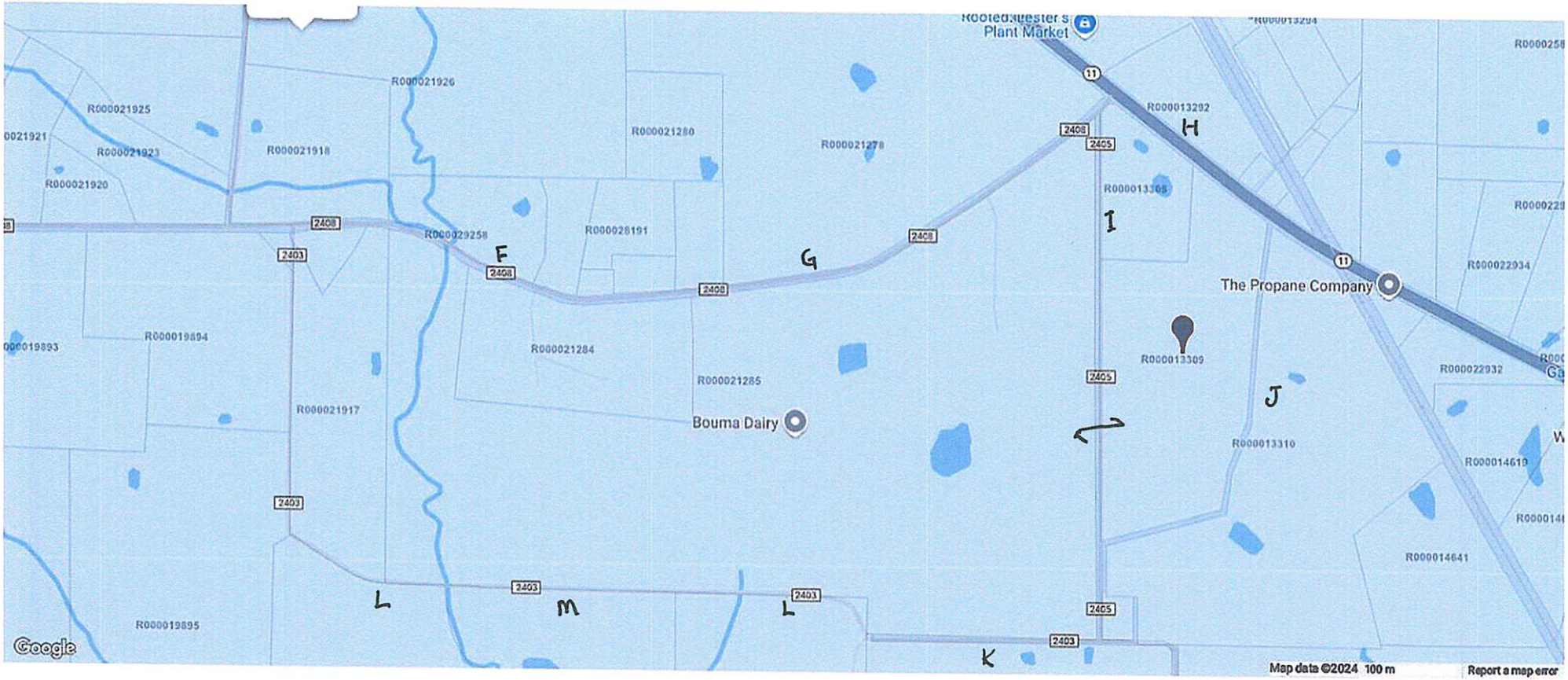
Property Year 2024 Map/GIS

Property ID: R000013309 Geo ID: 65.0307.000.013.01

MAP B

Information Updated 10/23/2024

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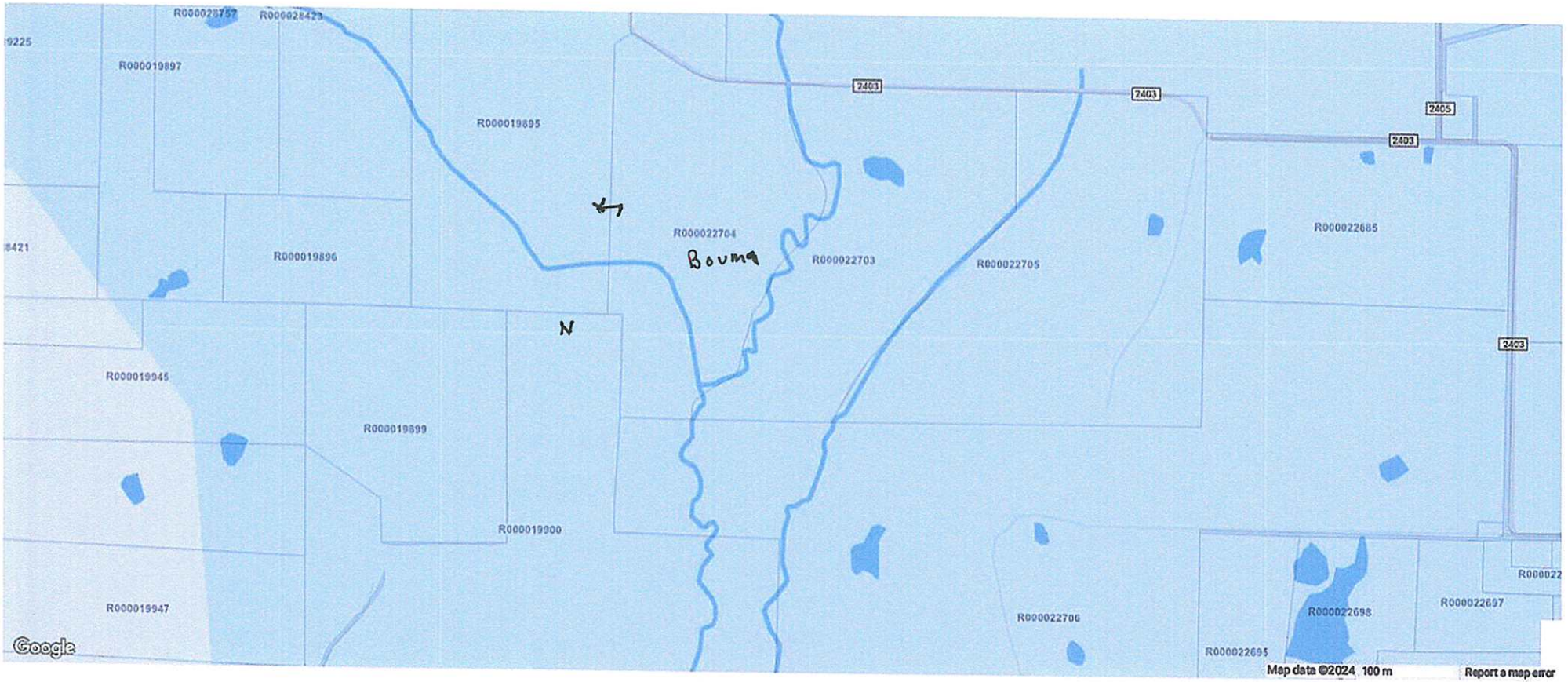
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Property ID: R000021285 Geo ID: 65.0898.000.005.01

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MAP



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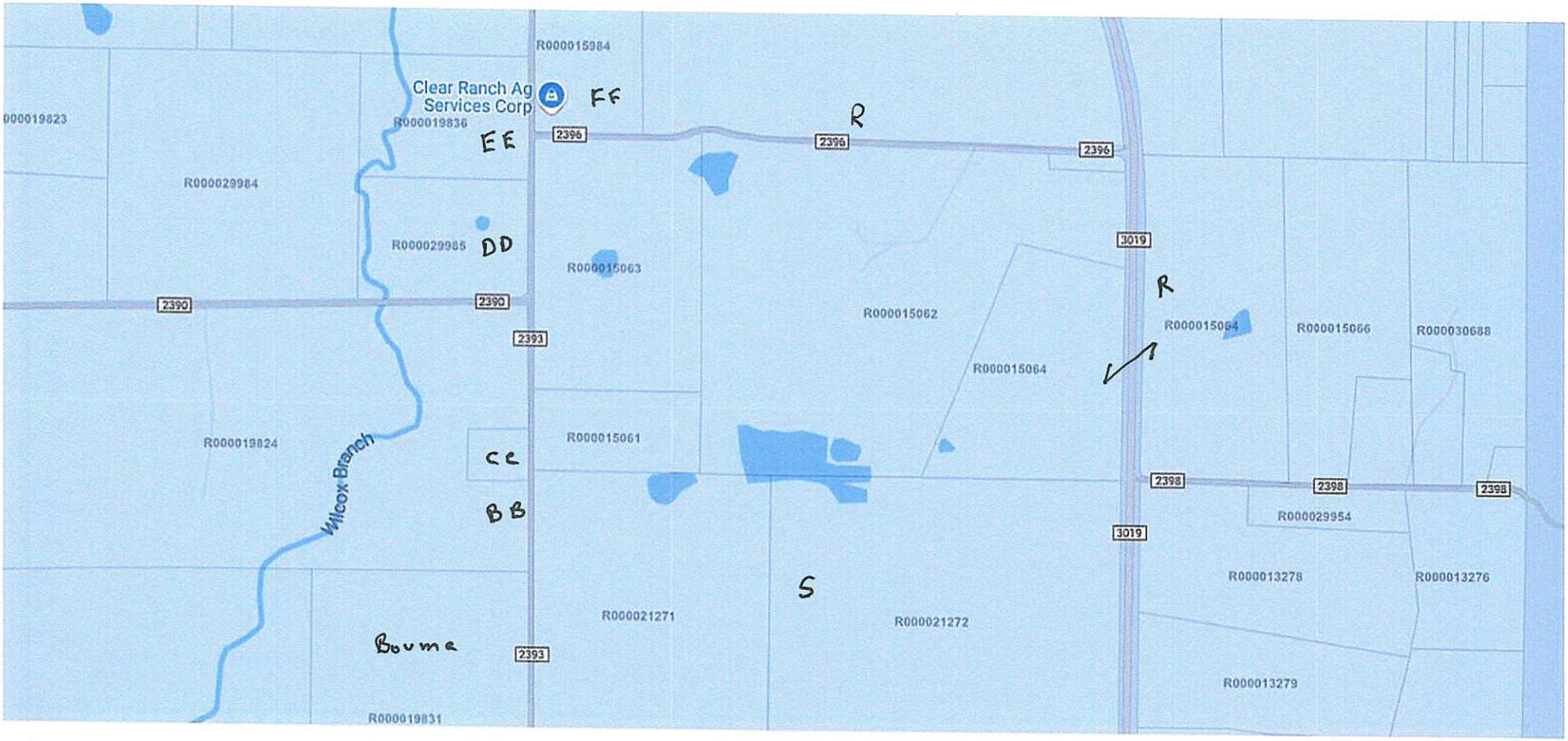
Property Year 2024 Map/GIS

Property ID: R000021285 Geo ID: 65.0898.000.005.01

Off site A

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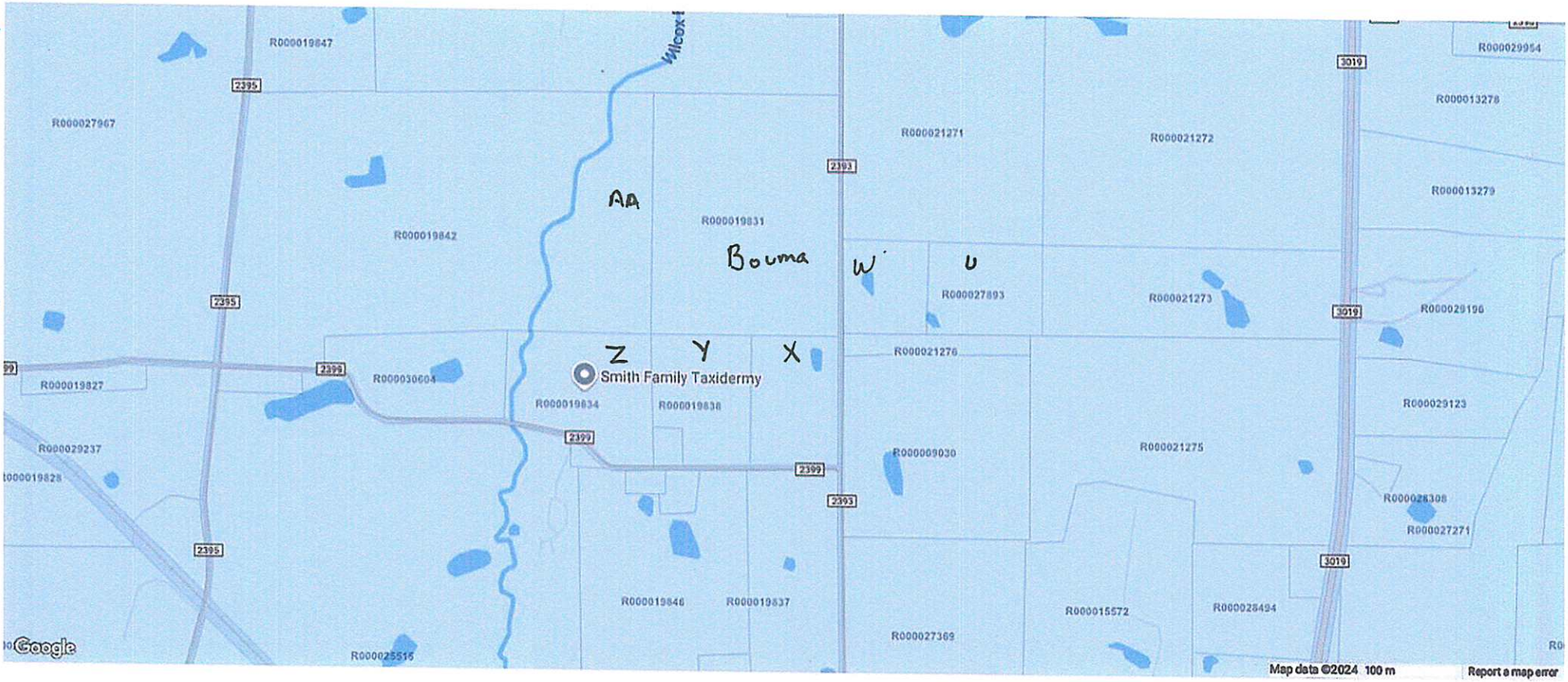
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Off site B

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HALSTEAD, KS 67056

DUSTIN BRODY ALLEN
2430 CR 2410
WINNSBORO, TX 75494

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7750 LYNDON B JOHNSON FWY 201
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7750 LYNDON B JOHNSON FWY 201
DALLAS, TX 75251

BLAKE C & REGINA BAIN
4360 CR 2310
SULPHUR SPRINGS, TX 75482

DENNIS RAY & SHERRY G NICHOLS
2342 CR 2403
WINNSBORO, TX 75494

ROYCE EUGENE & VERA LEE CARTER
P O BOX 941
VAN ALSTYNE, TX 75495

RAGSDALE LAND COMPANY LLC
PO BOX 822
WINNSBORO, TX 75494

RAMONA L LONG
1143 CR 2393
WINNSBORO, TX 75494

RIDDLES ELLEN GRUBBS & GARY NEAL GRUBBS
1205 CEDARWOOD DR
FLOWER MOUND, TX 75028

SHIRLEY JACKSON MAY
2822 CR 2408
WINNSBORO, TX 75494-4136

TEMPLEMAN LIVING TUST
TRUSTEE IRIS ANNETTE TEMPLEMAN
1901 WISTERIA WAY
MCKINNEY, TX 75071

JOHN DAVID & ANNA LAURISSA STONE
1923 CR 2399
WINNSBORO, TX 75494-4241

KARI GAYE NOLEN
1577 CR 2393
WINNSBORO, TX 75494

CHARLESTON DAVID GREEN
203 E CEDAR ST
WINNSBORO, TX 75494

ANTHONY TY & TAMMY LYNNE MARLER
1179 CR 2399
WINNSBORO, TX 75494

AMELIA ANN L/E GREEN
LAQUITA RACHELLE SAVAGE
1801 CR 2399
WINNSBORO, TX 7549

RICHARD & TAMMY SMITH
1671 CR 2399
WINNSBORO, TX 75494

WIEPIE & JENNIFER SANDLIN JONGSMA
4705 CR 2390
WINNSBORO, TX 75494

ANASTASIA & MATTHEW PERRY
PO BOX 917
WINNSBORO, TX 75494

PHUONG LAN T TRAN
1394 CR 2393
WINNSBORO, TX 75494

AISE J & CHARLOTTE BOUMA
902 MAIN ST
HALSTEAD, KS 67056

SHANE NICHOLS
2745 CR 2403
WINNSBORO, TX 75494

JOHN P & LESLIE A MOORE
P O BOX 724
WINNSBORO, TX 75494

PHILLIP GILBREATH
7750 LYNDON B JOHNSON FWY 201
DALLAS, TX 75251

ROYCE EUGENE & VERA LEE CARTER
P O BOX 941
VAN ALSTYNE, TX 75495

RIDDLES ELLEN GRUBBS & GARY NEAL GRUBBS
1205 CEDARWOOD DR
FLOWER MOUND, TX 75028

JOHN DAVID & ANNA LAURISSA STONE
1923 CR 2399
WINNSBORO, TX 75494-4241

ANTHONY TY & TAMMY LYNNE MARLER
179 CR 2399
WINNSBORO, TX 75494

VIEPIE & JENNIFER SANDLIN JONGSMA
705 CR 2390
WINNSBORO, TX 75494

DUSTIN BRODY ALLEN
2430 CR 2410
WINNSBORO, TX 75494

CARL & KATHERINE KASTNER
1195 CR 2403
WINNSBORO, TX 75494

GEORGE JAMES PIERCE
20343 HWY 11 E
WINNSBORO, TX 7549

BLAKE C & REGINA BAIN
4360 CR 2310
SULPHUR SPRINGS, TX 75482

RAGSDALE LAND COMPANY LLC
PO BOX 822
WINNSBORO, TX 75494

SHIRLEY JACKSON MAY
2822 CR 2408
WINNSBORO, TX 75494-4136

KARI GAYE NOLEN
1577 CR 2393
WINNSBORO, TX 75494

AMELIA ANN L/E GREEN
LAQUITA RACHELLE SAVAGE
1801 CR 2399
WINNSBORO, TX 7549

ANASTASIA & MATTHEW PERRY
PO BOX 917
WINNSBORO, TX 75494

MISTY GAYLE & JEFFERY ALAN ETAL MCBRIDE
3259 CR 2408
WINNSBORO, TX 75494

JODY W & ROSE M RIOJAS
3999 CR 2408
WINNSBORO, TX 75494

PETER G LAUZON & SHEILA M LAUZON AS CO TRUSTEES
20262 HWY 11 E
WINNSBORO, TX 75494

DENNIS RAY & SHERRY G NICHOLS
2342 CR 2403
WINNSBORO, TX 75494

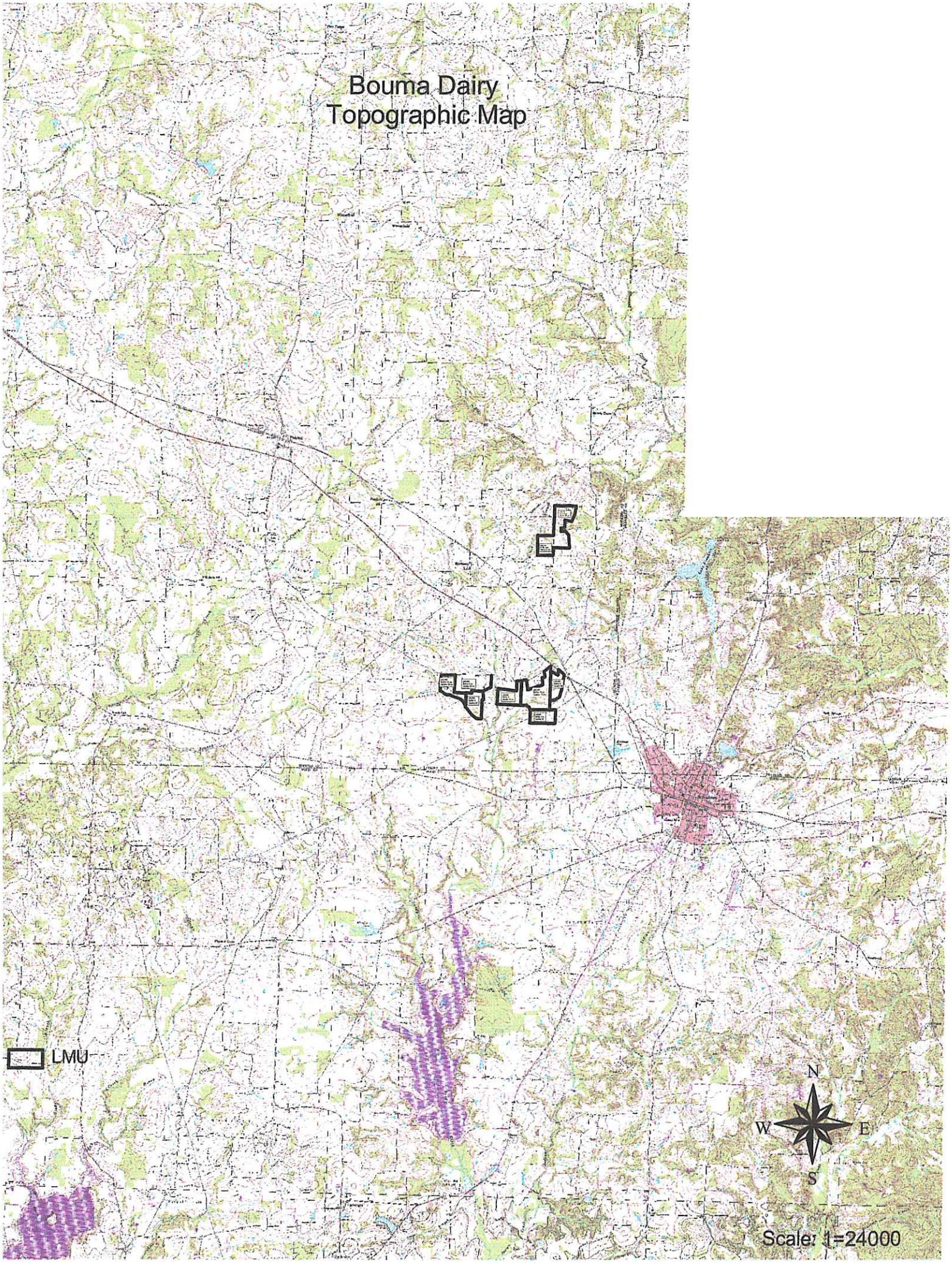
RAMONA L LONG
1143 CR 2393
WINNSBORO, TX 75494

TEMPLEMAN LIVING TUST
TRUSTEE IRIS ANNETTE TEMPLEMAN
1901 WISTERIA WAY
MCKINNEY, TX 75071

CHARLESTON DAVID GREEN
203 E CEDAR ST
WINNSBORO, TX 75494

RICHARD & TAMMY SMITH
1671 CR 2399
WINNSBORO, TX 75494

PHUONG LAN T TRAN
1394 CR 2393
WINNSBORO, TX 75494


Bouma Dairy
Topographic Map
LMU
N
W
E
S
Scale: 1=24000

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.

Hopkins County Appraisal District Website

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

HOPKINS COUNTY
APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Property ID: R000021919 Geo ID: 65.0984.000.003.11

Information Updated 10/31/2024

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Property Details

Ownership

BOUMA MAIKO & PETRONELLA-BAUKJE GLAS

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-13-12

Available Actions

CLICK HERE FOR PDF APPRAISAL NOTICE

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 2.019, ABS: 984, TR: 3-11, SUR: THOMAS GEORGE

Situs: CR 2403 1361

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$120,020	$100,580	$100,580	$61,970	$60,370	$0
Land	+	$44,420	$44,420	$30,290	$14,130	$14,130	$0
Production Market	+	$0	$0	$0	$0	$0	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$164,440	$145,000	$130,870	$76,100	$74,500	$0
Agricultural Loss	-	$0	$0	$0	$0	$0	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$164,440	$145,000	$130,870	$76,100	$74,500	$0

Improvement / Buildings *Improvement Value: $120,020*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage
1	RES1	RESIDENCE - 1ST FLOOR	1950	1,740	176
2	S4AP	COV PORCH	1950	180	72
3			1950	0	
4	S1AF	ATT GARAGE	1950	336	80

Land Details *Market Value: $44,420* *Production Market Value: $0* *Production Value: $0*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC63	1.000	43,560	0	0		22,000	0
AC63	1.019	44,388	0	0		22,418	0

Deed History

Conveyance	Volume	Page	Deed Date Instrument
UNAVAILABLE	014	256	4/28/1986

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	164,440	$1.0118	0.010118	$1,663.80
HOP	HOPKINS COUNTY	164,440	$0.40022	0.0040022	$658.12
HOS	HOSPITAL DISTRICT	164,440	$0.151886	0.00151886	$249.76
	Total Estimation		**$1.563906**	**0.01563906**	**$2,571.68**

The above property tax estimation is not a tax bill. Do not pay.

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HOPKINS COUNTY APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000015063 Geo ID: 65.0459.000.002.03

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-14-11

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 25.000, ABS: 459, TR: 2-03, SUR: HEDGECOCK MINTER

Situs: CR 2396 459

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$2,310	$2,310	$2,310	$2,310	$2,310	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$250,000	$250,000	$150,000	$64,130	$64,130	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$252,310	$252,310	$152,310	$66,440	$66,440	$0
Agricultural Loss	-	$246,870	$246,300	$146,300	$60,430	$60,430	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$5,440	$6,010	$6,010	$6,010	$6,010	$0

Improvement / Buildings *Improvement Value: $2,310*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage
1	PSAQ	POLE SHED AV QUAL		1,200	160

Land Details *Market Value: $0* *Production Market Value: $250,000* *Production Value: $3,130*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC51	25.000	1,089,000	0	0		250,000	3,125

Deed History

Conveyance	Volume	Page	Deed Date Instrument
MORGAN DAVID L & ADDIE M	528	278	5/2/2005

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	5,440	$1.0118	0.010118	$55.04
HOP	HOPKINS COUNTY	5,440	$0.40022	0.0040022	$21.77
HOS	HOSPITAL DISTRICT	5,440	$0.151886	0.00151886	$8.26
	Total Estimation		**$1.563906**	**0.01563906**	**$85.07**

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HOPKINS COUNTY
APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000019831 Geo ID: 65.0757.000.009.02

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-14-11

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 39.400, ABS: 757, TR: 9-02, SUR: POLK JOHN

Situs: CR 2393 0

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$275,800	$275,800	$157,600	$89,830	$89,830	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$275,800	$275,800	$157,600	$89,830	$89,830	$0
Agricultural Loss	-	$270,870	$269,970	$151,770	$84,000	$84,000	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$4,930	$5,830	$5,830	$5,830	$5,830	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $275,800* *Production Value: $4,930*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC46	39.400	1,716,264	0	0		275,800	4,925

Deed History

Conveyance	Volume	Page	Deed Date	Instrument
HAND BILLY JOE	489	605	6/22/2004	

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	4,930	$1.0118	0.010118	$49.88
HOP	HOPKINS COUNTY	4,930	$0.40022	0.0040022	$19.73
HOS	HOSPITAL DISTRICT	4,930	$0.151886	0.00151886	$7.49
	Total Estimation		**$1.563906**	**0.01563906**	**$77.10**

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HOPKINS COUNTY
APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Property ID: R000019895 Geo ID: 65.0761.000.005.00

Information Updated 10/31/2024

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-13-12

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 65.600, ABS: 761, TR: 5, SUR: POE JAMES W

Situs: CR 2403 0

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$464,870	$464,870	$265,640	$159,380	$159,380	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$464,870	$464,870	$265,640	$159,380	$159,380	$0
Agricultural Loss	-	$456,570	$455,040	$255,810	$149,550	$149,550	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$8,300	$9,830	$9,830	$9,830	$9,830	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $464,870* *Production Value: $8,300*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC46	52.410	2,282,980	0	0		366,870	6,551
AC46	14.000	609,840	0	0		98,000	1,750

Deed History

Conveyance	Volume	Page	Deed Date Instrument
PENN DORIS E	483	168	5/7/2004

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	8,300	$1.0118	0.010118	$83.98
HOP	HOPKINS COUNTY	8,300	$0.40022	0.0040022	$33.22
HOS	HOSPITAL DISTRICT	8,300	$0.151886	0.00151886	$12.61
	Total Estimation		**$1.563906**	**0.01563906**	**$129.81**

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HOPKINS COUNTY
APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000019895 Geo ID: 65.0761.000.005.00

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-13-12

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 65.600, ABS: 761, TR: 5, SUR: POE JAMES W

Situs: CR 2403 0

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$464,870	$464,870	$265,640	$159,380	$159,380	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$464,870	$464,870	$265,640	$159,380	$159,380	$0
Agricultural Loss	-	$456,570	$455,040	$255,810	$149,550	$149,550	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$8,300	$9,830	$9,830	$9,830	$9,830	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $464,870* *Production Value: $8,300*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC46	52.410	2,282,980	0	0		366,870	6,551
AC46	14.000	609,840	0	0		98,000	1,750

Deed History

Conveyance	Volume	Page	Deed Date Instrument
PENN DORIS E	483	168	5/7/2004

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	8,300	$1.0118	0.010118	$83.98
HOP	HOPKINS COUNTY	8,300	$0.40022	0.0040022	$33.22
HOS	HOSPITAL DISTRICT	8,300	$0.151886	0.00151886	$12.61
	Total Estimation		**$1.563906**	**0.01563906**	**$129.81**

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HOPKINS COUNTY APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000021271 Geo ID: 65.0897.000.001.00

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-14-11

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 40.000, ABS: 897, TR: 1, SUR: SHEARER L D

Situs: CR 2393 1601

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$1,040	$1,040	$1,040	$1,040	$1,040	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$280,000	$280,000	$160,000	$91,200	$91,200	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$281,040	$281,040	$161,040	$92,240	$92,240	$0
Agricultural Loss	-	$275,000	$274,080	$154,080	$85,280	$85,280	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$6,040	$6,960	$6,960	$6,960	$6,960	$0

Improvement / Buildings *Improvement Value: $1,040*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage
1	PSAQ	POLE SHED AV QUAL		2,040	188

Land Details *Market Value: $0* *Production Market Value: $280,000* *Production Value: $5,000*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC46	40.000	1,742,400	0	0		280,000	5,000

Deed History

Conveyance	Volume	Page	Deed Date	Instrument
MORGAN DAVID L	528	278	5/2/2005	

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	6,040	$1.0118	0.010118	$61.11
HOP	HOPKINS COUNTY	6,040	$0.40022	0.0040022	$24.17
HOS	HOSPITAL DISTRICT	6,040	$0.151886	0.00151886	$9.17
	Total Estimation		**$1.563906**	**0.01563906**	**$94.45**

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HOPKINS COUNTY APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000021285 Geo ID: 65.0898.000.005.01

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-14-12

Available Actions

CLICK HERE FOR PDF APPRAISAL NOTICE

Qualified Exemptions

Homestead Exempt

* For property owner confidentiality reasons not all exemption details are available online.

Legal Information

Legal: Acres: 193.700, ABS: 898, TR: 5-01 ALSO AB 307, SUR: SMITH THOMAS B

Situs: CR 2408 4252

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$816,550	$786,340	$789,260	$712,740	$696,630	$0
Land	+	$11,000	$11,000	$7,000	$4,200	$4,200	$0
Production Market	+	$1,054,350	$1,054,350	$670,950	$402,370	$402,370	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$1,881,900	$1,851,690	$1,467,210	$1,119,310	$1,103,200	$0
Agricultural Loss	-	$1,031,020	$1,026,600	$643,200	$374,620	$374,620	$0
Homestead / Circuit Breaker Cap Loss	-	$75,538	$59,870	$71,090	$5,180	$0	$0
Total Assessed	=	$775,342	$765,220	$752,920	$739,510	$728,580	$0

Improvement / Buildings *Improvement Value: $816,550*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage
1	RES1	RESIDENCE - 1ST FLOOR	1950	2,898	234
10	S3AQ	DET CARPORT	1950	992	126
16	ESEQ	EQPT SHED	1950	288	72
1	RES2	2ND RESIDENCE ON ACCOUNT		1,064	180
2	HSAQ	HAY SHED AV QUAL		1,560	196
1	RES3	THIRD RESIDENCE ON ACCOUNT		952	164
2	HSAQ	HAY SHED AV QUAL		1,400	180
15	ST1V	METAL STG BLD		560	108
1	DPAF	DAIRY PARLOR		1,042	152
2	PSAQ	POLE SHED AV QUAL		1,460	186
3	PSLQ	POLE SHED LOW QUAL		2,904	220
6	HSAQ	HAY SHED AV QUAL	2002	920	136
7	ST1G	METAL STG BLD	2002	200	60
1	HSAQ	HAY SHED AV QUAL		5,616	316
2	HSLQ	HAY SHED LOW QUALITY		308	72
3	PSAQ	POLE SHED AV QUAL		484	88
1	PSLQ	POLE SHED LOW QUAL		840	142
2	PSLQ	POLE SHED LOW QUAL		345	76
1	HSEQ	HAY SHED EX QUAL	1992	55,000	1,220
9	HSEQ	HAY SHED EX QUAL	2004	52,800	1,180
12	HSLQ	HAY SHED LOW QUALITY	2017	4,000	440
13	HSLQ	HAY SHED LOW QUALITY	2017	800	120
17	DPEB	DAIRY PARLOR	2017	2,500	200
18	PSEQ	POLE SHED EX QUAL	2017	7,500	400

Land Details *Market Value: $11,000* *Production Market Value: $1,054,350* *Production Value: $23,330*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC43	1.000	43,560	0	0		5,500	0
AC43	8.000	348,480	0	0		44,000	368
AC43	183.700	8,001,972	0	0		1,010,350	22,962
AC43	1.000	43,560	0	0		5,500	0

Deed History

Conveyance	Volume	Page	Deed Date Instrument
BOUMA TJITZE & WILLEMKE	327	237	3/22/2000

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	675,342	$1.0118	0.010118	$6,833.11
HOP	HOPKINS COUNTY	743,350	$0.40022	0.0040022	$2,975.04
HOS	HOSPITAL DISTRICT	775,342	$0.151886	0.00151886	$1,177.64
	Total Estimation		**$1.563906**	**0.01563906**	**$10,985.79**

The above property tax estimation is not a tax bill. Do not pay.

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HOPKINS COUNTY
APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000019893 Geo ID: 65.0761.000.002.00

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Property Details

Ownership

BOUMA MAIKO & PETRONELLA BAUKJE

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-13-12

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 34.939, ABS: 761, TR: 2, SUR: POE JAMES W

Situs: CR 2408 0

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$244,570	$244,570	$139,760	$83,850	$83,850	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$244,570	$244,570	$139,760	$83,850	$83,850	$0
Agricultural Loss	-	$240,200	$239,400	$134,590	$78,680	$78,680	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$4,370	$5,170	$5,170	$5,170	$5,170	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $244,570* *Production Value: $4,370*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC46	34.939	1,521,943	0	0		244,573	4,367

Deed History

Conveyance	Volume	Page	Deed Date	Instrument
BUSBY JERRY MACK & DEBORAH KAY	600	542	11/17/2006	

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	4,370	$1.0118	0.010118	$44.22
HOP	HOPKINS COUNTY	4,370	$0.40022	0.0040022	$17.49
HOS	HOSPITAL DISTRICT	4,370	$0.151886	0.00151886	$6.64
	Total Estimation		**$1.563906**	**0.01563906**	**$68.35**

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HOPKINS COUNTY APPRAISAL DISTRICT

Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000028756 Geo ID: 65.0725.000.009.02

Property Details

Ownership

BOUMA MAIKO & PETRONELLA GLAS

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-13-12

Available Actions

CLICK HERE FOR PDF APPRAISAL NOTICE

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 3.058, Tract: 9-02, Abst: 725, Survey: ODOM OLLEN

Situs: CR 2408 0

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$58,100	$45,870	$25,990	$11,930	$11,930	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$58,100	$45,870	$25,990	$11,930	$11,930	$0
Agricultural Loss	-	$57,720	$45,420	$25,540	$11,480	$11,480	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$380	$450	$450	$450	$450	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $58,100* *Production Value: $380*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC60	3.058	133,206	0	0		58,102	382

Deed History

Conveyance	Volume	Page	Deed Date	Instrument
NO OWNER ON FILE			10/1/2015	20154946

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
020	COMO-PICKTON CISD	380	$1.1669	0.011669	$4.43
HOP	HOPKINS COUNTY	380	$0.40022	0.0040022	$1.52
HOS	HOSPITAL DISTRICT	380	$0.151886	0.00151886	$0.58
	Total Estimation		**$1.719006**	**0.01719006**	**$6.53**

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HOPKINS COUNTY APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000028757 Geo ID: 65.0761.000.006.04

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Property Details

Ownership

BOUMA MAIKO & PETRONELLA GLAS

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-13-12

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 26.942, Tract: 6-04, Abst: 761, Survey: POE JAMES

Situs: CR 2408 0

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$269,420	$269,420	$161,650	$96,990	$72,000	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$269,420	$269,420	$161,650	$96,990	$72,000	$0
Agricultural Loss	-	$266,050	$265,430	$157,660	$93,000	$67,560	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$3,370	$3,990	$3,990	$3,990	$4,440	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $269,420* *Production Value: $3,370*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC51	26.942	1,173,594	0	0		269,420	3,368

Deed History

Conveyance	Volume	Page	Deed Date	Instrument
NO OWNER ON FILE			10/1/2015	20154946

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	3,370	$1.0118	0.010118	$34.10
HOP	HOPKINS COUNTY	3,370	$0.40022	0.0040022	$13.49
HOS	HOSPITAL DISTRICT	3,370	$0.151886	0.00151886	$5.12
	Total Estimation		**$1.563906**	**0.01563906**	**$52.71**

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HOPKINS COUNTY APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000015062 Geo ID: 65.0459.000.002.02

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-14-11

Available Actions

CLICK HERE FOR PDF APPRAISAL NOTICE

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 65.560, ABS: 459, TR: 2-02, SUR: HEDGECOCK MINTER

Situs: CR 2396 452

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$272,840	$254,120	$254,120	$232,450	$208,510	$0
Land	+	$7,000	$7,000	$4,000	$2,280	$2,280	$0
Production Market	+	$450,560	$450,560	$256,880	$145,900	$145,900	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$730,400	$711,680	$515,000	$380,630	$356,690	$0
Agricultural Loss	-	$446,800	$445,260	$251,580	$140,600	$140,600	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$283,600	$266,420	$263,420	$240,030	$216,090	$0

Improvement / Buildings *Improvement Value: $272,840*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage
1	RES1	RESIDENCE - 1ST FLOOR	1981	1,716	166
3	ST2V	WOOD STG BLD	1989	120	44
4	ST2G	WOOD STG BLDG	1981	192	56
1	DPAF	DAIRY PARLOR		948	140
2	PSAQ	POLE SHED AV QUAL		1,708	290
3	ESLQ	EQPT SHED		100	40
4	PSLQ	POLE SHED LOW QUAL	1995	900	120
11	PSAQ	POLE SHED AV QUAL		3,240	228
12	PSGQ	POLE SHED GD QUAL		1,440	168
13	ST1A	METAL STG BLDG		80	36
9	HSEQ	HAY SHED EX QUAL	2008	30,000	800

Land Details *Market Value: $7,000* *Production Market Value: $450,560* *Production Value: $3,760*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC46	1.000	43,560	0	0		7,000	0
AC46	10.000	435,600	0	0		70,000	1,250
AC46	54.560	2,376,634	0	0		380,556	2,510

Deed History

Conveyance	Volume	Page	Deed Date	Instrument
MORGAN ADDIE M (ARNOLD)	528	278	5/2/2005	

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	283,600	$1.0118	0.010118	$2,869.46
HOP	HOPKINS COUNTY	283,600	$0.40022	0.0040022	$1,135.02
HOS	HOSPITAL DISTRICT	283,600	$0.151886	0.00151886	$430.75
	Total Estimation		**$1.563906**	**0.01563906**	**$4,435.23**

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HOPKINS COUNTY
APPRAISAL DISTRICT

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Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000015061 Geo ID: 65.0459.000.002.01

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Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-14-11

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 10.000, ABS: 459, TR: 2-01, SUR: HEDGECOCK MINTER

Situs: CR 2393 0

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$100,000	$100,000	$60,000	$28,500	$28,500	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$100,000	$100,000	$60,000	$28,500	$28,500	$0
Agricultural Loss	-	$98,750	$98,520	$58,520	$27,020	$27,020	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$1,250	$1,480	$1,480	$1,480	$1,480	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $100,000* *Production Value: $1,250*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC51	10.000	435,600	0	0		100,000	1,250

Deed History

Conveyance	Volume	Page	Deed Date	Instrument
MORGAN DAVID L	528	278	5/2/2005	

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	1,250	$1.0118	0.010118	$12.65
HOP	HOPKINS COUNTY	1,250	$0.40022	0.0040022	$5.00
HOS	HOSPITAL DISTRICT	1,250	$0.151886	0.00151886	$1.90
	Total Estimation		**$1.563906**	**0.01563906**	**$19.55**

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HOPKINS COUNTY APPRAISAL DISTRICT

Property Year 2024 Map/GIS

Information Updated 10/31/2024

Property ID: R000013309 Geo ID: 65.0307.000.013.01

Property Details

Ownership

BOUMA MAIKO

4252 CR 2408
WINNSBORO, TX 75494

Ownership Interest: 1.0000000

4-14-12

Available Actions

Qualified Exemptions

Not Applicable

Legal Information

Legal: Acres: 37.320, ABS: 307, TR: 13-01, SUR: EARP ROBERT

Situs: HWY 11 0 E

Property Valuation History

Values by Year		2024	2023	2022	2021	2020	n/a
Improvements	+	$0	$0	$0	$0	$0	$0
Land	+	$0	$0	$0	$0	$0	$0
Production Market	+	$261,240	$261,240	$149,280	$89,570	$89,570	$0
Personal	+	$0	$0	$0	$0	$0	$0
Mineral	+	$0	$0	$0	$0	$0	$0
Total Market	=	$261,240	$261,240	$149,280	$89,570	$89,570	$0
Agricultural Loss	-	$256,570	$255,720	$143,760	$84,050	$84,050	$0
Homestead / Circuit Breaker Cap Loss	-	$0	$0	$0	$0	$0	$0
Total Assessed	=	$4,670	$5,520	$5,520	$5,520	$5,520	$0

Improvement / Buildings *Improvement Value: $0*

Group Sequence	Code	Building Description	Year Built	Square Footage	Perimeter Footage

Land Details *Market Value: $0* *Production Market Value: $261,240* *Production Value: $4,670*

Land Code	Acres	Sq. Ft.	Front Ft.	Rear Ft.	Depth	Mkt. Value	Prd. Value
AC46	37.320	1,625,659	0	0		261,240	4,665

Deed History

Conveyance	Volume	Page	Deed Date Instrument
n/a	230	869	8/14/1996
n/a			1/1/1901

Property Tax Estimation by Entity / Jurisdiction

Code	Description	Taxable Value	Tax Rate per $100	Tax Factor applied to Taxable Value	Estimated Tax
095	WINNSBORO ISD	4,670	$1.0118	0.010118	$47.25
HOP	HOPKINS COUNTY	4,670	$0.40022	0.0040022	$18.69
HOS	HOSPITAL DISTRICT	4,670	$0.151886	0.00151886	$7.09
	Total Estimation		**$1.563906**	**0.01563906**	**$73.03**

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page.

Permit Number:

Applicant: MAIKO HESSEL BOUMA

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: MAIKO HESSEL BOUMA

Title: Owner

Signature: MHBouma Date: 12-18-24

SUBSCRIBED AND SWORN to before me by the said MAiKo Bouma on

this 18 day of December, 20 24

My commission expires on the 14 day of February, 20 27

JENNIFER A. GRAHAM
(Seal) Notary Public
State of Texas
ID # 13420239-8
My Comm. Expires 02-14-2027

Jennifer A Graham
Notary Public

WOOD
County, Texas

Attachment 1
Individual Information

N/A

Complete this attachment if the facility owner or co-applicant is an individual. Make additional copies of this attachment if both are individuals.

Prefix (Mr., Ms., Miss):

Full Legal Name, including middle name:

Driver's License or State Identification Number:

State that Issued the License or Identification Number:

Date of Birth:

Mailing Address:

City, State and Zip Code:

Phone Number: Fax Number:

E-mail Address:

For TCEQ Use Only

Customer Number _____
Regulated Entity Number _____
Permit Number _____

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: MAIKO HESSEL BOUMA,
2. Permit Number: EPA ID Number:
3. Address of the project (location description that includes street/highway, city/vicinity, and county). 4252 COUNTY ROAD 2408 WINNSBORO, TX 75494 4100 Hopkins Co.
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: Jim Wyrick

   Company Name: East Texas Environmental Services

   Mailing Address: 317 Highland Dr.

   City, State, and Zip Code: 75482

   Phone Number: 903-243-0400 Fax Number:
5. County where the facility is located: Hopkins Co
6. If the property is publicly owned and the owner is different than the permittee/applicant, please identify the owner.
7. Identify the name of the water body (receiving waters) and TCEQ segment number that will receive the discharge. BIG SANDY CREEK
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):
12. Describe existing disturbances, vegetation & land use (plowing, other ground disturbances):

Aeriation of hayland, no-till of winter pasture, plowing and seeding

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

13. List construction dates of any buildings or structures on the property: unknown

14. Provide a brief history of the property, and name of the architect/builder, if known: unknown

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

15. List each Retention Control Structure and its required capacity (Acre Feet). RCS#1-5.66, RCS#2-6.92

16. Provide the location and number of acres where wastewater and manure are land applied: LMU#1-75, LMUJ#2-44, LMU#3-39, LMU#4-64, LMU#5-30, LMU#6-41, 7-38, LMU#8-31, LMU#9-101

17. List the maximum number of head to be permitted. 999

WATER QUALITY PERMIT

PAYMENT SUBMITTAL FORM

Use this form to submit you APPLICATION FEE, if you are mailing your payment.

- Complete items 1 through 5 below:
- Staple your check in the space provided at the bottom of this document.
- Do not mail this form with your application form.
- Do not mail this form to the same address as your application.
- Do not submit a copy of the application with this form as it could cause duplicate permit entries.

Mail this form and your check to:

BY REGULAR U.S. MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

Fee Code: WQP Wastewater Permit Number: WQ000

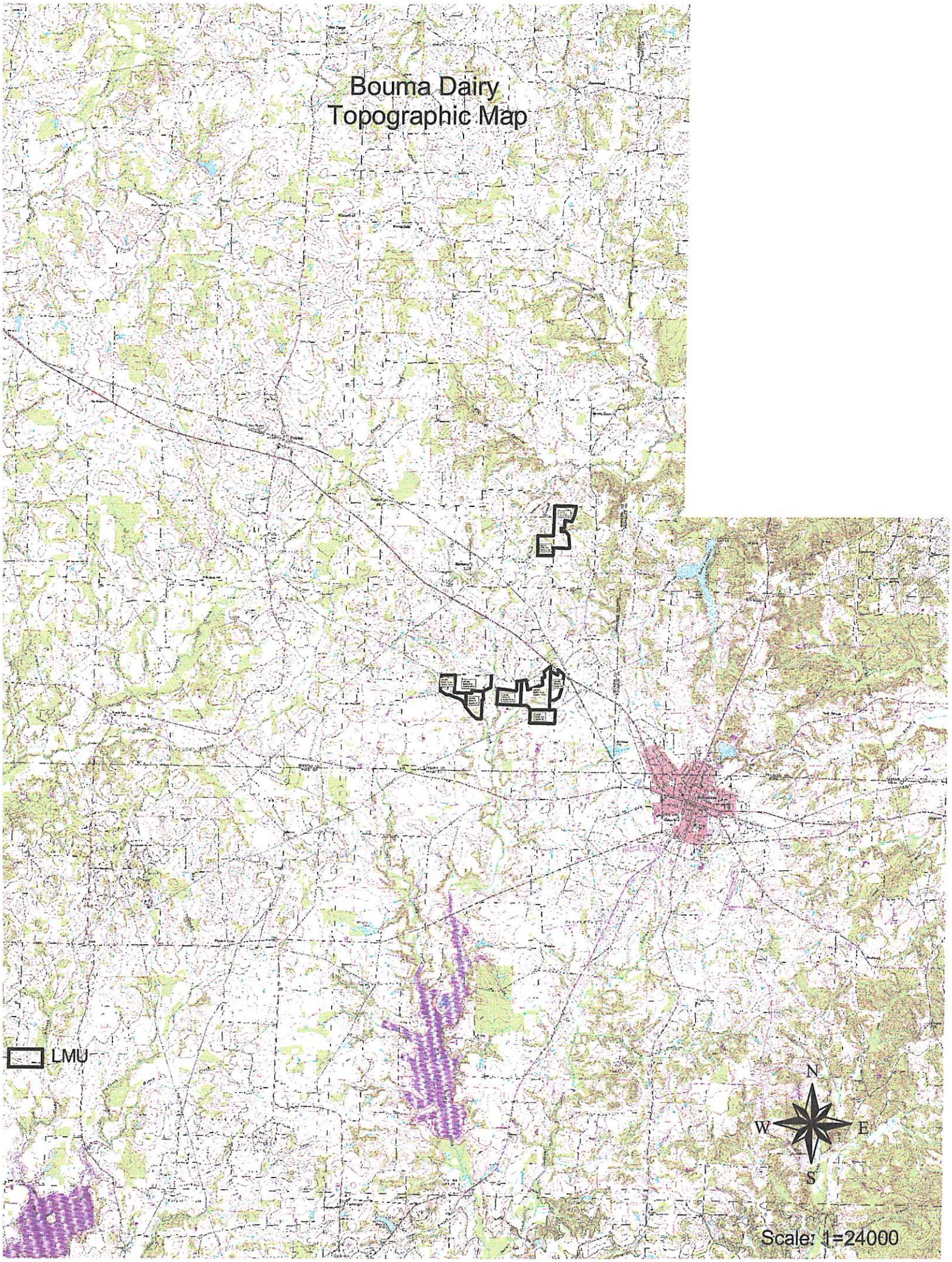
1. Check / Money Order Number:
2. Amount of Check/Money Order:
3. Date of Check or Money Order:
4. Name on Check or Money Order:
5. APPLICATION INFORMATION

   If the check is for more than one application, attach a list of each Project/Site (RE) Name and Physical Address exactly as provided on the application.
   Project/Site (RE) Name:

   Project/Site (RE) Physical Address:

Staple Check in This Space

TCEQ - 20134


Bouma Dairy
Topographic Map
LMU
N
W
E
S
Scale: 1=24000

Google Maps

Bouma Dairy
Vicinity Map



TECHNICAL INFORMATION PACKET FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOS)

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

Name of Site: BOUMA DAIRY

TCEQ Permit Number, if assigned: WQ000

Date Prepared: 11/14/24

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	Manure generated in the freestalls is flushed into the settling basin then into RCS #1 and irrigated to the LMUs with the irrigation water. Very limited amount will be stockpiled at end of the freestalls and hauled to LMUs.
Wastewater	All wastewater gravity flows from the freestalls into the settling basin then into the RCS#1. Where it is stored until there is a crop demand for water and nutrients, and then applied to LMUs at an agronomic rate.
Sludge	Sludge will be cleaned from the RCSs before the sludge volume reaches the designed capacity. A system of irrigation and vacuum tanks will be used to with the sludge from the RCSs
Compost	NA
Feed and Bedding	Feed when spoiled, will be applied to LMUs. When applied it will be applied at a rate similar to that of manure.
Silage stockpiles	Most of the silage is stored under plastic. The plastic will be removed and disposed of in the appropriate waste containers. If the silage is not covered, any ruined silage will be land applied
Dead animals	All dead animals are collected within 24-hours and properly buried within 72 hours of death following TCEQ guidelines.
Dust	Water will be applied to the until the conductions for dust have passed.
Lubricants	All oil and lubricant products will be stored in a covered storage area in covered, waterproof container. Empty containers are to be disposed of following all precautionary guidelines on the container or placing in a commercial garbage

Potential Pollutant Source	Best Management Practices
Pesticides	All pesticides and herbicides application is contracted to an applicator and no chemicals are stored on the property. All pesticides will be used and disposed in accordance with the label rules
Bulk cleaning chemicals	Use and disposal of empty containers will be according to direction on the product label.
Inorganic fertilizers	NA
Fuel storage tanks	All fuels are stored in a properly maintained storage tank, away from wells. Care will be so spills do not occur when equipment is being filled. If a spill occurs, it will be immediately cleaned up and not allowed to flow from the tank area
Other, specify:	NA

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:

2) Total Number of Animals:
In Open Lots: 999 In Buildings: 999

3) Animal Housing Location, hours/day:
Open Lots: 7 Buildings: 17

4) Average Liveweight, pounds per head: 1400

5) Volatile Solids Removed by Separator System: NA

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

7) Spilled Drinking Water, gallons/day: 4995

8) Water for Cleanup, gallons/day: 4995

9) Water for Manure Removal, gallons/day: 14563

10) Recycled Wastewater, gallons/day: 58252

B. Wastewater Runoff

1) Design Rainfall Amount, inches: 8.00

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:

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
RCS#1	.85	2.36	0	2.25	.10	5.56	5.56
RCS#2	.86	0	0	1.16	4.90	6.92	6.92

Indicate which RCSs are in-series: RCS#1 and RCS#2 are in series

D. RCS Liner or Lack of Hydrologic Connection Certification

Table 3: RCS Hydrologic Connection

RCS Name	Construction Date	Type of Hydrologic Connection Certification
RCS#1	1/6/2000	In-situ Soils - certified 3/1/2007
RCS#2	To be constructed	After completion of RCS

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:
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:
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:

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)
LMU#1	75	Coastal graze 1 AU/1 ac, SG mod graze	14.0 Ac-ft/Ac/Year
LMU#2	44	Coastal graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#3	39	Coastal Hay 4 cut, RG mod Graze	16.3 Ac-ft/Ac/Year
LMU#4	64	Common graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#5	30	Common graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#6	41	Common graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#7	38	Common graze 1 AU/1 ac, SG mod graze	4308.5 Tons/Ac/Year
LMU#8	31	Common graze 1 AU/1 ac, SG mod graze	11782.2 Tons/Ac/Year
LMU#9	101	Common graze 1 AU/1 ac, SG mod graze	11782.2 Tons/Ac/Year

1) Wastewater production, ac-in/year: 43.17
2) Estimated Wastewater application, ac-in/year: 43.17
3) Manure production, tons/year: 3752
4) Estimated manure application, tons/year: 0 as dry manure. 3752 in draghose irrigation
5) Estimated manure transferred to other persons, tons/year: 0

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.

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.

F. Soil Limitations

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
	SEE ATTACHMENT	

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
#1	Domestic	Producing	Cased	Maintain 150' Buffer
#2	Domestic	Producing	Cased	Maintain 150' Buffer
#3	Domestic	Producing	Cased	Maintain 150' Buffer

SECTION 4. AIR AUTHORIZATION SUMMARY

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes	Too acid	Permanent Vegetation: High residue crop
FrB—Freestone fine sandy loam, 1 to 3 percent slopes	Depth to saturated zone	Permanent Vegetation: High residue crop
KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	Slow water movement, Too steep for surface application, too acid	Permanent Vegetation: High residue crop
KvD—Kirvin soils, 3 to 8 percent slopes	Slow water movement, Too steep for surface application, too acid	Permanent Vegetation: High residue crop
Lr—Lufkin-Raino complex		Permanent Vegetation: High residue crop
Na—Nahatche soils, frequently flooded	Flooding	Permanent Vegetation: High residue crop
PkC—Pickton loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop
WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop
WtC—Woodtell loam, 2 to 5 percent slopes	Slow water movement	Permanent Vegetation: High residue crop

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: 2

¼ - ½ mile: 4

½ - 1 mile: 32

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

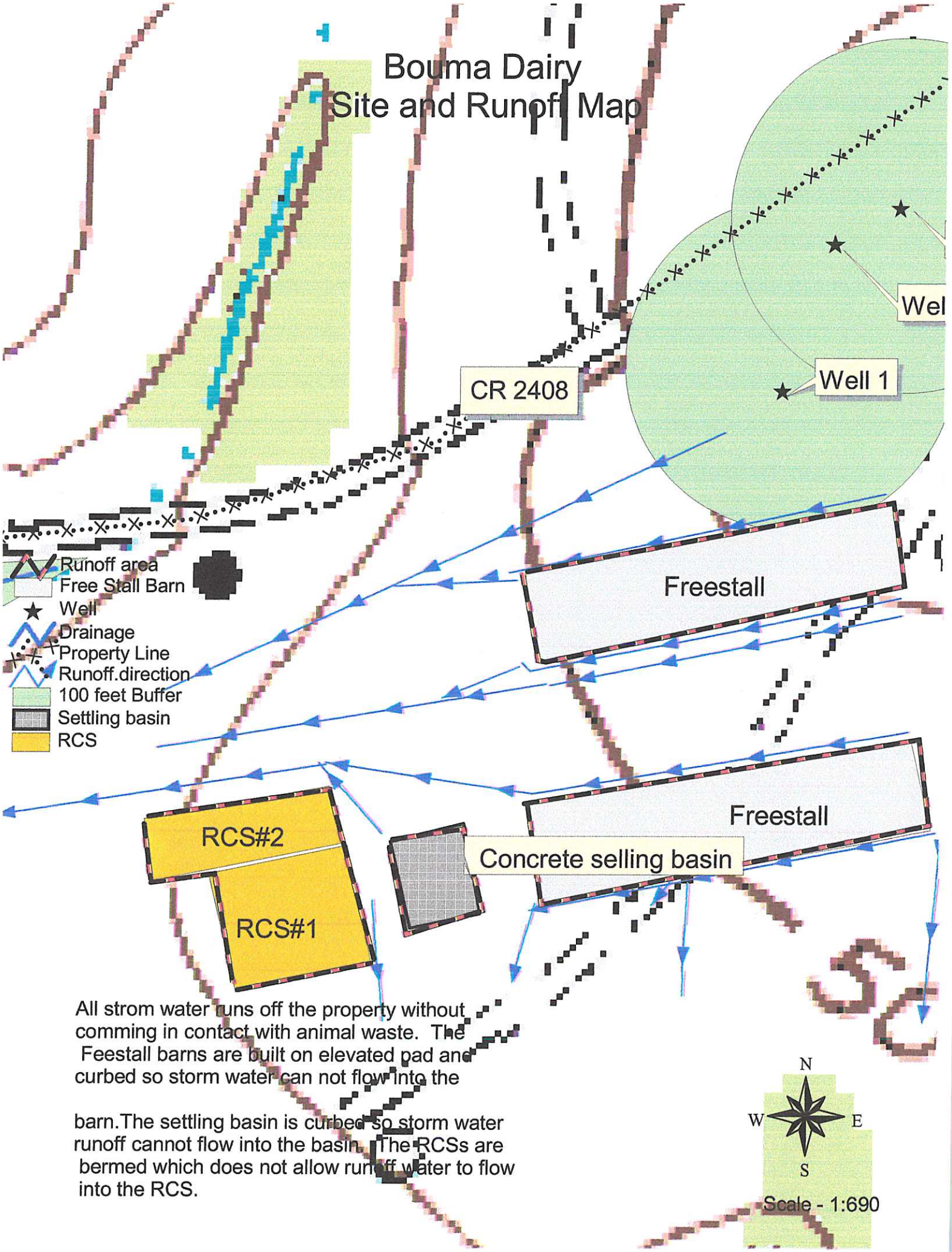
RECHARGE FEATURE CERTIFICATION STATEMENT

I certify that potential recharge features, as defined in 30 Texas Administrative Code 321, Subchapter B, ☒ EXIST ☐ DO NOT EXIST on properties used in this application. All information presented on this page and the attached supporting documents is true and accurate to the best of my knowledge.

Certification Signature: J.C Wyatt Seal and Date: 11/14/2024

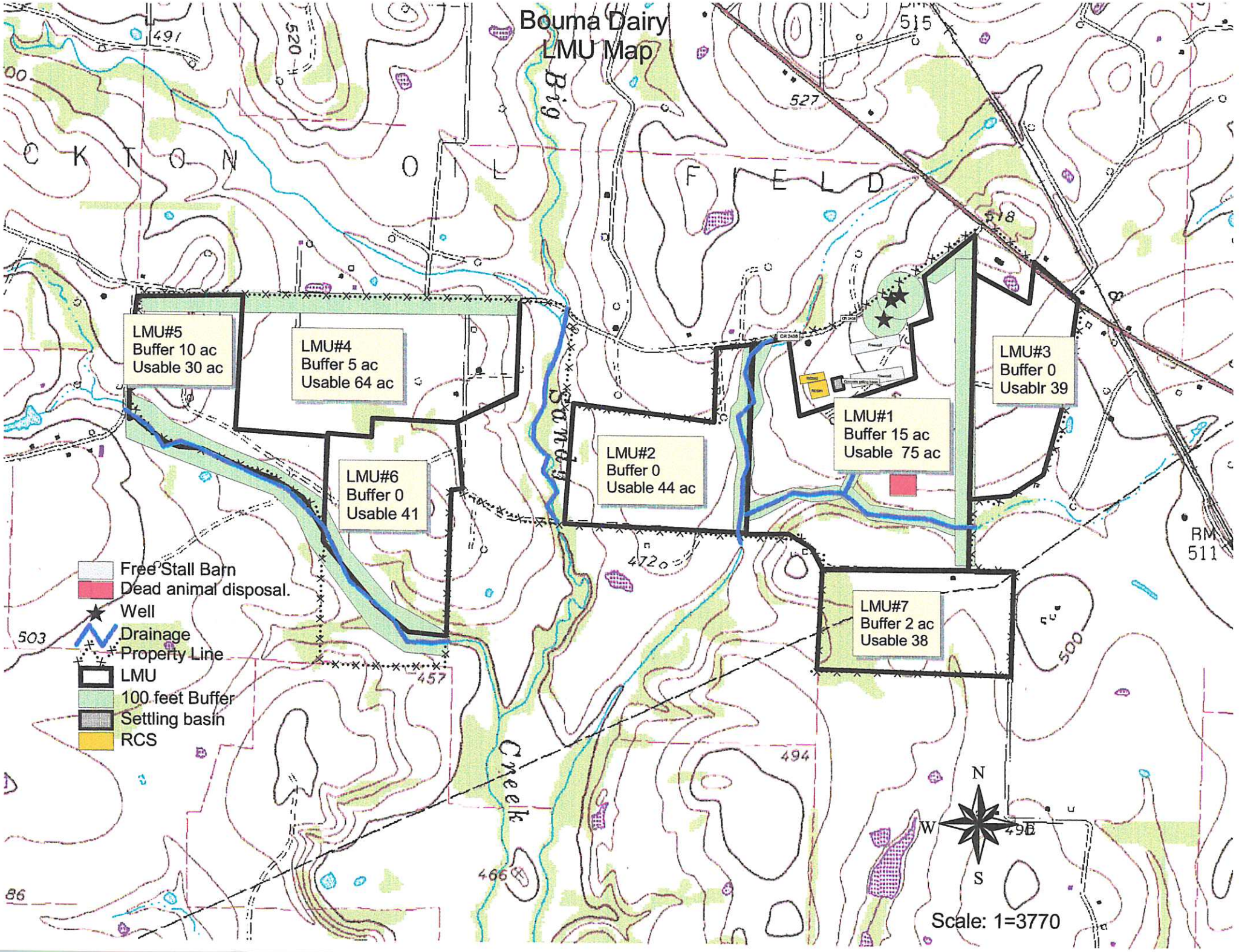


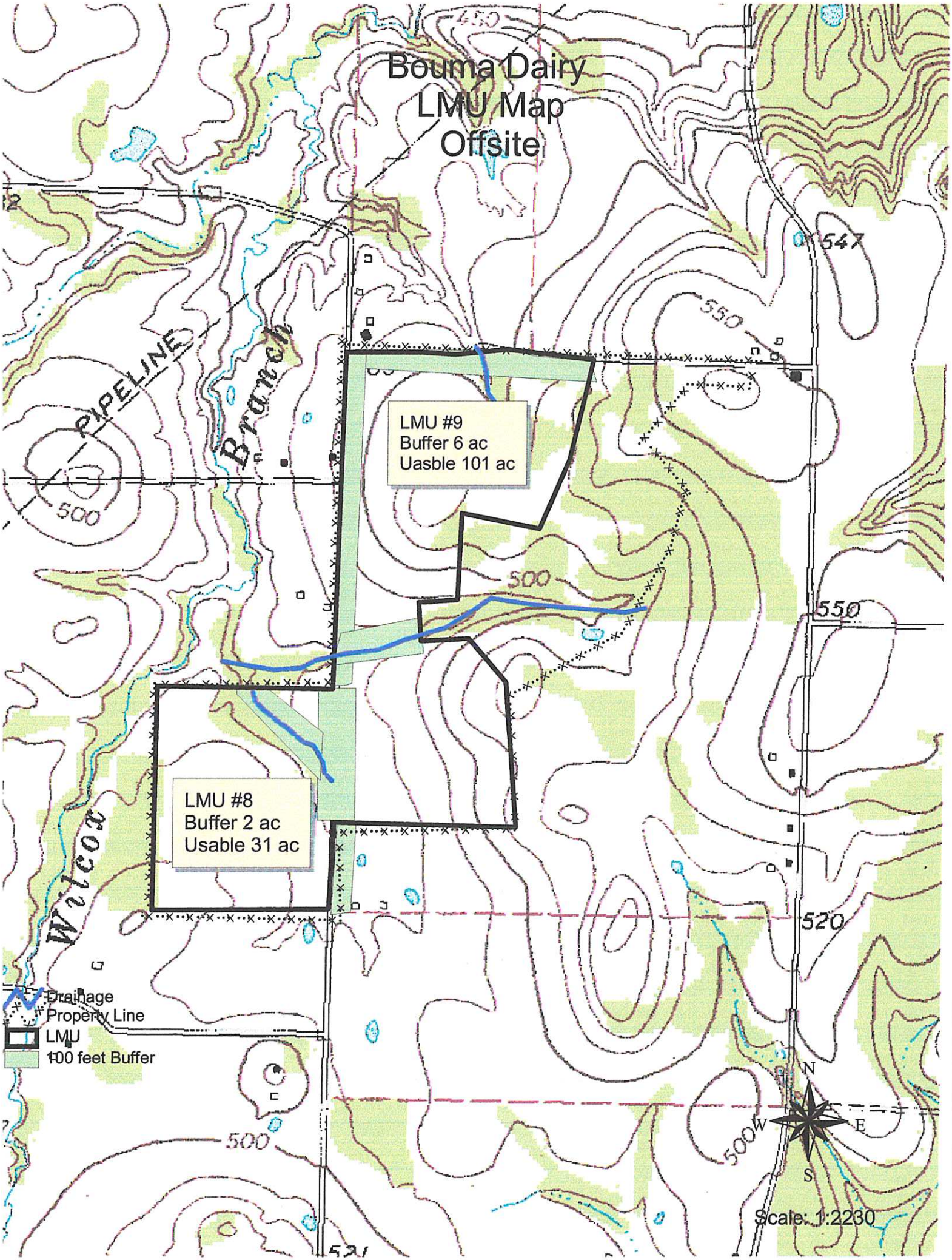
Bouma Dairy
Site and Runoff Map



All strom water runs off the property without comming in contact with animal waste. The Feestall barns are built on elevated pad and curbed so storm water can not flow into the

barn.The settling basin is curbed so storm water runoff cannot flow into the basin. The RCSs are bermed which does not allow runoff water to flow into the RCS.

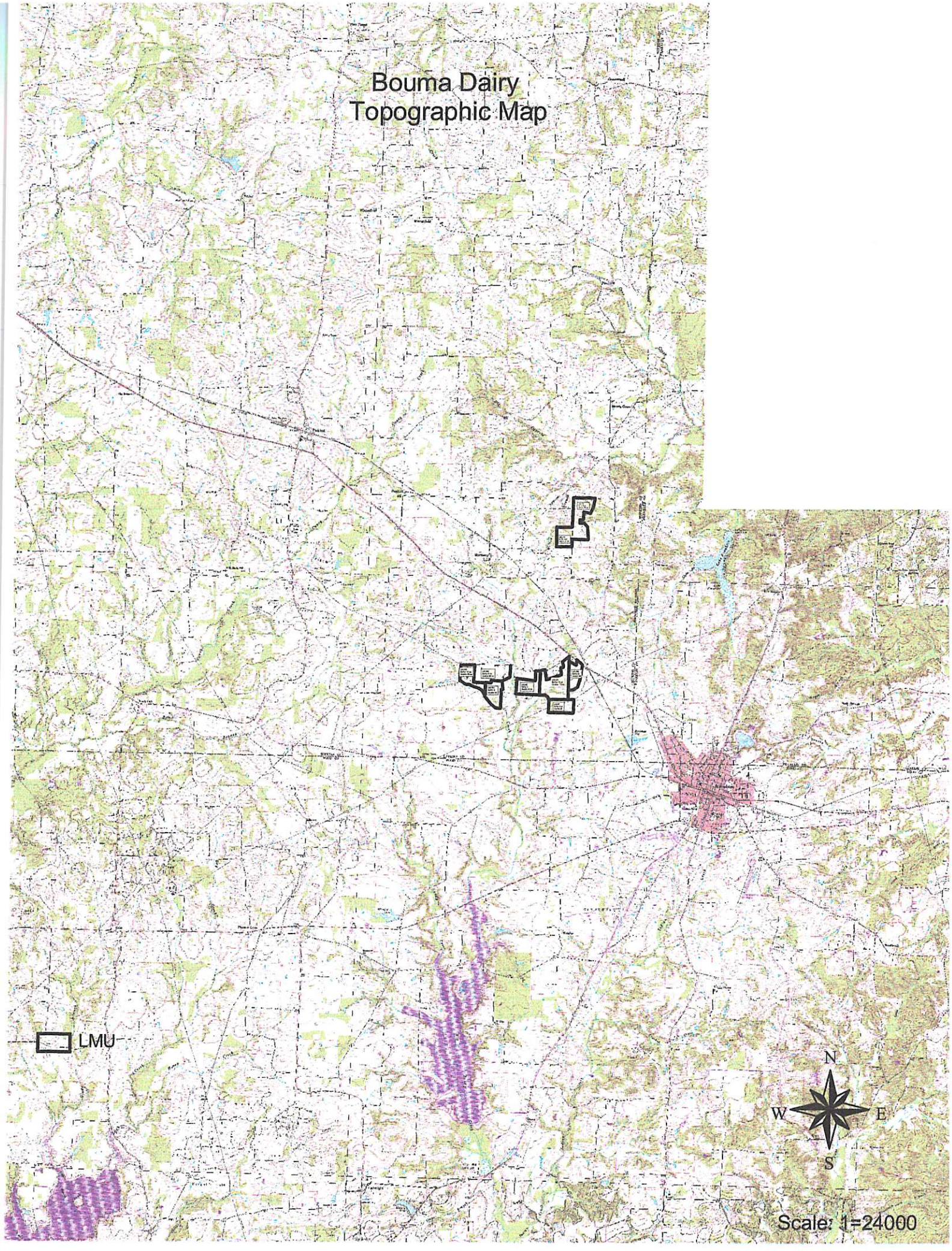

Bouma Dairy
LMU Map
LMU#5
Buffer 10 ac
Usable 30 ac
LMU#4
Buffer 5 ac
Usable 64 ac
LMU#6
Buffer 0
Usable 41
LMU#2
Buffer 0
Usable 44 ac
LMU#1
Buffer 15 ac
Usable 75 ac
LMU#3
Buffer 0
Usablr 39
LMU#7
Buffer 2 ac
Usable 38
Free Stall Barn
Dead animal disposal.
Well
Drainage
Property Line
LMU
100 feet Buffer
Settling basin
RCS
Big Sioux
Creek
N
W
S
Scale: 1=3770

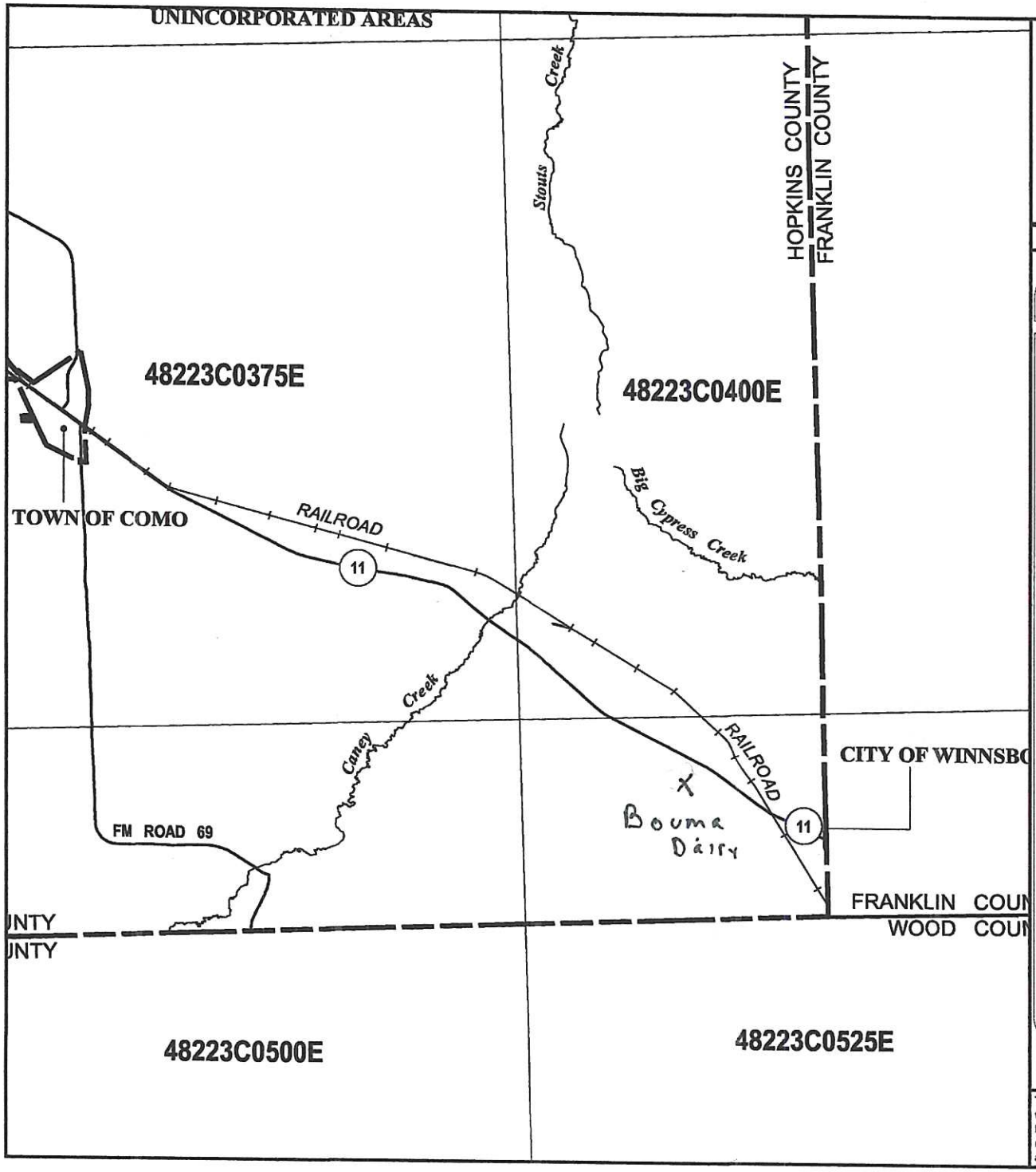

Bouma Dairy
LMU Map
Offsite
LMU #9
Buffer 6 ac
Uasble 101 ac
LMU #8
Buffer 2 ac
Usable 31 ac
PIPELINE
Branch
Wilcox
450
500
550
520
547
Drainage
Property Line
LMU
100 feet Buffer
N
W
E
S
Scale: 1:2230

Google Maps

Bouma Dairy
Vicinity Map




Bouma Dairy
Topographic Map
LMU
N
W
E
S
Scale: 1=24000



N

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

HOPKINS COUNTY, TEXAS

AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

PANELS PRINTED: 50, 75, 100, 125, 150, 175, 200, 215, 225, 250, 275, 300, 325, 330, 350, 375, 400, 425, 450, 475, 500, 525

MAP NUMBER
48223CIND0A

EFFECTIVE DATE
MARCH 17, 2011

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

RECHARGE FEATURE CERTIFICATION
FOR
BOUMA DAIRY

GENERAL REMARKS:

Mr. Bouma is applying for a TCEQ Individual Permit for a concentrated animal feeding operation. He will be reducing the herd size to 999 animals of which 999 are milking cows and will be kept in confinement. This recharge feature evaluation and associated certification was conducted at the request of Miako Bouma of Bouma Dairy. Jim C. Wyrick, Professional Geoscientist, compiled the findings and recommendations, contained herein.

PURPOSE OF REPORT:

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 wastewater from the retention control structure or land application site into the underlying aquifer as according to GPTXG920000 requirements. The following records and/or maps from the following entities/agencies were reviewed to locate any recharge features: (a) Texas Railroad Commission, (b) well driller, (c) TCEQ, (d) Natural Resource Conservation Service, (e) owner of site, and (f) an on-site inspection. There are no previous landowners available to contact.

AREA OF EVALUATION

The site under evaluation consists of a retention control structure (RCS#1) and (RCS#2) to be constructed. The wastewater application area LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. The property is located on the side of CR 2408, .29 miles W of intersection Hwy 11 and CR 2408 in Hopkins County. Latitude: 32.980666 ° N and Longitude: 95.328666° W. This property consists of approximately 477 acres located on Abstract 307, Tract 5-01, and Thomas B. Smith Survey in Hopkins, Texas. The facility is a dairy operation using a freestall system. The facility is located on a topographic ridge with uncontaminated surface runoff generally draining via overland flow and shallow concentrated flows west into unnamed drain and then into Big sandy Creek. The elevation of the dairy property ranges from approximately 460 to 520 feet above mean sea level (AMSL). The current land use of the property is agricultural (pasture and forage crops). All waste application areas are located on the property, and off-site manure application areas will be used by this facility.

SITE DESCRIPTIONS

The existing RCS is located west and down slope of the dairy barn. The RCS was constructed in 1999. Inland Engineering and Surveying certified the size of RCS#1 as having a capacity of 5.56 acre-feet. RCS#2 will be constructed north of the existing RCS will be built to a capacity of 6.92 ac ft. The RCSs will catch and contain all wastewater and manure generated from the dairy barn and 2 free stallbarns. Wastewater flows from the dairy barn and freestall barns into a concrete settling basin then though a six-inch PVC pipe into RCS#1 and then into RCS#2. The RCSs will be dewatered using a drag hose system attached to the back of a tractor. The wastewater application area is on 331acres, LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 LMU#6 and LMU#7 The fields generally drain via overland flow and shallow concentrated flows south into unnamed creek then into Big Sandy Creek.

DEFINITION OF RECHARGE ZONE FEATURE

For the purpose of this report, the definition of "recharge feature" shall be the same as the definition presented in TXG920000 Part 1. Recharge feature is defined as those natural or artificial features either on or beneath the ground surface at the site under evaluation that provide or create significant hydrologic connections 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 connection includes, but are not limited to: faults; fractures; sinkholes or other macro pores that allow direct surface infiltration; a permeable or a shallow soil material that overlies an aquifer; exposed geologic formations that are identified as an aquifer; or a water course bisecting an aquifer

LOCAL GEOLOGY

The site is located in the northern part of the East Texas Basin. Geologic units near the site crop out in bands running generally in an east-west direction. The fine sandy loams and loams of the Bernaldo Freestone, Nahatche, Kirvin and Wolfpen soils are immediately underlain by the Relaw Formation (Er) which consists of a layer of dark silty shale typically 30' to 40' thick over a layer of dark gray to green, very fine glauconitic silty sand typically 20' to 30' thick for a total formation thickness of 50' to 70', but is up to 130' thick in certain areas. The shale layer is important in that it provides an impermeable separation between the Queen City Formation and the Carrizo Formation. The Formation is not considered a source of water for water wells. Formations in descending order include The Carrizo Formation (Ec) which consists largely of white to light gray, fine to medium quartz sand. However, small amounts of silt and clay are present in the upper part of the formation. The Carrizo yields small to moderate quantities of water to wells. Typical thickness of the Carrizo is 50' to 100', but is up to 150' thick in some places and in other places is mostly shale so as to not be detectable. Wilcox Group Undivided (Ewi) which consists mostly of silty and sandy clay, very thinly bedded to massive, locally cross-bedded, in part carbonaceous, calcareous siltstone and ironstone concretions common various shades of gray; local beds of clay, lignite, silt, and quartz sand; weathers various shades of gray, brown, yellow, and red; abundant plant fossils; thickness 700 feet. Midway Group which includes the Wills Point Formation (Ewp) and Kincaid Formation (Ek). Wills Point Formation is mostly clay, upper part silty, locally liginitic, some calcareous siltstone concretions, thin bed of rosette limestone near middle, glauconitic near base thin bedded to locally massive, various shades of gray; weathers medium gray to yellowish gray; marine megafossils; thickness ±450 feet. Kincaid Formation is mostly clays calcareous, glauconitic, selenitic, in part silty and sandy locally phosphatic near base, some thin beds of hard gray limestone in upper part, various shades of gray; weathers medium gray: marine megafossils thickness ±150 feet. Navarro Group Undivided (Kna) Upper part mostly clay, salty, in part sandy, sand increases downward, calcareous, glauconitic, calcareous concretions common, some cone-in-cone, medium gray to bluish gray; weather light yellowish gray and medium greenish gray; marine mega fossils scarce. Lower part is mostly sand, fine grained, salty, clayey, weakly coherent, light to medium gray; weathers light yellowish gray; marine mega fossils abundant locally. Indistinctly to thinly bedded. Thickness ranges from 500-775 feet. Neylandville Formation (Kne) consists of clay, calcareous, silty, sandy, medium gray; weathers light gray, forms somewhat irregular topography; scattered marine megafossils; thickness ±75 feet. Marlbrook Marl (Kmb) is marl, slightly glauconitic in upper part, highly plastic when wet, strikingly uniform throughout, medium bluish gray to yellowish gray; weathers light gray to white, forms smooth, rolling topography; marine megafossils scarce; thickness 150-450 feet, thins eastward. (Barnes and others 1966).

GROUND WATER

The Wilcox Group undivided is a multi-aquifer system, composed of fluvial channel sand distributed within the lower permeability interchannel sands and clays. (Kaiser, 1990). These two are considered to be one aquifer in this area. They are considerate the primary and most productive aquifer in the area. These aquifers are tapped by most of the local moderate to large-capacity wells. Locally, this aquifer is tapped by wells between about 240 and 1,250 feet deep. The aquifers are recharged as part of the precipitation that falls on the outcrops infiltrates the soil layers and percolates to the generally shallow water table. Water also moves between overlying alluvial and terrace aquifers according to

hydraulic head differences. Recharge to the deeper sands is generally is limited to areas where these sands outcrop. In other areas, movement of groundwater into the deeper portions of the Wilcox Aquifer is insignificant because of the very low vertical permeability of the interbedded clay layers found in the Wilcox Group (Hall Southwest, 1990b). Water level fluctuations are mostly seasonal.

EVALUATIONS OF LOCAL RECHARGE POTIENTAL

Recharge from Precipitation

According to the National Weather Service (NOAA), the average annual precipitation rate in Hopkins County is about 38.1 inches per year. A significant amount of water that infiltrates to the water table moves slowly down the local hydraulic gradient and discharges through evapotranispiration or via seeps and springs into the surface drainage system. This rejected recharge supplies a major fraction of the base flow for streams in the area. The balance of the water is available to move downdip into the confined portions of the Wilcox Aquifer.

Retention Control Structures (RCS)

The USDA-NRCS Web Soil Survey for Hopkins-Rains Counties indicates the RCS was constructed in BeB - Bernaldo fine sandy loam. 1 to 3 percent slopes See Soil Interpretation Tables for detail information on theses soil. A Texas Licensed Professional Geoscientist certified the pond liner in the RCS. (See liner certification documents) as meeting the minimum requirements considered protective of groundwater as established by the TCEQ. An on-site evaluation was done on the RCSs. Mr. Bouma owner indicated there had not been any digging equipment in the RCS#1 since it was constructed. During the inspection no evidence was found to show any mechanical or structural damage to the liner. The RSC is being be properly maintained and there was no indication of seepage or leakage. The embankments are free of trash, brushes or trees and walls are stabilized and no erosion or deterioration has taken place. Based on these facts, there is little or no potential for hydraulic connection between the RCS and the underlying aquifer.

Wastewater Application Area

The USDA-NRCS Web Soil Survey for Hopkins-Rains Counties, Texas indicates that soils occurring on the wastewater application areas are: KnD - Kirvin gravelly fine sandy loam, 3 to 8 percent slopes, BeB - Bernaldo fine sandy loam. 1 to 3 percent slopes, Na - Nahatche soils, FrB - Freestone fine sandy loam, 1 to 3 percent slopes, and WoC - Wolfpen loamy fine sand, 1 to 5 percent slopes. Bernaldo, Nahatche and Wolfpen soils have a seasonal highwater table and Wolfpen soil has excessive permeability. See Soil Interpretation Tables for detail information on these soils. Sustaining and maintaining the bermuda grass cover and applying wastewater at agronomic rates will prevent nutrient build-up in the soil profile.

ARTIFICIAL RECHARGE FEATURE EVALUATION

Texas Railroad Commission Records

An inventory of oil and gas wells located on the property was conducted for this report. Texas Rail Road Commission records show there are fourteen abandoned or operating oil or gas wells located within a one-mile radius of the site.

Local Water District

Hopkins County does not have a local groundwater district. The rural water supply company for the area surrounding Bouma Dairy is in the Brinker Springs Water Supply Corporation. According to the Water Supply office, no public water supply wells are known to exist on the subject property.

Texas Water Development Board

Texas Water Development Board Water Data Interactive (TWDB WDI). was reviewed for registered wells within a 1-mile radius of the faculty site. There are no registered public

wells within the site.

Current and Previous Landowners

Mr. Bouma stated there are no abandoned or operating oil or gas wells are located on or near the facility. Three private water wells are located on the facility. A certified well driller constructed the wells. Surface completion was in accordance with a Specified Surface Slab (Rule 287.44 (2) (A). The wells are 100 feet deep and surface casing was cemented to a depth of 60 feet below ground level. The previous landowner is not available to be contacted to locate any artificial recharge features. The water wells are identified Site Map

USDA Natural Resources Conservation Service (Hopkins County)

An inquiry was made to the USDA-NRCS office in Sulphur Springs relating to artificial or natural recharge features, which may be present on the site. They were not aware of any additional features.

On-Site Inspection

The property comprising Bouma Dairy was inspected by ground reconnaissance on the dairy property for signs or features that could be adversely affected due to the operation of the facility. Other than the areas identified within the attached maps, no other suspect areas were observed.

METHODS USED

Natural and artificial recharge features were identified by the following techniques: on-site inspection of the dairy site, interviews with the landowner, review of Texas Railroad Commission records, review of published maps and reports (refer to bibliography), review of Soil Survey of Hopkins and Rains Counties, Texas, NRCS information, review of Texas Water Development Board maps, well driller's logs, the Geologic Atlas of Texas Texarkana and personal knowledge of the area. The previous owner was not available for interview regarding recharge features.

CONCLUSIONS

1) The Wilcox Aquifer is the major water-bearing unit beneath the area. Deep Wilcox sand aquifers (greater than 100 feet deep) provide an important source groundwater to the area. It is highly unlikely that operations at the dairy will affect these deeper aquifers because of file presence of frequent low permeability clay beds in the Wilcox Group

2) The site is located in an area where shallow Wilcox sand bodies exist. These sand bodies have sufficient permeability and capacity to serve as local aquifers for domestic purposes. Because they are typically of limited lateral extent, they do not constitute a major source of groundwater in the area. The shallow aquifers are partially recharged by precipitation where the sand units crop out at or near ground surface.

3) The shallow fine-grained sand units present at the site do not represent a classic recharge feature for the regional aquifer system. A significant pathway between ground surface and the regional aquifers does not appear to exist at the site; however, a percentage of the annual precipitation will infiltrate through the unsaturated zone to the shallow aquifers underlying the site. Therefore, protective measures as Best Management Practices (BMPs) should be carried out to prevent any potential negative impacts to the underlying aquifer.

4) There are three private water wells located on the facility. A records search and on-site inspection were made and no other wells were found. Other water wells not identified during this investigation could be near the site.

5) The existing RCS was constructed prior to this application and meets GPTXG920000

requirements for in-situ soil material pond liner. The RCSs are designed to hold all runoff water from the facility, including a 25-Year - 24-hour rainfall event.

RECOMMENDATIONS

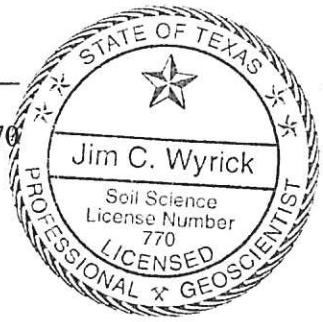
Since a percentage of the annual precipitation will infiltrate through the unsaturated zone to the shallow, local aquifers underlying the site, the facility will employ BMPs, which are protective of the local aquifer underlying the site. These protective measures will be taken to prevent the possible migration of contaminants from, RCSs and the wastewater application areas to the underlying groundwater. As a minimum, these protective measures will include the following BMPs:

- Operations in and around the RCS will take care not to damage the in-suite clay liners. If the ponds are cleaned by a dragline, front-end loader or the waste storage pond liner disturbed, the dairy operator will request the pond liner be inspected and certified by a Texas Licensed Professional Engineer or Texas Licensed Professional Geoscientists
- The operator will prohibit livestock entry into the RCSs.
- Land application of wastewater in the recharge areas of the shallow, local aquifer will take place on designated application areas and at agronomic rates as an organic fertilizer. Wastewater application rates will not exceed the infiltration rates of the soil.
- Over watering of wastewater will be avoided to prevent leaching of nutrients below the crop root zone.
- Wastewater will not be applied when the ground is frozen or saturated or during rainfall events.
- Irrigation practices will be managed to minimize ponding and puddling of wastewater
- Wastewater and manure will be applied at agronomic rates and not allowed to runoff. Diversions or terraces will be constructed if necessary, to prevent wastewater from leaving the application areas.
- Wastewater will not be applied closer than 150 feet from any active water well. Wastewater will not be applied closer than 100 feet to waters of Texas. In addition, a vegetative buffer strip will be maintained between all waste application areas and waters of Texas.
- Dead animals will be properly buried in the designated burial area as identified on LMU Map. According to 30 TAC subchapter B: §§321.31-321.47 requirements.
- Pesticides and other chemicals will not be stored near the water wells or disposed of in the waste storage pond.
- Soils in the waste application areas will be sampled annually in accordance with TCEQ requirements.
- Thorough inspections of the RCSs, transport, treatment and disposal system will take place on regular intervals. If problems are encountered during these inspections, corrective action plans will be developed to address the specific problems encountered
- Any abandoned wells encountered will be reported, inspected and properly sealed to prevent possible point source contamination to the underlying aquifer.
- A 150-foot buffer zone will be maintained between any future water supply wells drilled and the waste storage facilities and other potential pollutants. The water wells will be properly cemented, cased and protected from inundation.
- If public water well is drilled on the dairy site, a 500 feet buffer will be maintained around the well and waste application areas.

CERTIFICATION

The undersigned hereby certifies that natural recharge features and three potential artificial recharge features exist as defined in 30 TAC subchapter B: §§321.31-321.47 Part I on tracts operated or controlled by Bouma Dairy and utilized under this application. See Aquifer Protection Plan for the natural and artificial recharge features impact on the Aquifer.

Jim C. Wyrick
Professional Geoscientist, License Number 770



11/14/2024
Date

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AQUIFER PROTECTION PLAN

The artificial recharge features are three private water wells. They are used exclusively for private water supply. The wells locations are shown on the Site and Runoff Map.

Well #1 is about 80 feet north of the commodity barn. Well #2 is about 75 feet west of the commodity barn and 140 feet north of the milking parlor. All runoff water from the commodity barns flows to the south away from the wells. The wastewater generated in the milking parlor flows south over a concrete lane and a pipeline into the RCS. Wastewater from the commodity or milking parlor could not enter the wells. The surrounding ground slopes away from the wells. Well #3 is about 110 feet north of the freestall barn and about 80 feet west of milking parlor. The wastewater generated in the milking parlor flows south over concrete and through a pipeline into the RCS. Wastewater generated in the freestall barns is flushed down a curbed concrete floor sloping to the south away from the well. Wastewater from the milking parlor or freestall cannot enter the wells. The surrounding ground slopes away from the well.

These BMPs are for use on all three wells. All wastewater is stored in the RCS. Wastewater application will not be applied near the wells. Cattle are not allowed to graze in the area around the wells. There are no other pollutant sources such as manure, sludge, wastewater, dust, fuel storage tanks, pesticide and lubricants stored near the wells. Dead animal burial area is not near the wells. The fuel storage tank is not located near the wells. Additional wellhead protective measures include, all wells have a sanitary seal, located on a concrete slab. The areas around the wells have a bermudagrass ground cover. Water wellhead backflow prevention devices have been added to the wells.

The wells and area around them will be inspected monthly to ensure contaminants are not running into the well. If for some reason a pollutant ever flows in the direction of the well, immediate action will be taken to divert the flow from the well. Any change in conditions of the wells will have corrective measures taken. The date Well#1 and Well#2 were drilled is unknown and well logs are not available. Well#3 was drilled on January 9, 2008 a copy of the well log is attached. The wells were completed in accordance with water well drilling rules at that time of drilling. These wellhead protective measures will prevent pollutants from entering the groundwater through the wells

The natural recharge features include surface water bodies, creeks, and tributaries. Structural and non-structural controls to be used to protect the natural recharge features are as follow:

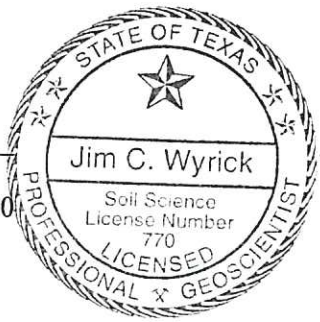
- Vegetative filter strips of Bermuda grass will filter, contain, and prevent the lateral movement of wastewater irrigation and manure.
- Waste will be applied only where the LMU cover vegetation is growing and has crop demand for nutrients.
- Waste will be applied at the nutrient requirements of the vegetative cover at the agronomic application rates.
- Wastewater will be applied at a rate less than the permeability of the soil to prevent ponding and runoff.
- Wastewater application will be at rate that ensures that wastewater will be used by the vegetative cover.
- Vegetative buffers of 150 feet for will be maintained around any newly drilled private water wells.
- 100 feet of vegetative cover buffer between waste and wastewater application areas and surface water and watercourses will be maintained.
- Records of climatic conditions during waste application such as: temperature, precipitation and cloud cover.

The following BMPs are to protect the groundwater for LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 and LMU#6. These LMUs have Bernaldo, Nahatche and Wolfpen soils, which have a seasonal high-water table. LMU#1, LMU#2, LMU#5 and LMU#6 have Wolfpen soils which have excessive permeability. The LMU locations are shown on the LMU Map.

1. Application of wastewater will be applied following the Nutrient Management Plan. This will ensure:
    - Intensive nutrient management practices to manage LMU limitations
    - All agricultural waste shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies.
    - Wastewater application rates will not exceed the soil infiltration rate so not to cause leaching and groundwater contamination.
    - Wastewater application rates will not exceed the available water holding capacity of the soil profile at the time of application, so not to cause leaching and groundwater contamination.
    - Wastewater will be applied at nutrients levels to meet the bermudagrass ground cover needs. This will prevent the movement of nutrients through the soil profile to groundwater caused by over irrigation
    - Annual soil sampling to determine soil available nutrient and amount of nutrients needed for crop production, according to30 TAC subchapter B: §§321.31-321.47.
2. Use of proper timing, formulation, and application methods for nutrients that maximize plant utilization of nutrients and minimize the loss to the ground water,
3. Wastewater will not be applied to saturated soils.
4. Irrigation will be limited on these soils areas when the potential for the seasonal water table to be near the soil surface. (November – May).
5. Timing of manure or waste water application should coincide as nearly as possible to the time when plants can use the nutrients -- that is, during the normal growing season
6. Continual inspection and maintenance of waste handling facilities and equipment will prevent unwarranted waste discharges into surface water and groundwater.
7. Records of crop yields will be kept to determine realistic crop yield expectations.
8. Application equipment should be calibrated and inspected for wear and damage periodically, and repaired when necessary.
9. Records of nutrient application rates will be maintained along with other management records for each field.

These BMPs will provide adequate protective measures for the natural recharge features.

Jim C. Wyrick
Professional Geoscientist, License Number 770



11/14/2024
Date

United States Department of Agriculture

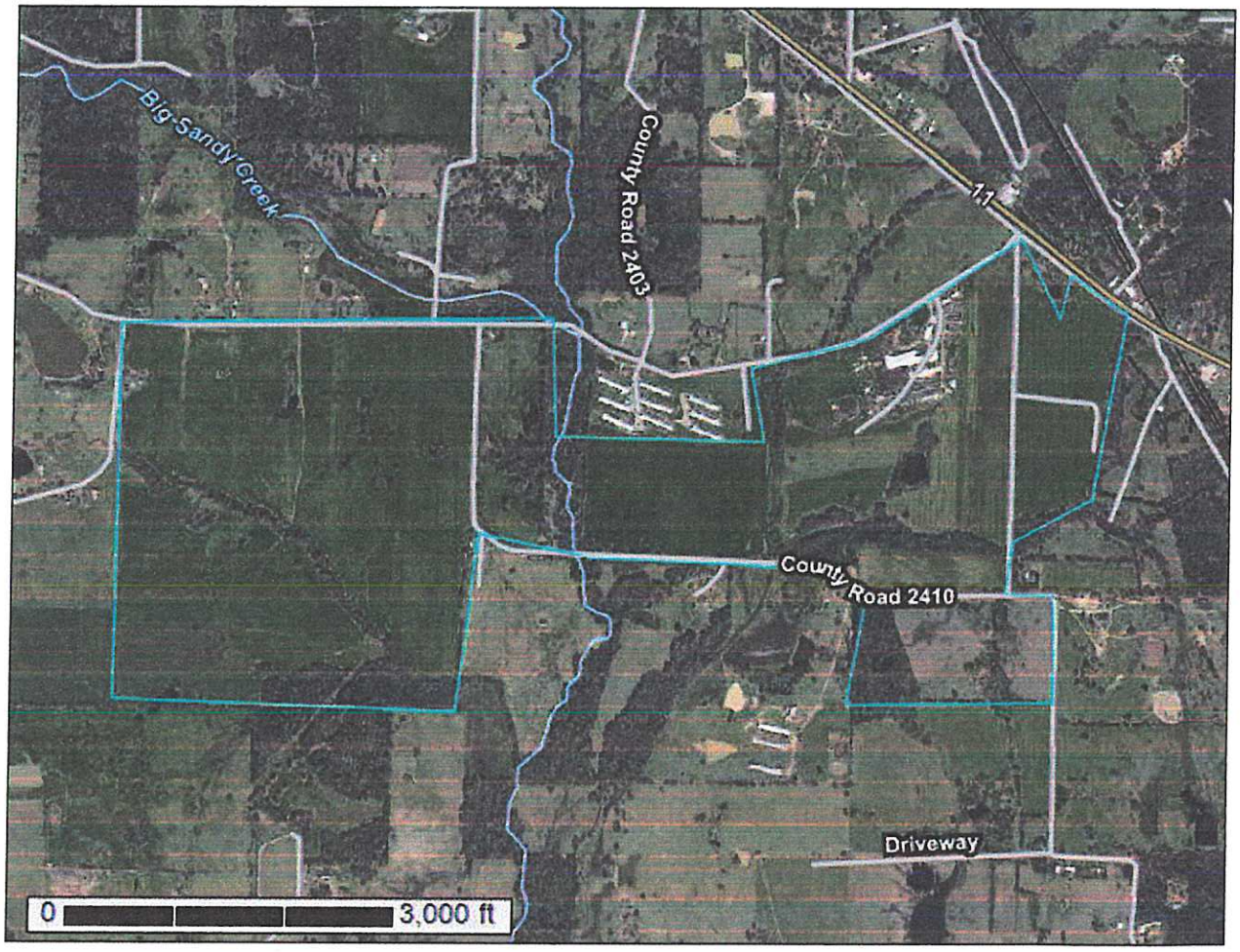
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hopkins and Rains Counties, Texas

Bouma Dairy



August 21, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

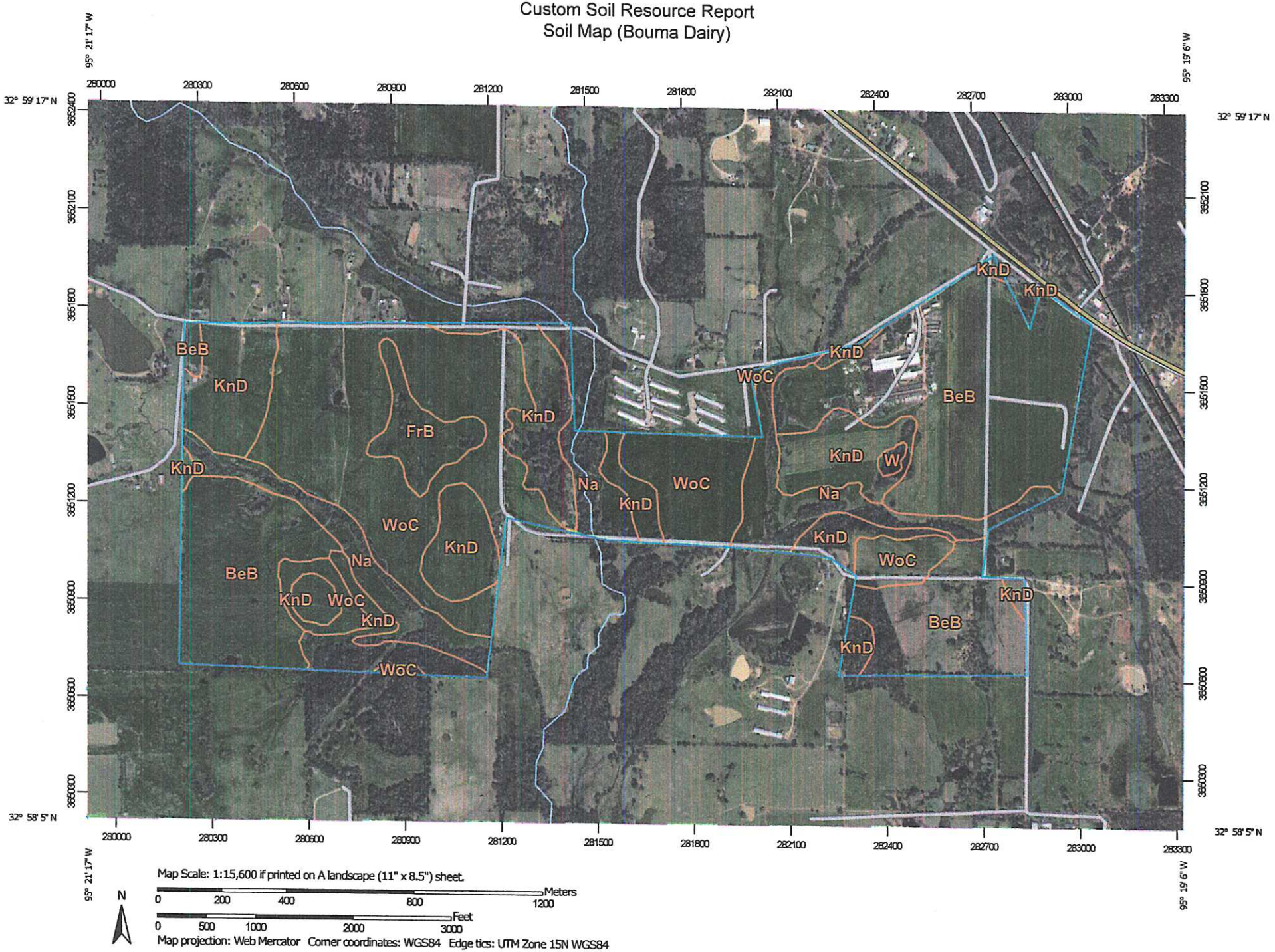
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

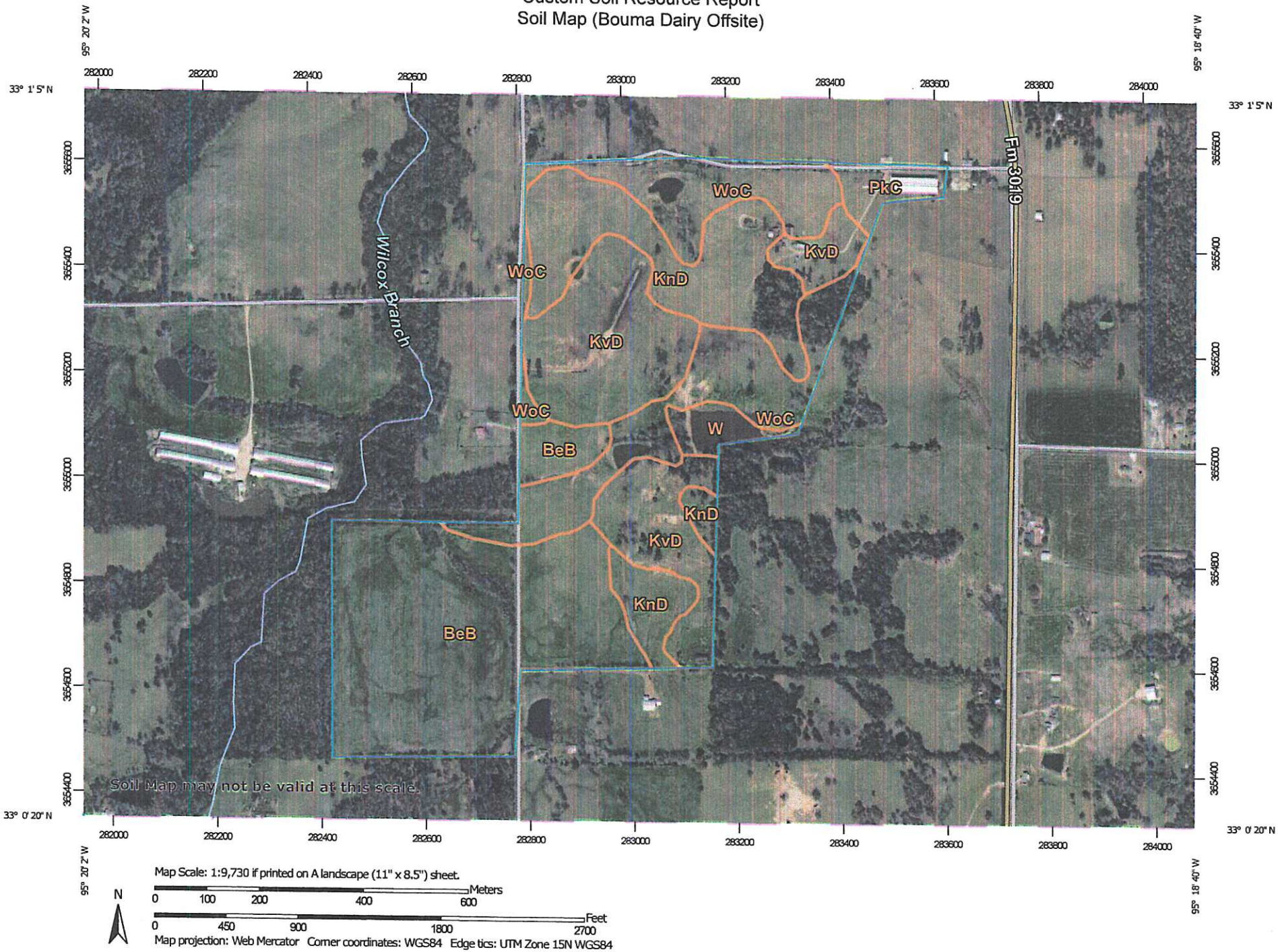
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Bouma Dairy)



Custom Soil Resource Report
Soil Map (Bouma Dairy Offsite)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hopkins and Rains Counties, Texas
Survey Area Data: Version 19, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 19, 2023—Mar 5, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Bouma Dairy)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Bernaldo fine sandy loam, 1 to 3 percent slopes	203.2	36.0%
FrB	Freestone fine sandy loam, 1 to 3 percent slopes	16.1	2.9%
KnD	Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	122.5	21.7%
Na	Nahatche soils, frequently flooded	67.5	12.0%
W	Water	1.5	0.3%
WoC	Wolfpen loamy fine sand, 2 to 5 percent slopes	153.3	27.2%
Totals for Area of Interest		**564.2**	**100.0%**

Map Unit Descriptions (Bouma Dairy)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases.* Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas.* Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hopkins and Rains Counties, Texas

BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tf44
Elevation: 200 to 720 feet
Mean annual precipitation: 42 to 51 inches
Mean annual air temperature: 54 to 75 degrees F
Frost-free period: 240 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bernaldo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernaldo

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

A - 0 to 4 inches: fine sandy loam
E - 4 to 12 inches: fine sandy loam
Bt - 12 to 47 inches: sandy clay loam
Bt/E - 47 to 80 inches: sandy clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 42 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F133BY013TX - Terrace
Hydric soil rating: No

Minor Components

Freestone

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

FrB—Freestone fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wg9c
Elevation: 140 to 790 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 62 to 66 degrees F
Frost-free period: 218 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Freestone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freestone

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy alluvium derived from shale and siltstone

Typical profile

Ap - 0 to 4 inches: fine sandy loam
E - 4 to 11 inches: fine sandy loam
Bt - 11 to 20 inches: sandy clay loam

B/Et1 - 20 to 28 inches: clay loam
B/Et2 - 28 to 44 inches: clay
B't - 44 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Minor Components

Raino

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Mounds
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

Woodtell

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tlk3
Elevation: 230 to 630 feet
Mean annual precipitation: 42 to 49 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 195 to 242 days
Farmland classification: Not prime farmland

Map Unit Composition

Kirvin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 4 inches: gravelly fine sandy loam
E - 4 to 12 inches: gravelly fine sandy loam
Bt - 12 to 31 inches: clay
BCt - 31 to 43 inches: clay loam
C - 43 to 80 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

Minor Components

Briley
Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Bowie
Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

Na—Nahatche soils, frequently flooded

Map Unit Setting
National map unit symbol: dklg
Elevation: 100 to 400 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 235 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition
Nahatche and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nahatche

Setting
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium of holocene age

Typical profile
H1 - 0 to 7 inches: clay loam
H2 - 7 to 65 inches: loam

H3 - 65 to 80 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R087BY007TX - Loamy Bottomland
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 5 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tcnz
Elevation: 210 to 570 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 204 to 236 days
Farmland classification: Not prime farmland

Map Unit Composition

Wolfpen and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wolfpen

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 27 inches: loamy fine sand
Bt - 27 to 55 inches: sandy clay loam
Bt/E - 55 to 70 inches: sandy clay loam
B't - 70 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Minor Components

Oakwood

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

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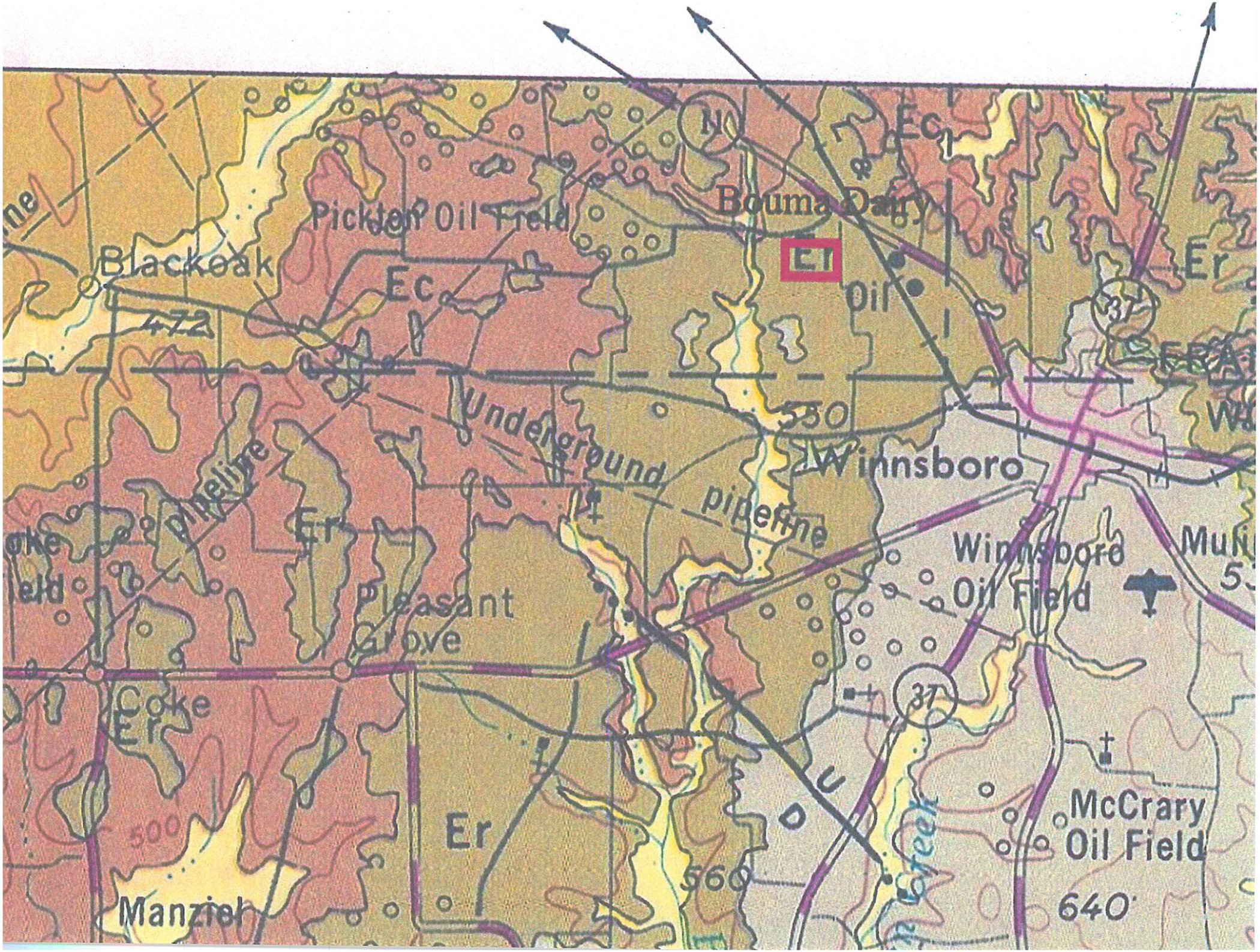
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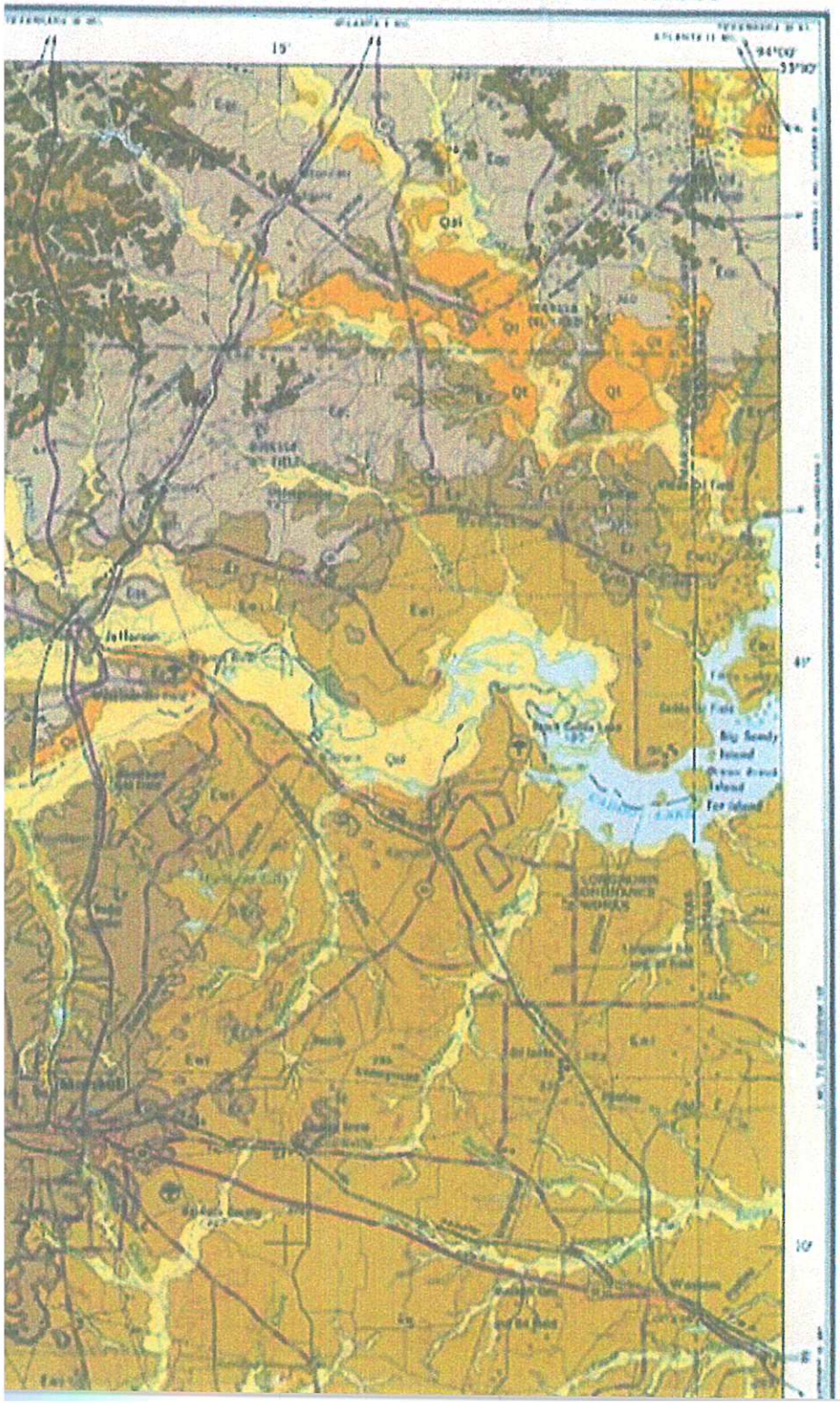
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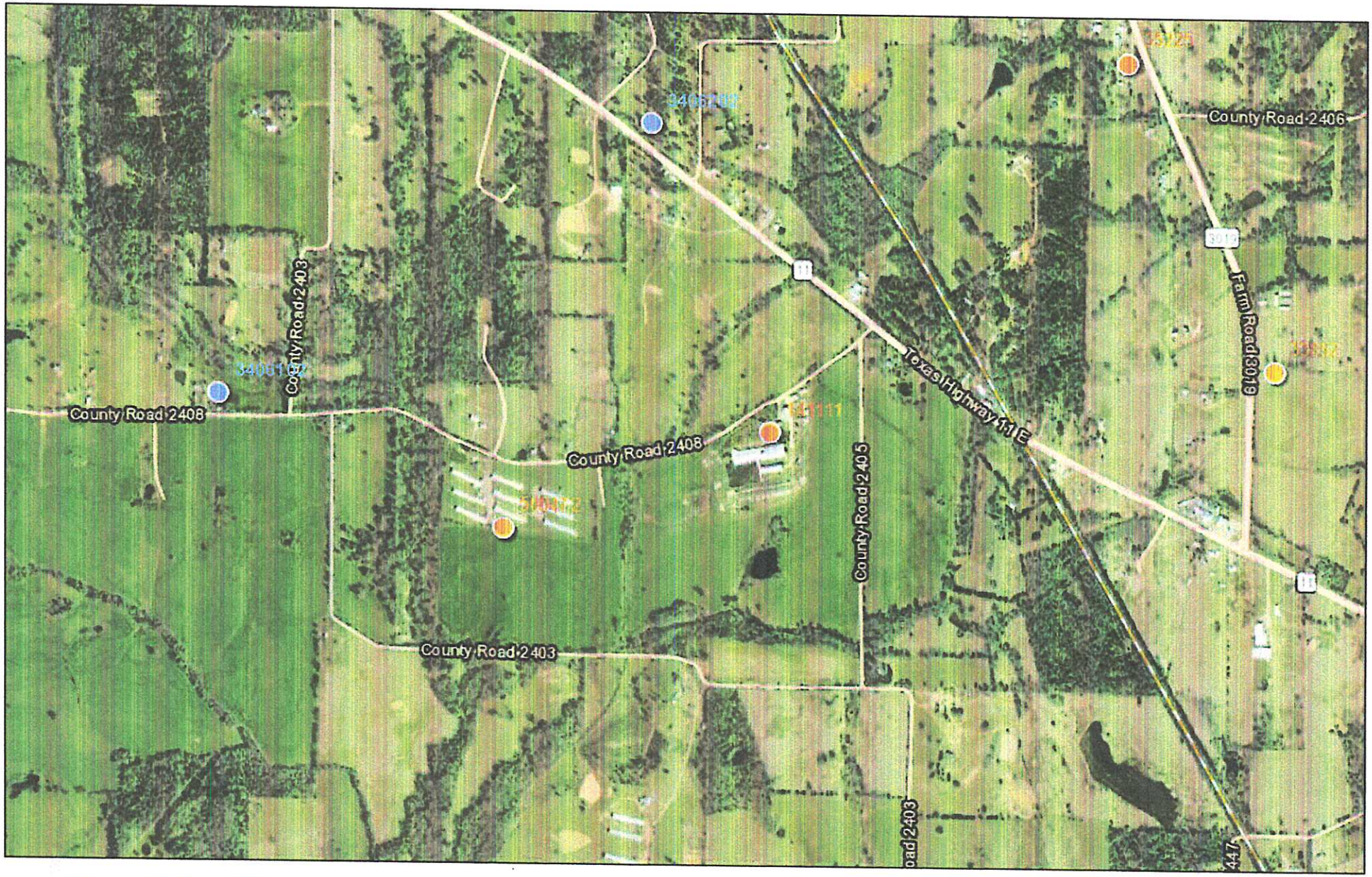
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Pickton Oil Field
Bouma Dairy
Blackoak
Ec
Er
Oil
472
530
Underground pipeline
Winnsboro
Pleasant Grove
Winnsboro Oil Field
Coke
Manziel
560
640
McCrary Oil Field
37

TYLER SHEET


15'
94°00'
32°30'
Qal
Qt
Tal
Tcl
Tcl
Tal
Tal
Tal

Bouma Well Location



Texas Water Development Board

September 4, 2024

TWDB Groundwater

Well Reports

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

1:18,056

Esri, HERE, Garmin, (c) OpenStreetMap contributors

The data in Water Data Interactive represents the best available information provided by the TWDB and third-party cooperators of the TWDB. The TWDB provides information via this web site as a public service. Neither the State of Texas nor the TWDB assumes any legal liability or responsibility or makes any guarantees or warranties as to the accuracy, completeness or suitability of the information for any particular purpose. The TWDB systematically revises or removes data discovered to be incorrect. If you find inaccurate information or have questions, please contact WDI-Support@twdb.texas.gov.

TEXAS WATER DEVELOPMENT BOARD

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

STATE OF TEXAS WELL REPORT for Tracking #141111

Owner:	**Michael Bouma**	Owner Well #:	**1**
Address:	**4252 CR 2408 Winnsboro, TX 75494**	Grid #:	**34-06-2**
Well Location:	**4252 CR 2408 Winnsboro, TX 75494**	Latitude:	**32° 58' 54" N**
		Longitude:	**095° 19' 40" W**
Well County:	**Wood**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **1/7/2008** Drilling End Date: **1/9/2008**

Borehole:

Diameter (in.)	Top Depth (ft.)	Bottom Depth (ft.)
7.875	0	573

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed; Straight Wall**

Filter Pack Intervals:

Top Depth (ft.)	Bottom Depth (ft.)	Filter Material	Size
440	573	Gravel	16/30

Annular Seal Data:

Top Depth (ft.)	Bottom Depth (ft.)	Description (number of sacks & material)
0	100	19 c w/6% gel
390	440	7 c w/6% gel

Seal Method: **Pumped with Tremmie Pipe**

Sealed By: **Driller**

Distance to Property Line (ft.): **50 +**

Distance to Septic Field or other concentrated contamination (ft.): **50 +**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **Owner**

Surface Completion: **Surface Sleeve Installed**

Water Level: **215 ft.** below land surface on **2008-01-22** Measurement Method: **Unknown**

Packers: **None**

Type of Pump: **Submersible** Pump Depth (ft.): **340**

Well Tests: **Jetted** **Yield: 60 GPM with 140 ft. drawdown after 1 hours**

Plug Information:

Description (number of sacks & material)	Top Depth (ft.)	Bottom Depth (ft.)
N/A		

Water Quality:

Strata Depth (ft.)	Water Type
No Data	No Data

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled 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 report(s) being returned for completion and resubmittal.

Company Information: **C Miller Drilling**

7355 E State Hwy 154
Winnsboro, TX 75494

Driller Name: **Cory L Miller** License Number: **2464**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	22	Clay and Rock
22	42	Shale and Sand Light Gray
42	82	Shale
82	102	Shale and Sand
102	202	Shale
202	340	Shale with Lignite Streaks
340	362	Sand with Shale Streaks
362	506	Shale with Lignite Streaks
506	562	Sand
562	573	Shale

Casing:
BLANK PIPE & WELL SCREEN DATA

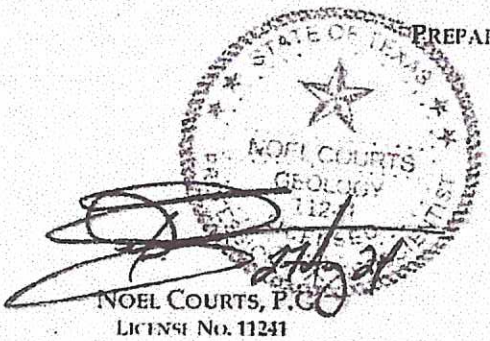
Dia. (in.) New/Used Type Setting From/To (ft.)
4 1/2" New SDR 17 0 - 480 Casing
4" New SCH 40 PVC 480 - 508 Casing
4" New SCH 40 PVC 508 - 558 .016 Screen
4" New SCH 40 PVC 558 - 564 Casing

BOUMA DAIRY

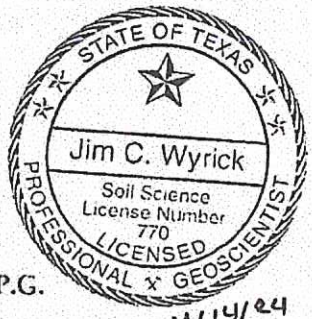
CALCULATIONS FOR DAIRY BARN & FREE STALL SLUDGE

MAIKO BOUMA
4252 COUNTY ROAD 2408
WINNSBORO, TEXAS 75494
HOPKINS COUNTY

PREPARED BY:

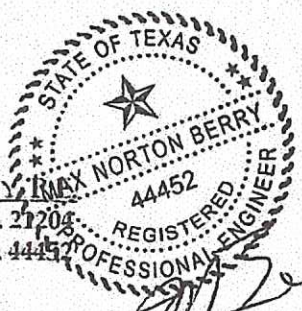


NOEL COURTS, P.G.
LICENSE NO. 11241
EAST TEXAS ENVIRONMENTAL SERVICES



JIM C. WYRICK, P.G.
LICENSE NO. 770
EAST TEXAS ENVIRONMENTAL SERVICES

11/14/24



M. BERRY, INC.
FIRM NO. 21204
SEAL NO. 44452

11/29/24

BOUMA DAIRY - SLUDGE VOLUME

D.A. #1 - DAIRY BARN & FREESTALL BARN

All of the waste from the dairy barn and freestalls at Bouma Dairy removed by a Honey Vacuum that is proved to be at least 50-90% effective according to the NRCS Practice Standard Code 6632 – "Solid/Liquid Waste Separation Facility". In this case 90% vacuum efficiency was used. The remaining solids go into settling basins that removes 45% of the remaining solids produced. Any manure separating facilities have 40%-65% total solids efficiency according to NRCS Practice Standard Code 632 – "Solid/Liquid Waste Separation Facility". The adjusted total live weight contributing to the waste volume is 990,675 pounds @ 1400lbs/cow. The sludge from the free stall barns is calculated below:

Adjusted Total Live weight Contributing Manure	990,675 lbs
Honey Vacuum Efficiency	90%
Adjusted Live weight	99,067 lbs
Settling Basin Efficiency	45%
Adjusted Live weight	54,487 lbs
Sludge Accumulation Rate cu ft/year/lbs live weight	0.25

Sludge Volume = $\frac{(54,487 \text{ lbs})\ (0.25 \text{ cu ft/year/lbs live weight})}{43,560 \text{ cu ft/ac-ft}}$ =

STATE OF TEXAS
MAX NORTON BERRY
44452
REGISTERED
PROFESSIONAL ENGINEER
F-21204
11/29/24

BOUMA DAIRY

SLUDGE VOLUME FROM OPEN LOTS

OPEN LOT:

Sludge storage for a ten year period may be calculated using the following equation:

Sludge Volume = 25% x (25yr-24hr storm volume runoff from open lots)

For this facility the 25yr-24hr storm volume from open lots = 1.31 ac-ft

Open Lot Volume = .25 x 1.31 = .33 for a ten year period.

The planned sludge cleanout interval for open lots is 1 year; therefore, allotted sludge volume is as follows:

$\frac{.33 \text{ ac-ft (5 years)}}{10 \text{ years}}$ =

CERTIFICATION:

Prepared By: _____
Noel Courts, P.G.
East Texas Env. Services

Prepared By: _____
Jim C. Wyrick
East Texas Env. Services
11/14/24

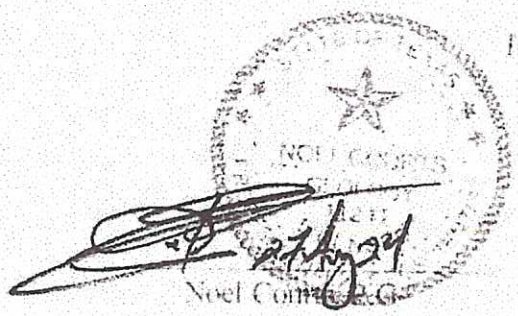
Prepared By: _____
M. Berry, P.E.
Firm No. F-21204
Seal No. 44452
11/29/24

BOUMA DAIRY- TOTAL

AGRICULTURAL WASTE MANAGEMENT PLAN

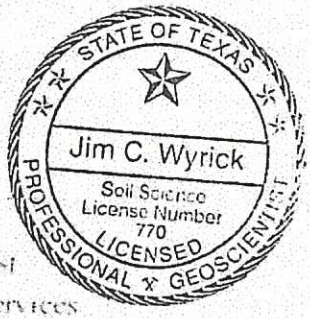
HOPKINS COUNTY

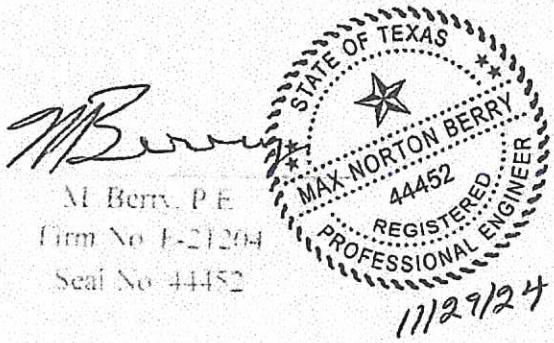
Prepared by:



Noel Comeaux, P.G.
Professional Geoscientist
East Texas Environmental Services

Jim C Wyrick, P.G.
Professional Geoscientist
East Texas Environmental Services





M. Berry, P.E.
Firm No. F-21204
Seal No. 44452

11/29/24

Modified for Wood Hopkins Rains Franklin Counties TX with on January 22, 2008. Modifications made to monthly rainfall, monthly evaporation, and monthly correspondence coefficient values for bermudagrass pastureland, bermuda small grain pastureland, small grain cropland, grain sorghum cropland, and sorghum small grain cropland. Modifications values were taken from following reference: Borrelli, J., V. B. Ozdemir, and J.M. Gregory. 1986. *Water and Sediment Yield and Flood Water Evaporation for Texas*. USWRL Grant No. 98-483-CX. Dept. of Civil Engineering, Texas Tech University, Lubbock, Texas. TR-CEWA-01, Version 2. Modified by Eugene Caldwell, P.E.

IN COOPERATION WITH:

NATURAL RESOURCES CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

MANURE PRODUCTION DATA
FOR CONFINED ANIMAL FEEDING OPERATIONS

TYPE OF ANIMAL (Dairy=0, Swine=1, Laying Hens=2, Beef Feedlot=3, Sheep Feedlot=4, Horses=5, Turkeys=6, Broilers=7) = 0

Feeding Facilities For: Dairy

	Dairy Barn & Free Stall Barn	Open Lots	Total
Number of Animals	999	999	
Average Liveweight per Head, lbs/hd	1,400	1,400	
Total Liveweight,lbs	1,398,600	1,398,600	
Confinement Period, hours/hd/day	17.0	7.0	24.0
Adjusted Total Liveweight, lbs	990,675	407,925	1,398,600
Wet Manure Production, lbs/day	101,049	41,608	142,657
Dry Manure Production, lbs/day	14,563	5,996	20,559
Dry Manure Production, tons/year	2,658	1,094	3,752
Volatile Solids (VS) Production, lbs/day	10,689	4,402	15,091
Total Nitrogen Production, lbs/day	542	223	765
Total Phosphorus (P2O5), lbs/day	267	110	378
Total Potassium (K2O), lbs/day	459	189	648
Sodium Production, lbs/day	77	32	109
COD Production, lbs/day	13,275	5,466	18,741
BOD5 Production, lbs/day	2,061	848	2,909

STATE OF TEXAS
MAX NORTON BERRY
44452
REGISTERED
PROFESSIONAL ENGINEER

F-21204
11/29/24

Engineering Job Approval Authority Job Class for Ag. Waste Management System: _____

This practice, Ag. Waste Management System, meets specifications, signed by:

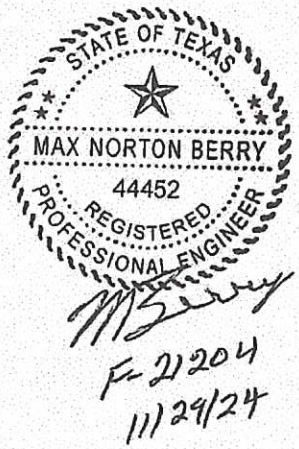
_____ Date: _____

Remarks

VOLUME OF MANURE & WASTEWATER FROM CONFINEMENT BUILDINGS

Wet Manure Production	=	12116	gal/day
Water Used for Manure Removal			
a. Dry Manure Production	=	14563	lbs/day
b. Water Volume Required for Manure Removal			
1. Flush Systems:			
(Enter gallons water per pound of dry manure production, range 8-12 gal/lb)	=>	5	
Total flush water	=	72815	gal/day
2. Manual Scrape/Wash System (Enter gallons of water per pound of dry manure production. Range: 3 - 6 gal/lb)	=>	0	
Total manual wash water	=	0	gal/day
Cleanup and Washwater (Default=10 gal/hd/day)	=>	5	gal/hd/day
	=	4995	gal/day
Other Water That Enters Wastewater System	=>	5	gal/hd/day
[e.g. drinking water, etc.(12 gal/hd/day)]	=	4995	gal/day
Total Process Generated Wastewater Volume			
Daily Volume	=	94921	gal/day
Less Volume of Recycled Wastewater Used for Manure Removal	=>	58253	gal/day
Design Wastewater Storage Volume, Minimum Allowable			
Minimum Storage Days (Use Exhibit 2)*	=>	21	days
Minimum Design Storage Volume	=	2.36	ac-ft
Net Manure and Wastewater Volume for Land Application			
Monthly Volume	=	3.42	ac-ft/month
Annual Sludge Accumulation Rate, ac-ft	=	0.31	
Desired Sludge Storage Volume in Pond	=>	3.41	ac-ft
Sludge Cleanout Interval	=	10.0	years
Design Sludge Accumulation Storage Volume (Not to be less than 1 Year accumulation)	=	3.41	ac-ft

* Use Exhibit 2 of Texas Water Commission regulations for your particular location.



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ESTIMATED VOLUME OF RUNOFF FROM OPEN LOTS

Total area draining into Runoff Control Structure (RCS)			
a. Area of open lot surface	=>	[illegible]	acres
b. Area between open lot surface and RCS	=>	[illegible]	acres
c. Surface area of RCS	=>	[illegible]	acres
d. Total area (#1.a + #1.b + #1.c)	=	2.80	acres
Design rainfall (25-year frequency, 24-hour duration storm), inches (Use Exhibit 1)	1) =>	[illegible]	inches
Design runoff depth, inches (Use exhibit 3)			
a. For Open Lot Surface * CN	=>	[illegible]	
		6.81	inches
b. For Area Between Lots and RCS ** CN	=>	[illegible]	
		6.21	inches
c. For Surface Area of RCS	=	8.00	inches
Design runoff volume from 25-year, 24-hour storm			
a. For Open Lot Surface	=	0.7	ac-ft
b. For Area Between Lots and RCS	=	0.1	ac-ft
c. For Surface Area of RCS	=	0.9	ac-ft
d. Total Design Runoff Volume	=	1.7	ac-ft

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NOTE: Runoff Control Structures must be capable of storing Design Runoff Volume plus Design Storage Volume, if runoff and process generated wastewater streams are combined.

* Use NRCS soil cover complex curve No. 90 for unpaved (soil) lots and curve No. 95 for concrete surfaces.

** Use appropriate NRCS soil cover complex curve number for particular type of cover. Contact local Natural Resources Conservation Service field office for assistance.

SUMMARY OF REQUIRED AND DESIGNED STORAGE PONDS

Minimum Design Wastewater Storage Volume	2.36	ac-ft
Minimum Design Runoff Storage Volume	1.71	ac-ft
Sludge Accumulation Storage Volume	3.41	ac-ft
Additional Capacity Allowance	5.00	ac-ft
Total Capacity Designed	12.48	ac-ft

DESIGN BASIS FOR
PRIMARY ANAEROBIC MANURE TREATMENT LAGOONS

(WHERE APPLICABLE)

Design Factor		Dairy	
Adjusted Total Liveweight Contributing Manure to Lagoon	=	54487	lbs
Recommended Unit Treatment Volume (see footnote) (RUTV), cubic feet/pound liveweight	=> =	3.00	
Total Treatment Volume	=	[illegible]	
Design checks (see footnotes):			
a. Volatile Solids (VS) Loading Rate		0.0654	
b. Hydraulic Retention Time		13	days
c. Estimated Sludge Cleanout Interval:			
1. Sludge Accumulation Rate, cu ft/year/lb liveweight	=	0.250	
2. Sludge Cleanout Interval	=	6.0	years
Additional Capacity Allowance for:			
a. Design Runoff Volume, (one stage lagoons o	=>	[illegible]	ac-ft
b. Sludge storage	=>	[illegible]	ac-ft
c. Additional Storage	=>	[illegible]	ac-ft
Total Primary Lagoon Capacity	=	3.8	ac-ft

THIS PAGE IS NOT APPLICABLE TO THIS PLAN

Notes: 2. If user entry area equals 0, then default values are used
(dairy=3, swine=1.75, poultry,laying hens=2.5, beef=2, sheep=2, horses=2).
User may specify alternate value which will override template default.

4.a. VS Loading Rate--Volatile Solids Production (Worksheet I, #10) / Total Treatment Volume.
Desired range is 0.0025-0.0040 lbs VS/day/cu ft for odor control

4.b. Hydraulic Retention Time--Total Treatment Volume / Total Manure and Wastewater Volume.
Desired range is 160-400 days for good treatment.

4.c. Sludge Cleanout Interval (when half full)

$$\text{Interval} = \frac{\text{Total Treatment Volume (cuft)} \times 0.5}{\text{Adj. Total Live Wt.} \times \text{Sludge Accum. Rate}}$$

LAND AREA FOR DISPOSAL OF MANURE OR EFFLUENT FROM TREATMENT LAGOONS,

BASED ON PLANT-AVAILABLE NITROGEN (PAN)

		Buildings		Open Lots	
Total Daily Nitrogen Production	=	542	more->	223	lbs/day
Total Annual Nitrogen Production	=	197793	more->	81444	lbs/yr
Percent Nitrogen Loss from manure storage or treatment system*	=>	20	more->	50	percent
Annual Nitrogen Loss from manure storage or treatment system	=	39559	more->	40722	lbs/yr
Total Annual Nitrogen Remaining	=	158235	more->	40722	lbs/yr
Availability of Nitrogen in Manure or Effluent:% (Normal range is 80-95% in lagoon effluent; 50-80% in fresh or pit-stored manure; or 40-50% in feed lot manure)	=>	80	more->	50	percent
Annual Plant-Available Nitrogen (PAN) Applied to Soil		126588	more->	20361	lbs/yr
PAN Losses from Soil Surface Application**	** =>	20	more->	20	percent
PAN Losses from Soil Surface Application	=	25318	more->	4072	lbs/yr
PAN Entering Soil	=	101270	more->	16289	lbs N/yr

Land Required for Various PAN Application Rates:

Assumed PAN Application Rate, lbs/ac/yr	Buildings Acres		Open Lots Acres		Total Acres
100	1013	+	163	=	1176
150	675	+	109	=	784
200	506	+	81	=	588
300	338	+	54	=	392
400	253	+	41	=	294

* Nitrogen Loss from Lagoon Surface--Normal loss is 40-65% for primary treatment lagoons with 200 days or more storage; 10-20% from liquid manure settling basins or storage pits; and 40-50% from open feedlot surface.

** Normal range of nitrogen loss from soil surface is 15-35% for surface application or, 5% for soil injection. Losses are highest in warm weather and on high pH soils.

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WATER BUDGET ANALYSIS

DRAINAGE AREA	2.80	ACRES	RUNOFF CONTROL STRUCTURE DATA		
MANURE PROD. RCS AREA	1.32	ACRES	LOCATION NO.	12	FIELD OFFICE SULPHUR SPRGS
					COUNTY HOPKINS
SLUDGE ACCUMULATION	3.41	AC-FT	30-DAY CURVE NUMBERS		CROPS FOR WATER DEMAND
MIN. WASTEWATER STORE	2.36	AC-FT	POND	74.0	Bermudagrass 0.00 AC
ADDITIONAL STORAGE	5.00	AC-FT	FIELD	48.0	Bermuda SmGr 381.00 AC
SUBTOTAL	10.77	AC-FT	IRRIG. EFFICIENCY, %	75.00	Sorghum SmGr 0.00 AC
25YR-24HR RUNOFF	1.71	AC-FT	IRRIGATION DEPTH, IN/YR	1.02	Small Grain 0.00 AC
TOTAL POND CAPACITY	12.48	AC-FT	EVAPORATION, COEFF.	71.50	Assumed Seepage 0.0 ACFT

MONTH	RAINFALL (1) IN	RUNOFF (2) IN	INFLOW TO POND (3) AC-FT	OTHER INFLOW (3a) AC-FT	EFFECTIVE RAINFALL (5) IN	GROSS EVAP (6) IN	NET POND EVAP (8) AC-FT	CROP DEMAND (9) AC-FT	ACTUAL WITHDRAWL (10) AC-FT	STORAGE at E O M (11) AC-FT	SURF AREA at E O M (12) AC	SPILL (13) AC-FT
										10.72	1.25	0.00
JAN	2.70	0.03	0.17	3.42	2.67	2.20	0.00	18.89	10.90	3.41	0.91	0.00
FEB	3.20	0.09	0.24	3.42	3.11	2.30	0.00	24.76	3.67	3.41	0.91	0.00
MAR	3.90	0.24	0.36	3.42	3.66	3.20	0.04	145.39	3.74	3.41	0.91	0.00
APR	4.80	0.51	0.51	3.42	4.29	3.90	0.05	188.75	3.88	3.41	0.91	0.00
MAY	5.29	0.66	0.59	3.42	4.84	4.50	0.11	190.93	3.90	3.41	0.91	0.00
JUN	3.70	0.19	0.32	3.42	3.51	3.60	0.21	159.39	3.55	3.41	0.91	0.00
JUL	3.10	0.07	0.25	3.42	3.03	7.10	0.33	131.26	3.32	3.41	0.91	0.00
AUG	2.40	0.00	0.13	3.42	2.40	7.60	0.39	139.86	3.16	3.41	0.91	0.00
SEP	3.50	0.15	0.29	3.42	3.35	6.20	0.26	60.29	3.45	3.41	0.91	0.00
OCT	4.00	0.27	0.37	3.42	3.73	5.20	0.18	35.73	3.62	3.41	0.91	0.00
NOV	3.40	0.13	0.27	3.42	3.27	3.80	0.10	0.00	0.00	7.01	1.68	0.00
DEC	3.60	0.17	0.31	3.42	3.43	2.70	0.02	0.00	0.00	10.72	1.25	0.00
TOTALS	43.50	2.51	3.79	41.07	40.99	54.60	1.69	1075.15	43.17			Reset
	43.50					54.60			43.17	Checks		

STORAGE-AREA TABLE FOR RUNOFF CONTROL STRUCTURE

STORAGE DATA TYPE R (C - CIRCULAR, R - RECTANGULAR, or S - STAGE DATA)

CIRCULAR	RECTANGULAR	
DEPTH, FT 0.00	DEPTH, FT 12.35	THIS WATER BUDGET VERIFIES THAT
SIDE SLOPE, RATIO 0.00	SIDE SLOPE, RATIO 2.50	25YR - 24 HR STORM RUNOFF STORAGE
TOP DIAMETER, FT 0.00	END SLOPE, RATIO 2.50	ALLOCATION IS MAINTAINED
FREE BOARD, FT 0.00	TOP WIDTH, FT 240.00	THROUGHOUT THIS CLIMATIC CYCLE.
BOTTOM DIAMETER, FT 0.00	TOP LENGTH, FT 240.00	* *
SURFACE AREA, AC 0.00	FREE BOARD, FT 2.00	*
VOLUME, ACFT 0.00	BOTTOM WIDTH, FT 178.25	
	BOTTOM LENGTH, FT 178.25	NOTE: USER INPUT VALUES FOR NUTRIENTS
	SURFACE AREA, AC 1.32	USED IN NUTRIENT BALANCE WORKSHEET!
	VOLUME, ACFT 12.49	

DEPTH, FT 0.0 STAGE

FREE BOARD, FT 0.00

Leave Extra Rows at Bottom with Blanks or Zeros.

ROW =	DEPTH FT	AREA AC
BOTTOM	0.00	
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

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STAGE STORAGE DATA SUMMARY

METHOD: RECTANGULAR

ROW =	DEPTH FT	AREA AC	STORE ACFT	WIDTH FT	LENGTH FT
0	0.00	0.73	0.00	178.25	178.25
1	1.24	0.78	0.93	184.43	184.43
2	2.47	0.83	1.93	190.60	190.60
3	3.71	0.89	2.99	196.78	196.78
4	4.94	0.95	4.13	202.95	202.95
5	6.18	1.00	5.33	209.13	209.13
6	7.41	1.06	6.61	215.30	215.30
7	8.65	1.13	7.96	221.48	221.48
8	9.88	1.19	9.39	227.65	227.65
9	11.12	1.26	10.90	233.83	233.83
10	12.35	1.32	12.49	240.00	240.00
11	13.35	1.38	13.84	245.00	245.00
12	14.35	1.43	15.25	250.00	250.00
BOT 25YR-24HR	11.01	1.25	10.77	233.83	233.83
SPILLWAY	12.35	1.32	12.49	240.00	240.00
FREE BOARD	14.35	1.43	15.25	250.00	250.00

INLAND ENGINEERING AND SURVEYING

2304 HANCOCK DRIVE #1A
AUSTIN, TEXAS 78756

Telephone (512) 302-1750
Fax (512) 302-1751

January 6, 2000

Job No. 00173

Bouma Dairy
Rt 4, Box 45296
Winnsboro, Texas 75495

Re: Certification Waste Storage Pond No. 1
Bouma Dairy - TNRCC Permit No. 04145

Mr. Bouma,

Measurements and calculations of Waste Storage Pond No. 1 at your dairy site has been completed. Maximum storage is noted below.

Waste Storage Pond No. 1 ..... constructed storage = 5.56 ac-ft.

Certification by

STATE OF TEXAS
JERRY E. HOLLIGAN
29146
REGISTERED PROFESSIONAL ENGINEER

Jerry E. Holligan, P.E.
Registered Professional Engineer, No. 29146
State of Texas

00173.wps

HYDROLOGIC CONNECTION INVESTIGATION
Bouma Dairy
RCS#1
Hopkins County, Texas

Report for
Miako Bouma
Sulphur Springs, Texas



3/1/07

Prepared By
Jim C. Wyrick, PG
EAST TEXAS ENVIRONMENTAL SERVICES
315 Highland Dr.
Sulphur Springs, Texas 75482

INTRODUCTION

This investigation was performed in accordance with request for services and authorization to proceed granted by Miako Bouma, Bouma Dairy, Winnsboro, Texas. Field operations were conducted on March 1 2007. The purpose of this investigation was to define and evaluate the in-situ soil material of the wastewater RCS. Specifically, this study was planned to determine the following soil properties of the in-situ soil material in the RCS:

- Hydraulic Conductivity equal to or less than 1 x 10-7 cm/sec. ASTM D 5084
- Depth of liner soil material is a minimum thickness of 1.5 feet of suitable in-situ soil material. ASTM D1452-07a and ASTM D2488-06

PROJECT DESCRIPTION

The RCSs was constructed in 1985 and have been service years prior to this investigation. RCS#1 has an approximate dimension of 150 feet wide by 234.5 feet long and 10 feet deep.

INVESTIGATION PROCEDURE

Depth of the in-situ material was verified by using a two-inch soil bucket auger, six-foot long with a seven-foot extension. The water level was at 5 feet below the ground level. The borings were made to a depth of 11.5 feet below the ground level in four locations. Upon completion all sample holes were backfilled with native soil cuttings. Determining in-place hydraulic conductivity was done by driving two thin-walled tube into the soil mass to obtain a relativity undisturbed sample according to ASTM D1587. The sample was taken in the RCS sidewall just above the wastewater level. ADJ Services, Inc. Lab, Longview Texas determined the hydraulic conductivity using ASTM D 5084.

The RCS is in service and wastewater was present. Based on the literature reviewed, introduction of manure provides a further decrease in the permeability rate of at least 1 order of magnitude. Such sealing is thought to be a result of physical, chemical, and biological processes. Suspended solids settle or filter out of solution and physically clog the pores of the soil mass. Anaerobic bacteria produce by-products that accumulate at the soil-water interface and reinforce the seal, and in the process of metabolizing organic material can alter the soil structure. Chemicals in animal waste, such as salts, can disperse soil, which may be beneficial in reducing seepage. 1/.

1/ Part 651, Agricultural Waste Management Field Handbook, Agricultural Waste Management System Component Design Chapter 10, 651.1080 Appendix 10D—Geotechnical, Design, and Construction Guidelines

FIELD OPERATIONS

Jim Wyrick, Professional Geoscientist, made the soil borings, collected the hydraulic conductivity sample and visually identified the characteristic of the in-situ soil material.

CONCLUSION

The in-situ clay material in RCS#1, to depth of 11.5 feet meets the minimum criteria of hydraulic conductivity no greater than 1 x 10^{-7} centimeters per second (cm/sec) at optimal moisture content. The in-suite clay material has a thickness of 1.5 feet or greater meeting the thickness requirement in Part III.A.5(g)(3). No significant hydrologic connection exists, so there will be no significant leakage from the retention control structure. Therefore, a liner is not needed to prevent a significant hydrologic connection between the contained wastewater and water in the state

LIMITATIONS

Geotechnical investigations are characterized by the presence of a calculated risk that soil and groundwater conditions may not have been fully revealed by this exploratory boring investigation. This risk derives from the practical necessity of basing interpretations and design conclusions on a limited sampling of the subsoil stratigraphy at the project site. The recommendations given in this report are based upon the conditions that existed at the boring location at the time it was drilled. It is conceivable that soil conditions throughout the site may vary from those observed in the exploratory boring. ETES is not responsible for the conclusions, opinions, or recommendations made by others based on the contents of this report. My professional services have been performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical principles and practices. These warranties are in lieu of other warranties either expressed or implied.

Jim C. Wyrick,
Professional Geoscientist



3/1/07

ADJ SERVICES INC.

A Women Owned Business

705 Coleman Dr.
Longview, Texas756.05
Phone: 903-759-3111
Fax; 903-759-3126

March 1, 2007

Test for Hydraulic Conductivity

To: East Texas Environmental Services
317 Highland Dr.
Sulphur Springs, Texas 75482

Project No.: 10-6020
Wyrick- Bouma-07-148
P.O. No. verbal

Attn: Jim Wyrick

Project: Bouma Dairy
Hopkins Co
RCS #1

Mr. Wyrick;

As requested ADJ Services, Inc. has completed the soil testing for the above referenced project site. The purpose of the testing was to conduct hydraulic conductivity testing on a soil sample shipped to our Longview Office. The soil sample was shipped in two drive ring samplers and sealed to prevent moisture loss.

The samples were prepared and tested in accordance with ASTM D5084 Test Procedure. The test results are as follows;

	Site 1	Site 2
Test Procedure:	ASTM D5084	ASTM D5084
Specimen ID:	Bouma Dairy	Bouma Dairy
Soil Description:	Gray clay	Gray and yellow clay
Specimen Height:	1.37 inches	1.44 inches
Initial Moisture (%):	22.1 inches	23.1 inches
Final Moisture (%):	25.1 inches	25.4 inches
Surcharge: Yes psi	25 psi	25 psi
Hydraulic Conductivity (cm/sec)	3.8 x 10 -8 (cm/sec)	3.6 x 10 -8 (cm/sec)

Test meets minimum 1.0 x 10 -7 cm/sec for both samples

This should provide you with the information needed. Please contact me if you have any questions.

Very truly yours,
ADJ Services, Inc.
Co. Reg. No. F-1003

James Kim Winn, P.E. On behalf of ADJ Services, Inc.



3/1/07

Waste Utilization and Nutrient Management Plan

Bouma Dairy
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

TCEQ Permit Number:

Owner
Maiko Bouma
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

Type of Waste Plan:
Other AFO-CAFO Waste Plan
located in Hopkins County

Prepared By:

(Signature)
Jim C. Wyrick
Nutrient Management Specialist
Certificate Number = TX20049
Expiration Date = December 31, 2024
East Texas Environmental Services
317 Highland Dr.
Sulphur Springs, TX 75482
903-243-0400

This plan is based on:
590 -633 Plan V 4.0_5

11/14/24 4:29 PM

Waste Utilization and Nutrient Management Plan

RECORD KEEPING: Permit #:

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

EFFLUENT AND SOLIDS STORAGE & TESTING: Permit #:

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.

MORTALITY MANAGEMENT: (cont) Permit #:

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 APPLICATION: (cont) Permit #:

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.

EFFLUENT APPLICATION: (cont) Permit #:

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.

SOLIDS APPLICATION: (cont) Permit #:

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.

TABLES 1, 2 and 2a Permit #:

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.

Waste Utilization and Nutrient Management Plan

EXECUTIVE SUMMARY: Permit #:

This Nutrient Management Plan has fields that meet NMP and/or NUP requirements.

LOCATION AND PURPOSE OF THE PLAN

This animal operation is located in Hopkins 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 Solids . Approximately 999 head will be confined with the average weight of 1400 pounds. The animals will be confined 24 hours per day for 365 days per year.

Waste Utilization and Nutrient Management Plan

OPERATION AND MAINTENANCE: Permit #:

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:	**Jim C. Wyrick**	Date:	**11/14/2024**
Plan Approved by:	Jim C Wyrick	Date:	11/14/24
Producer Signature:		Date:	

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.

NMP will be discussed with Producer, after it is approved by TCEQ

Waste Utilization and Nutrient Management Plan

Table 1 - Estimated Effluent and Solids Quantities Produced Permit #:

Avg. Number of Animals	Type of Waste
999	Dairy Solids
	Dairy 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* 518

Estimated Tons Solids to be Land Applied Annually (on or off site)* 14,492.8

*From engineering design.

Estimated Nutrient Availabilty Effluent

	pounds/yr	Pounds / 1000 gal	Pounds / Acre Inch	
N	65	0.00	0.1	**
P2O5	418	0.03	0.8	
K2O	2,092	0.15	4.0	

** Effluent Values Based on Analysis dated: December 18, 2023

Estimated Nutrient Availabilty Solids

	pounds / yr	pounds / ton	
N	67	0.0	**
P2O5	431	0.0	
K2O	2,155	0.1	

** Solids Values Based on Analysis dated: December 18, 2023

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	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	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	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 or soil test P [1/] => 500 ppm in nutrient impaired TMDL areas.[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/ TMDL watersheds are designated by Texas Commission on Environmental Quality (TCEQ).

Waste Utilization and Nutrient Management Plan

Table 3 - Crop Removal Rates (For Information Only) Permit #:

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
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
3	39.0	Coastal Hay 4 cut, RG mod Graze M	NUP	Default	350	105	311
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
7	38.0	Common graze 1 AU/1 ac, SG mod graze M	NUP	Default	262	85	233
8	31.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
9	101.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233

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 #:

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)
14,493	1							
	2							
	3							
	4							
	5							
	6							
	7	38.0	Common graze 1 AU/1 ac, SG mod graze M	302	128	A	4308.5	163723
	8	31.0	Common graze 1 AU/1 ac, SG mod graze M	163	350	A	11782.2	365248
	9	101.0	Common graze 1 AU/1 ac, SG mod graze M	92	350	A	11782.2	1190000
Total Solids Application Acres								
170								
Application Allowable on-site (tons)								
1718971.1								
Adequate								
Solids to be used off-site (tons)								
0.0								

End of Table 4

Waste Utilization and Nutrient Management Plan

Table 5 - Nutrients Applied/Needs at Maximum Solids Rates Permit #:

	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
1							
2							
3							
4							
5							
6							
7	20	128	641	285	0	0	0
8	55	350	1752	345	0	0	0
9	55	350	1752	315	0	0	0

Waste Utilization and Nutrient Management Plan

Table 6 - Planned Solids Application Rates Permit #:

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)
1									
2									
3									
4									
5									
6									
7		38.0	Common graze 1 AU/1 ac, SG mod graze M	302	A	4308.5	100	4308.5	163723.4
8		31.0	Common graze 1 AU/1 ac, SG mod graze M	163	A	######	100	11782.2	365247.6
9		101.0	Common graze 1 AU/1 ac, SG mod graze M	92	A	######	100	11782.2	1190000.1
Acres		170.0							1718971.1
14493			Tons of wet solids produced Annually					Will the planned per acre application rates use all of the Solids?	YES
0			Tons to be used off-site at Max. rates					Tons to be used off-site at planned rates	0

Waste Utilization and Nutrient Management Plan

Table 7 - Nutrients Applied/Needed at Planned Solids Rates Permit #:

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
1							
2							
3							
4							
5							
6							
7	20	128	641	285	0	0	0
8	55	350	1752	345	0	0	0
9	55	350	1752	315	0	0	0

Waste Utilization and Nutrient Management Plan

Table 8 - Maximum Effluent Application Per Field Permit #:

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)
518	1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	266	136	A	168.2	12615
Source:	2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	149	350	A	433.9	19092
	3	39.0		Coastal Hay 4 cut, RG mod Graze M	280	158	A	195.9	7640
	4	64.0		Common graze 1 AU/1 ac, SG mod graze M	188	350	A	433.9	27770
Dairy Solids	5	30.0		Common graze 1 AU/1 ac, SG mod graze M	108	350	A	433.9	13017
	6	41.0		Common graze 1 AU/1 ac, SG mod graze M	145	350	A	433.9	17790
	7								
	8								
	9								
Total Effluent Application Acres									
293									
Maximum Effluent Application Allowable On-Site (ac in)									
97923									
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 #:

	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
1	21	136	679	300	0	0	0
2	55	350	1752	310	0	0	0
3	25	158	791	510	0	0	0
4	55	350	1752	345	0	0	0
5	55	350	1752	295	0	0	0
6	55	350	1752	335	0	0	0
7							
8							
9							

Waste Utilization and Nutrient Management Plan

Table 10 - Planned Effluent Application Rates Permit #:

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)
1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	266	A	168.2	1.0	1.7	128
2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	149	A	433.9	1.0	4.3	189
3	39.0		Coastal Hay 4 cut, RG mod Graze M	280	A	195.9	1.0	2	78
4	64.0		Common graze 1 AU/1 ac, SG mod graze M	188	A	433.9	1.0	4.3	275
5	30.0		Common graze 1 AU/1 ac, SG mod graze M	108	A	433.9	1.0	4.3	129
6	41.0		Common graze 1 AU/1 ac, SG mod graze M	145	A	433.9	1.0	4.3	176
7									
8									
9									
Acres	293.0								

Will the planned application rates use all of the Effluent?	975
	YES

Plan is based on: 590 -633 Plan V 4.0_5

Waste Utilization and Nutrient Management Plan

Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #:

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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
1	0	1	7	320	0	85	0
2	1	3	18	365	0	145	0
3	0	2	8	535	0	375	0
4	1	3	18	400	0	150	0
5	1	3	18	345	0	85	0
6	1	3	18	385	0	145	0
7							
8							
9							

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 #:

LMU / Field #	AWC (inches)	Restrictive Texture
1	3.52	Sandy Clay loam
2	1.71	Loamy Fine Sand
3	3.52	Sandy Clay loam
4	3.52	Sandy Clay loam
5	1.71	Loamy Fine Sand
6	1.71	Loamy Fine Sand
7		Loamy Fine Sand
8		
9		

LMU / Field #	AWC (inches)	Restrictive Texture

Waste Utilization and Nutrient Management Plan

Table 13 - Non Application Areas by Field Permit #:

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
1	15.0	0.0	0.0		15.0
2	0.0	0.0	0.0		
3	0.0	0.0	0.0		
4	5.0	0.0	0.0		5.0
5	10.0	0.0	0.0		10.0
6	0.0	0.0	0.0		
7	7.0	0.0	0.0		7.0
8	2.0	0.0	0.0		2.0
9	6.0	0.0	0.0		6.0

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
Totals	45.0	0.0	0.0	0.0	45.0

See Application Map for location of buffers

Total 590-633 application acres: 463.0

Total 590-633 Field Acres: 508.0

Waste Utilization and Nutrient Management Data Entries

General Data

Date :	11/14/2024
Farmer Name :	Bouma Dairy
County in which the Land is located :	Hopkins
Type of Waste Plan :	Other AFO-CAFO Waste Plan
Is this plan in a TMDL watershed for nutrients? Yes or No :	No
Is any field PERMITTED by TCEQ? Yes or No :	Yes
Permit # :	

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 :	999
Approximate Weight :	1400
Days per year in confinement :	365
Hours per day confined :	24
ACRE FEET of effluent to be irrigated* :	43.17
Estimated annual gallons of effluent to be irrigated/applied annually :	14066858.16
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)* :	2000
Is this the first Year of the AFO-CAFO Operation? :	No

Analysis Information

Effluent Information

Date of Analysis:	12/18/2023
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	0.0021
Phosphorus % From Analysis:	0.0047
Potassium % From Analysis:	0.0449
Moisture % From Analysis:	86.2

Manure / Solids Information

Date of Analysis:	12/18/2023
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	0.0021
Phosphorus % From Analysis:	0.0047
Potassium % From Analysis:	0.0449
Moisture % From Analysis:	86.2
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: 590 -633 Plan V 4.0

Printed on: 11/14/24 4:29 PM

Field and Buffer Entries

Permit #:

Printed on: 11/14/24 4:29 PM

Plan is based on: 590 -633 Plan V 4.0_5

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	
1	90	15			0	15.0	75.0	
2	44	0				0.0	44.0	
3	39	0				0.0	39.0	
4	69	5				5.0	64.0	
5	40	10				10.0	30.0	
6	41	0				0.0	41.0	
7	45	7				7.0	38.0	
8	33	2				2.0	31.0	
9	107	6				6.0	101.0	

Soil Test, Crop Information and Plant Analysis Data Entries

Printed on: 11/14/24 4:29 PM Plan is based on: 590 -633 Plan V 4.0_5 Permit #:

Soil Test Analysis				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)	Plant Analysis & Yield (optional) Use Only When Crop Removal is Required			
N (ppm)	P (ppm)	K (ppm)	Lime (enter amt or leave blank)							% N	% P	% K	Yield Air Dry Production (lbs/ac/yr)
39	266	154			1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
17	149	82			2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
2	280	52			3	39.0	Coastal Hay 4 cut, RG mod Graze M	E	N				
10	188	38			4	64.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
36	108	124			5	30.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
16	145	48			6	41.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
58	302	175			7	38.0	Common graze 1 AU/1 ac, SG mod graze M	S	N				
11	163	38			8	31.0	Common graze 1 AU/1 ac, SG mod graze M	S	N				
26	92	31			9	101.0	Common graze 1 AU/1 ac, SG mod graze M	S	N				

Solids Application Rate Entries

Solids - Set the Planned Application Rates

Permit #:

14493 "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
1							
2							
3							
4							
5							
6							
7	38.0	Common graze 1 AU/1 ac, SG mod graze M	302	175	Annual	4308.5	100.0
8	31.0	Common graze 1 AU/1 ac, SG mod graze M	163	175	Annual	11782.2	100.0
9	101.0	Common graze 1 AU/1 ac, SG mod graze M	92	175	Annual	11782.2	100.0

Printed on: 11/14/24 4:29 PM

Plan is based on: 590 -633 Pl

Effluent Application Rate Entries

Effluent - Set the Planned Application Rates

Permit #:

14066858	Gallons of Effluent to be used annually				Will the planned rates use all of the effluent?				Yes
518	Acre inches of Effluent to be used annually								
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)
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	266	175	Annual	168.2	1.0	1.7	128
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	149	175	Annual	433.9	1.0	4.3	189
3	39.0	Coastal Hay 4 cut, RG mod Graze M	280	225	Annual	195.9	1.0	2	78
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	188	175	Annual	433.9	1.0	4.3	275
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	108	175	Annual	433.9	1.0	4.3	129
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	145	175	Annual	433.9	1.0	4.3	176
7									
8									
9									
								Total Effluent This Page	975

Printed on: 11/14/24 4:29 PM

Plan is based on: 590 -633 Plan V 4.0_5

Available Water Capacity Entries

Printed on: 11/14/24 4:30 PM Plan is based on: 590 -633 Plan V 4.0_5 Permit #:

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																
1	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
2	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
3	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
4	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
5	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
6	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				

PI Index by Field

Printed on: 11/14/24 4:27 PM

This plan is based on: 590 -633 Plan V 4.0_2

Permit #:

Client Name: Bouma Dairy

Planner: Jim C. Wyrick

Date: 11/14/2024

Location: Hopkins

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	2.0%	61	8	0	1.5	0	4	0	1	0	14.5	Medium	11/14/23
2	Coastal graze 1 AU/1 ac, SG mod graze	2.0%	61	8	4	0.75	4	4	2.5	1	0	24.25	Medium	11/14/23
3	Coastal Hay 4 cut, RG mod Graze	2.0%	58	8	0	1.5	0	4	0	0	0	13.5	Medium	11/14/23
4	Common graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	1.25	1	0	15.75	Medium	11/14/23
5	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	0.75	0	4	5	0	0	17.75	Medium	11/14/23
6	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	0.75	0	4	5	0	0	17.75	Medium	11/14/23
7	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	3	0	4	5	0	0	20	Medium	11/14/23
8	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	Medium	11/14/23
9	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	Medium	11/14/23

TEXAS A&M AGRILIFE EXTENSION

Bouma
LMU 1

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979-845-4816 (phone)
979-845-5958 (FAX)
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643758
Customer Sample ID: 158
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended
pH	5.2	(5.8)		Strongly Acid							
Conductivity	97	(-)	umho/cm	None							
Nitrate-N	39	(-)	ppm**					CL*			20 lbs N/acre
Phosphorus	266	(50)	ppm								0 lbs P2O5/acre
Potassium	154	(150)	ppm								0 lbs K2O/acre
Calcium	609	(180)	ppm								0 lbs Ca/acre
Magnesium	148	(50)	ppm								0 lbs Mg/acre
Sulfur	17	(13)	ppm								0 lbs S/acre
Sodium	43	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											0.25 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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Bouma
LMU 2

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643759
Customer Sample ID: 159
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended
pH	5.0	(5.8)		Strongly Acid							
Conductivity	53	(-)	umho/cm	None			CL*				
Nitrate-N	17	(-)	ppm**								65 lbs N/acre
Phosphorus	149	(50)	ppm								0 lbs P2O5/acre
Potassium	82	(150)	ppm								110 lbs K2O/acre
Calcium	532	(180)	ppm								0 lbs Ca/acre
Magnesium	110	(50)	ppm								0 lbs Mg/acre
Sulfur	16	(13)	ppm								0 lbs S/acre
Sodium	24	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											0.30 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
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TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
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College Station, TX 77843-2478
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Bouma
LMU 3

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643761
Customer Sample ID: 160
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended
pH	4.7	(5.8)		Strongly Acid							
Conductivity	36	(-)	umho/cm	None				CL*			
Nitrate-N	2	(-)	ppm**								95 lbs N/acre
Phosphorus	280	(50)	ppm								0 lbs P2O5/acre
Potassium	52	(150)	ppm								160 lbs K2O/acre
Calcium	832	(180)	ppm								0 lbs Ca/acre
Magnesium	115	(50)	ppm								0 lbs Mg/acre
Sulfur	17	(13)	ppm								0 lbs S/acre
Sodium	26	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											0.70 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
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TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979-845-4816 (phone)
979-845-5958 (FAX)
Visit our website: http://soiltesting.tamu.edu

Boyma
LMU 4

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643762
Customer Sample ID: 161
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.0	(5.8)		Strongly Acid	
Conductivity	30	(-)	umho/cm	None	
Nitrate-N	10	(-)	ppm**	CL*	80 lbs N/acre
Phosphorus	188	(50)	ppm		0 lbs P2O5/acre
Potassium	38	(150)	ppm		185 lbs K2O/acre
Calcium	373	(180)	ppm		0 lbs Ca/acre
Magnesium	68	(50)	ppm		0 lbs Mg/acre
Sulfur	14	(13)	ppm		0 lbs S/acre
Sodium	21	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.95 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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Bouma
LMU 5

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643763
Customer Sample ID: 162
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.8	(5.8)		Strongly Acid	
Conductivity	108	(-)	umho/cm	None CL*	
Nitrate-N	36	(-)	ppm**		25 lbs N/acre
Phosphorus	108	(50)	ppm		0 lbs P2O5/acre
Potassium	124	(150)	ppm		40 lbs K2O/acre
Calcium	1,037	(180)	ppm		0 lbs Ca/acre
Magnesium	162	(50)	ppm		0 lbs Mg/acre
Sulfur	26	(13)	ppm		0 lbs S/acre
Sodium	78	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.80 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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Boyma
LMU 6

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643764
Customer Sample ID: 163
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.5	(5.8)		Strongly Acid	
Conductivity	82	(-)	umho/cm	None CL*	
Nitrate-N	16	(-)	ppm**		65 lbs N/acre
Phosphorus	149	(50)	ppm		0 lbs P2O5/acre
Potassium	48	(150)	ppm		170 lbs K2O/acre
Calcium	560	(180)	ppm		0 lbs Ca/acre
Magnesium	102	(50)	ppm		0 lbs Mg/acre
Sulfur	20	(13)	ppm		0 lbs S/acre
Sodium	68	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.70 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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Department of Soil and Crop Sciences
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College Station, TX 77843-2478
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Bouma
LMU 7

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643765
Customer Sample ID: 164
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	5.2	(5.8)		Strongly Acid	
Conductivity	106	(-)	umho/cm	None CL*	
Nitrate-N	58	(-)	ppm**		0 lbs N/acre
Phosphorus	302	(50)	ppm		0 lbs P2O5/acre
Potassium	175	(150)	ppm		0 lbs K2O/acre
Calcium	709	(180)	ppm		0 lbs Ca/acre
Magnesium	135	(50)	ppm		0 lbs Mg/acre
Sulfur	22	(13)	ppm		0 lbs S/acre
Sodium	35	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.25 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Boyma

LMU 8

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979-845-4816 (phone)
979-845-5958 (FAX)
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643766
Customer Sample ID: 165
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended
pH	4.4	(5.8)		Strongly Acid							
Conductivity	35	(-)	umho/cm	None			CL*				
Nitrate-N	11	(-)	ppm**								75 lbs N/acre
Phosphorus	163	(50)	ppm								0 lbs P2O5/acre
Potassium	38	(150)	ppm								185 lbs K2O/acre
Calcium	558	(180)	ppm								0 lbs Ca/acre
Magnesium	39	(50)	ppm								5 lbs Mg/acre
Sulfur	14	(13)	ppm								0 lbs S/acre
Sodium	15	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											0.70 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Bouma
LMU 9

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979-845-4816 (phone)
979-845-5958 (FAX)
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643767
Customer Sample ID: 166
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	5.0	(5.8)		Strongly Acid.	
Conductivity	50	(-)	umho/cm	None CL*	
Nitrate-N	26	(-)	ppm**		45 lbs N/acre
Phosphorus	92	(50)	ppm		0 lbs P2O5/acre
Potassium	31	(150)	ppm		195 lbs K2O/acre
Calcium	748	(180)	ppm		0 lbs Ca/acre
Magnesium	74	(50)	ppm		0 lbs Mg/acre
Sulfur	19	(13)	ppm		0 lbs S/acre
Sodium	27	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.40 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

EXAS A&M
GRILIFE
EXTENSION

Bouma

118

Bio-Solid Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

Visit our website:
http://soiltesting.tamu.edu

ated for:
nvironmental Services

hland Dr.
UR SPRINGS, TX 75482

rocessed: 12/18/2023

e(s) from Hopkins County

1: Based on analysis of oven dried sample(s)

atory #	Customer Sample Identification	Total Nitrogen %	Total Phosphorus %	Total Potassium %	Total Calcium %	Total Magnesium %	Total Sodium %	Total Zinc ppm	Total Iron ppm
								37.02	2244.64
1472	118	0.55	0.07	6.02	0.53	0.04	0.04		

oratory #	Total Copper ppm	Total Manganese ppm	Total Sulfur ppm	Total Boron ppm	% Dry Matter
472	7.68	37.78	926.62	2.26	47.8

tion 2: Pounds of nutrient per ton on an as received basis

boratory #	Customer Sample Identification	Nitrogen lbs/wet ton	P_2O_5 lbs/wet ton	K_2O lbs/wet ton	Calcium lbs/wet ton	Magnesium lbs/wet ton	Sodium lbs/wet ton	Zinc lbs/wet ton	Iron lbs/wet ton
									2.148
021472	118	5.29	1.52	69.18	5.08	0.43	0.42	0.035	

aboratory #	Copper lbs/wet ton	Manganese lbs/wet ton	Sulfur lbs/wet ton	Boron lbs/wet ton
5021472	0.007	0.036	0.887	0.002

TEXAS A&M AGRILIFE EXTENSION

Bio-Liquid Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

Visit our website:
http://soiltesting.tamu.edu

Bouma
100

generated for:
Texas Environmental Services

Highland Dr.
PHUR SPRINGS, TX 75482

Printed: 12/18/2023

ple(s) from Hopkins County

ion 1: Bio-liquids are analyzed on an as received basis

oratory #	Customer Sample Identification	Total Nitrogen %	Total Phosphorus %	Total Potassium %	Total Calcium %	Total Magnesium %	Total Sodium %	Total Zinc ppm	Total Iron ppm
21454	100	0.0003	0.0039	0.0367	0.0055	0.0032	0.0350	2.22	1.56
21455	101	0.0010	0.0039	0.0749	0.0063	0.0040	0.0221	2.32	1.33
21456	102	0.0031	0.0043	0.0260	0.0258	0.0029	0.0255	3.00	1.21
21457	103	0.0094	0.0104	0.1243	0.0280	0.0182	0.0874	5.01	1.87
21458	104	0.0060	0.0100	0.0734	0.0245	0.0077	0.0408	3.94	3.56

oratory #	Total Copper ppm	Total Manganese ppm
454	0.06	0.00
21455	0.06	0.10
21456	0.24	1.11
21457	0.75	2.40
21458	4.16	2.33

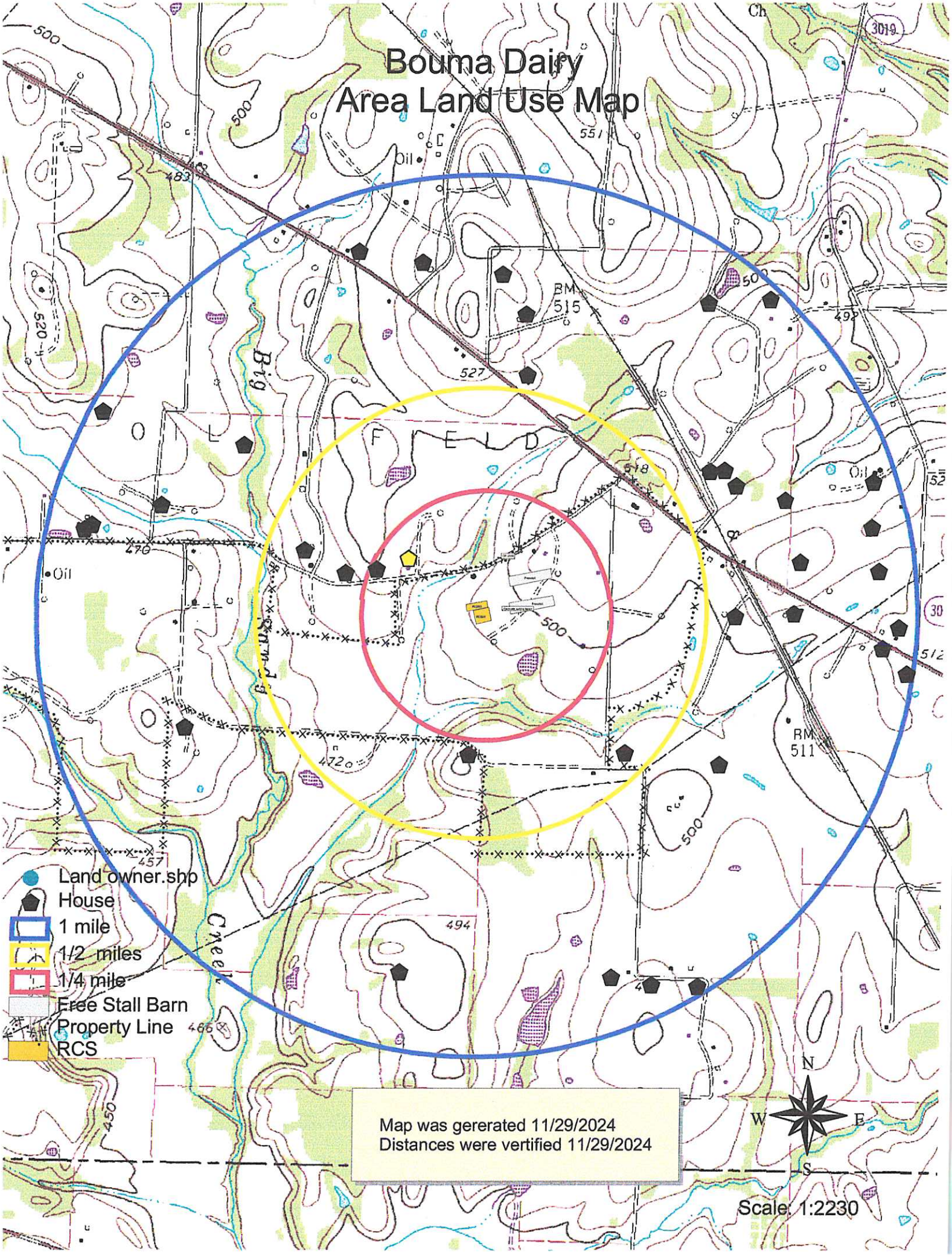
on 2: Interpretation of Bio-Liquid Analysis----pounds of nutrients per acre inch of effluent.

oratory #	Customer Sample Identification	Nitrogen lbs/acre inch	P_2O_5 lbs/acre inch	K_2O lbs/acre inch	Calcium lbs/acre inch	Magnesium lbs/acre inch	Sodium lbs/acre inch	Zinc lbs/acre inch	Iron lbs/acre inch
21454	100	1	20	100	13	7	79	0.50	0.35
21455	101	2	20	203	14	9	50	0.53	0.30
21456	102	7	22	71	58	6	58	0.68	0.27
21457	103	21	54	338	63	41	198	1.13	0.42
21458	104	14	52	199	56	18	92	0.89	0.81

ratory #	Copper lbs/acre inch	Manganese lbs/acre inch
21454	0.01	0.00
21455	0.01	0.02
456	0.06	0.25
21457	0.17	0.54
21458	0.94	0.53

acre inch equals 27150 gallons

Bouma Dairy
Area Land Use Map



Odor Control Plan
for
Bouma Dairy

Odors from the facility are mainly associated with agricultural operations, including other CAFOs. Odors from CAFO's are not consistently predictable, and may have a periodic impact on nearby residents depending on sources and weather conditions. Odors may be less noticeable during calm days and tend to be strongest during the cleaning of animal buildings and during withdrawal of water from the lagoons and land application. It is the intention of the faculty to limit odors to an absolute minimum.

The following are practices to be used for an Odor Control Plan:

- Pens will be scraped off on as needed basis. Solid waste will be removed as needed to best reduce nuisance odors.
- All dead animals should be removed within 24 hours or will be buried at a minimum depth of three feet in designated area.
- Cleaning of the barns will be done at times consistent with the least nuisance problems.
- Irrigation will be done during daylight hours when wind velocity and humidity are lower. Irrigation will be monitored by an employee or management trained in waste disposal. This training will be accomplished by attending waste management training provided by the Agriculture Extension Service and TCEQ
- All lounging areas around the barn will be maintained so that there is no ponding of liquids.
- Pump retention ponds before the liquid level reaches the 24 hr-25 yr marker.
- The RCS is properly sized using USDA-Natural Resource Conservation Service Waternuterr spreadsheet.
- In an effort to reduce air-bound particulate the dairy will add moisture to feed when mixing under windy conditions. Controlling the speed of farm vehicles will reduce dust generated at the facility
- The dairy would urge anyone who lives in the vicinity of the dairy, to notify the management when a perceived problem develops so that the source can be identified immediately.
- Dust when necessary will be controlled by water the area until the dust is controlled.

Responses to comments for WQ0005477000 (EPA I.D. No. TXG920057)
Applicant Name: Maiko Hessel Bouma (CN601231814) Site Name: Bouma Dairy Farm (RN102334539)

1. CAFO Application (TCEQ-00728) Section 3, Item D
The customer is an individual type, not a Sole Proprietorship (DBA). Please provide a revised page to indicate the customer type as individual and complete and provide Attachment 1 –Individual Information.

See attachment

2. CAFO Application (TCEQ-00728) Section 12 – Affected Landowner Information
 The affected landowner maps do not clearly show and label 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. Please provide an affected landowner map that clearly outlines and labels all applicant property boundaries, the 500-foot radius of their property boundaries, and all adjacent properties.
 Please provide the affected landowner list formatted for mailing labels (Avery 5160) in a Microsoft Word document.

See attachment

3. CAFO Application (TCEQ-00728) Section 13; Technical Information (TCEQ-00760) – Attachments.
The maps in the application, including the USGS, SPIF, vicinity, site, runoff control, floodplain, soil, and LMU maps are not legible. Please provide a legible and full color electronic copy of each map that clearly shows and labels all required items.

See attachment

4. Section I, item 2 & 3 on page 1, Thank you for addressing this item. However, as per Section 3, item B on page 2 of the application the CN number is indicated CN601231814 and the applicant's name is Maiko Hessel Bouma, we used this information to create the permit, and the regulated entity name 'Bouma Dairy Farm and the RN number is RN102334539. Please update the CDF and the application. Please update the CDF and the application accordingly.

See attachment

5. Section III, item 23, of the Core Data Form (CDF): Thank you for addressing this item. However, the facility location address is in correct and does not consistent with PLS English and Spanish. Please update this item.

See attachment

6. Section 9, item D on page 6 of the application: thank you for addressing this item. However, the county name is not indicated. Please update and submit a revised page.

See attachment

7. The following is a portion of the NORI which contains information relevant to your application. Please read it carefully and indicate if it contains any errors or omissions. The complete notice will be sent to you once the application is declared administratively complete.

APPLICATION. Maiko Hessel Bouma, 19008 Farm-to-Market Road 3079, Chandler, Texas 75758, has applied to the Texas Commission on Environmental Quality (TCEQ) for proposed Wastewater Permit No. WQ0005477000 (EPA I.D. No. TXG920057) for a Concentrated Animal Feeding Operation (CAFO) to authorize the operation of a 999 head count dairy facility. The facility is located at 4252 County Road 2408, near the city of Chandler, in Hopkins County, Texas 75494. TCEQ received this application on December 31, 2024. The permit application will be available for viewing and copying at Texas A&M AgriLife extension Service, 1200 West Houston, Sulphur Springs, in Hopkins 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/cafoapplications.
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=-95.32861,32.980555&level=18 Further information may also be obtained from Maiko Hessel Bouma at the address stated above or by calling Mr. Maiko Bouma, OWNER, at 903-855- 2748.

Chandler should be changed to Winnsboro.

8. The application indicates that public notices in Spanish are required. After confirming the portion of the NORI above does not contain any errors or omissions, please use the attached template to translate the NORI into Spanish. Only the first and last paragraphs are unique to this application and require translation. Please provide the translated Spanish NORI in a Microsoft Word document.

The NOTI is correct see attachment

9. Please provide an electronic copy of the complete application in a single PDF file. The electronic copy may be submitted via email to WQ-ARPTeam@tceq.texas.gov (25MB size file or smaller) or via TCEQs file transfer protocol (FTP) server using the following steps.

a. Sign in and upload your application as a single PDF file using the TCEQ FTP server:

https://ftps.tceq.texas.gov/index.php.
b. Share the uploaded file to the email address: WQDeCopy@tceq.texas.gov.
For complete instructions on using the TCEQ FTP server, please visit:
https://ftps.tceq.texas.gov/help/. For other questions about the submittal of electronic copies,
please view the frequently asked questions .

Attachment 1
Individual Information

Complete this attachment if the facility owner or co-applicant is an individual. Make additional copies of this attachment if both are individuals.

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

Full Legal Name, including middle name: MAIKO HESSEL BOUMA

Driver's License or State Identification Number: XXXXXX

State that Issued the License or Identification Number: Texas

Date of Birth: XXXXX

Mailing Address: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO, TX 75494 4100

Phone Number: 903 855 2748 Fax Number: na

E-mail Address: boumadairy@hotmail.com

For TCEQ Use Only

Customer Number _____
Regulated Entity Number _____
Permit Number _____

Mailing Address: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO, TX 75494 4100

Phone Number: 903 855 2748 Fax Number: na

E-mail Address: boumadairy@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: Click here to enter text

What is the Charter Filing Number issued by the Texas Secretary of State: Click here to enter text

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?

Click here to enter text

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 co-applicant?

Mailing Address: Click here to enter text

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

Phone Number: Fax Number: Click here to enter text

E-mail Address: Click here to enter text

HOPKINS COUNTY APPRAISAL DISTRICT

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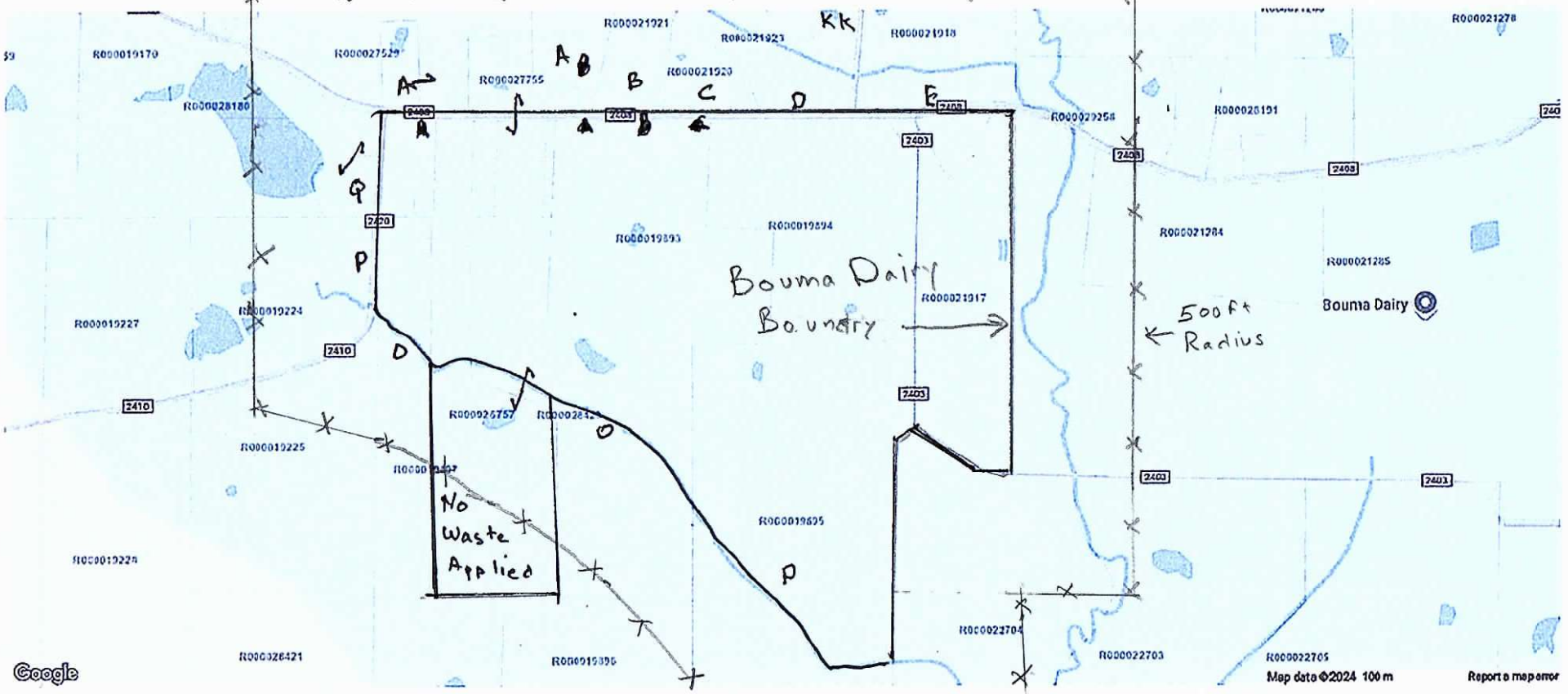
Property Year 2024 Map/GIS

Property ID: R000013309 Geo ID: 65.0307.000.013.01

Information Updated 10/23/2024

< Previous Property | 12 / 27 Next Property >

MAP A



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MAP F
↓

MAP A ↑

HOPKINS COUNTY

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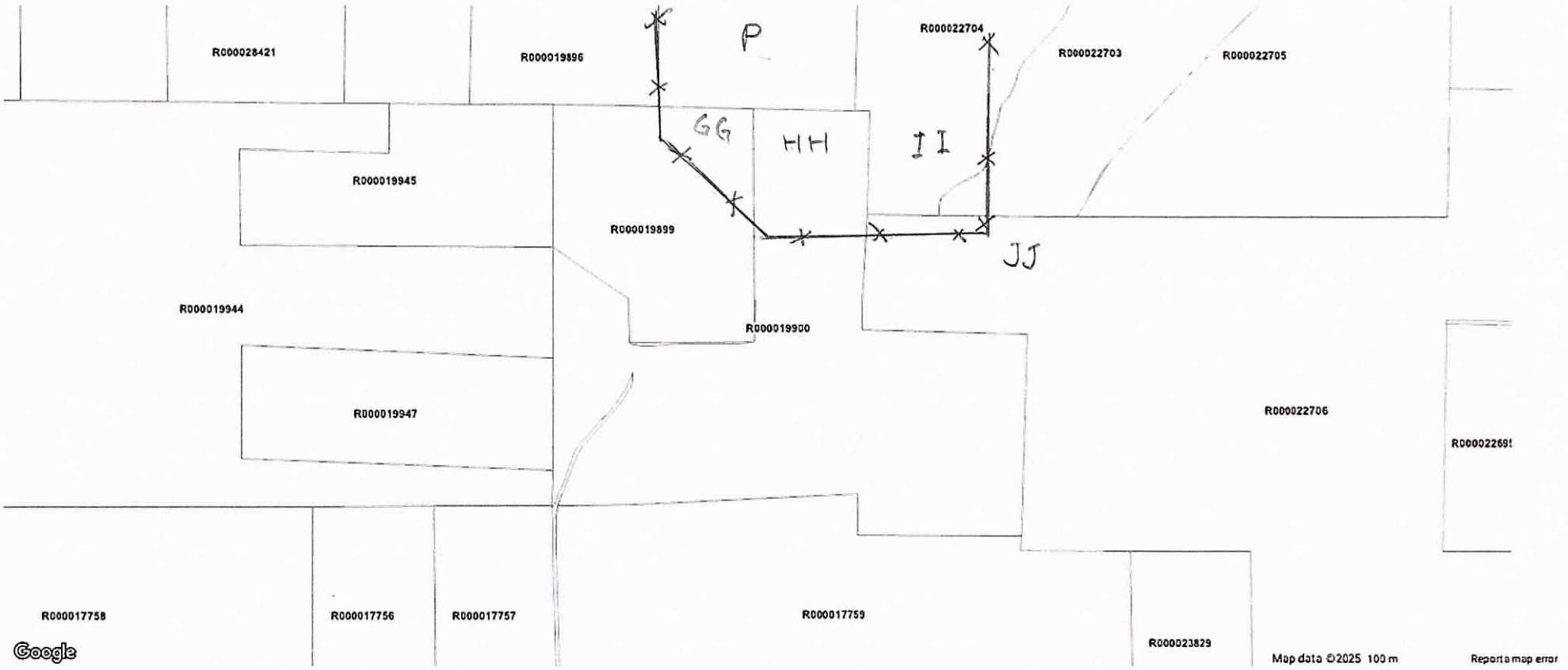
MAP F

Property Year 2024 Map/GIS

Property ID: R000015062 Geo ID: 65.0459.000.002.02

Information Updated 2/3/2025

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MAPA ↑

HOPKINS COUNTY

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MAP G

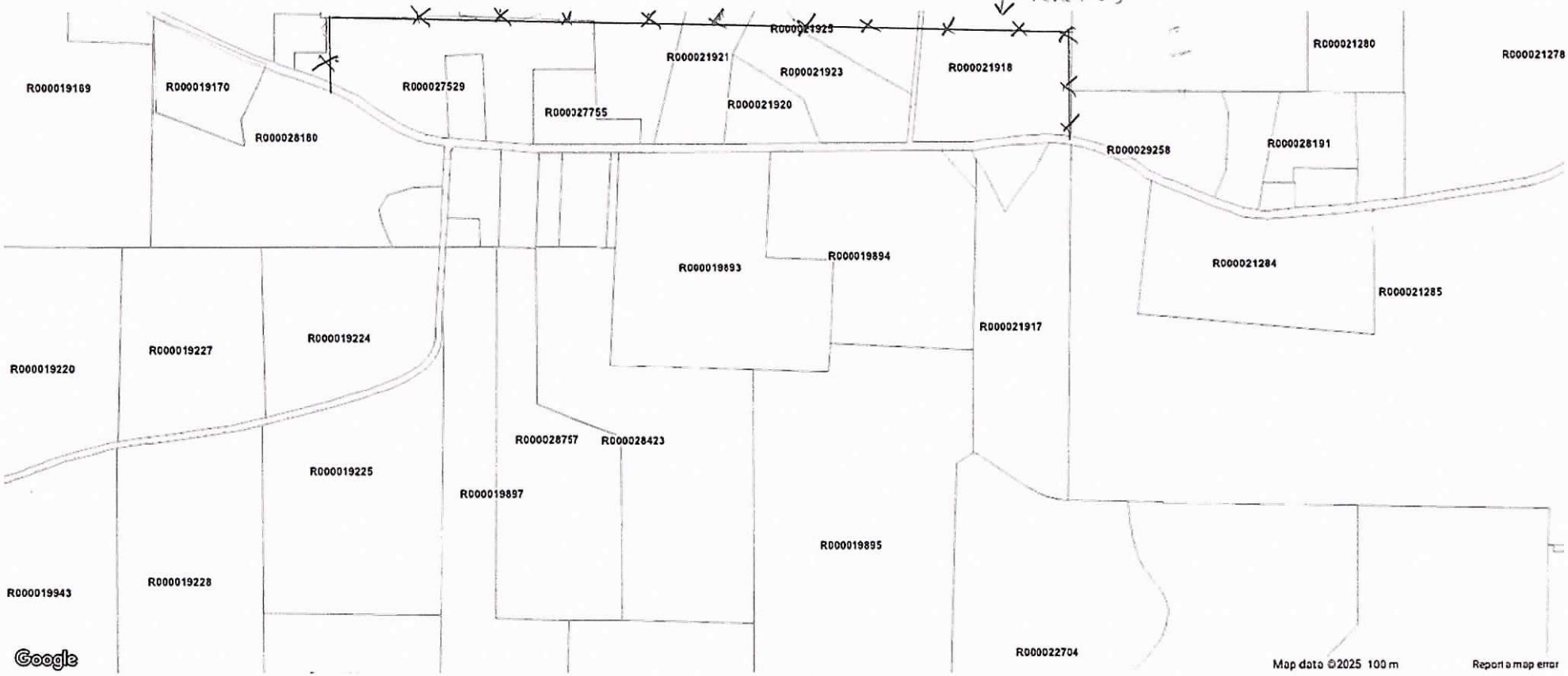
Property Year 2024 Map/GIS

Property ID: R000015062 Geo ID: 65.0459.000.002.02

Information Updated 2/3/2025

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500 ft Radius



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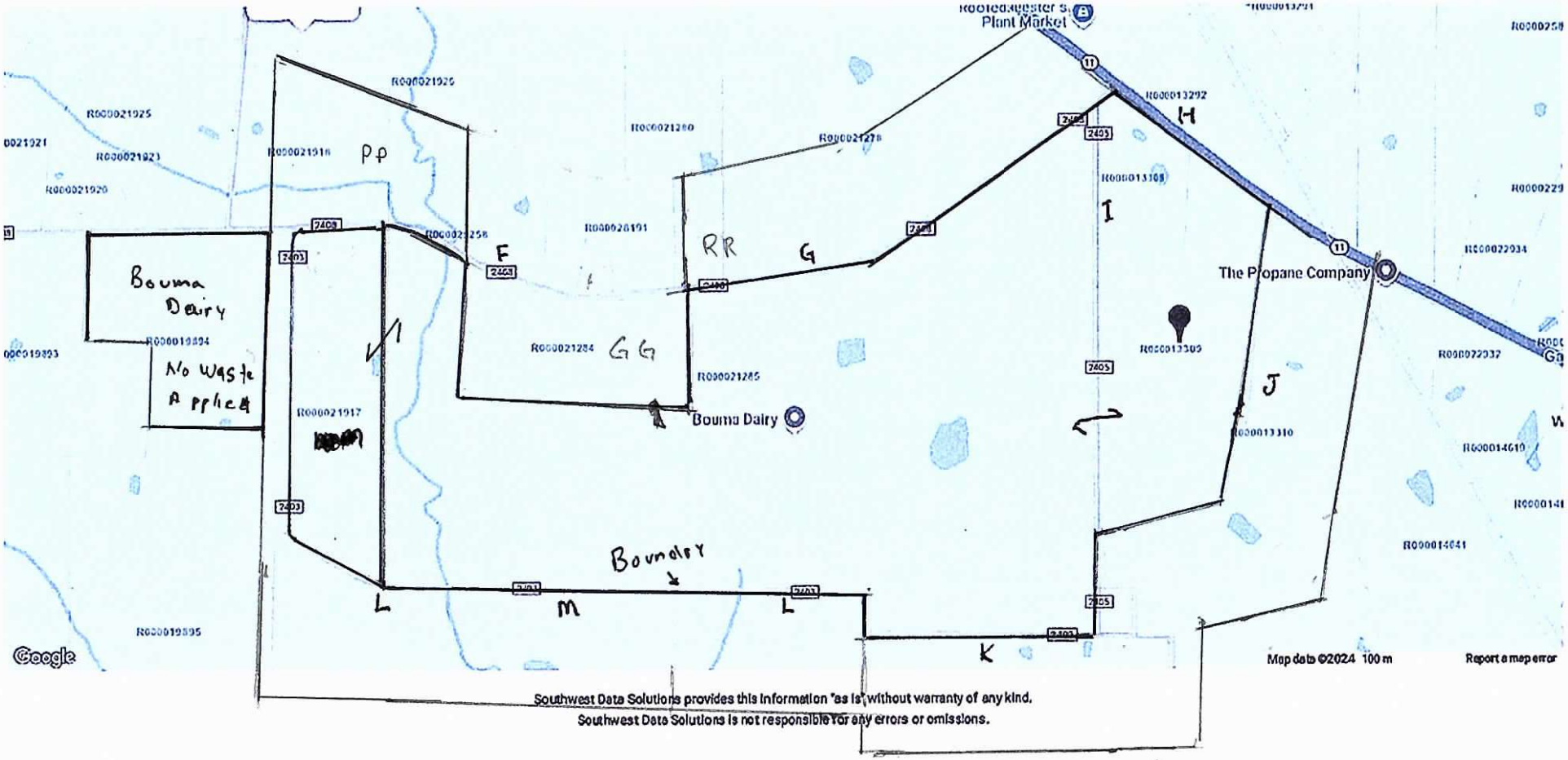
HOPKINS COUNTY
APPRAISAL DISTRICT

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Property Year 2024 Map/GIS
Property ID: R000013309 Geo ID: 65.0307.000.013.01

MAP B

Information Updated 10/23/2024
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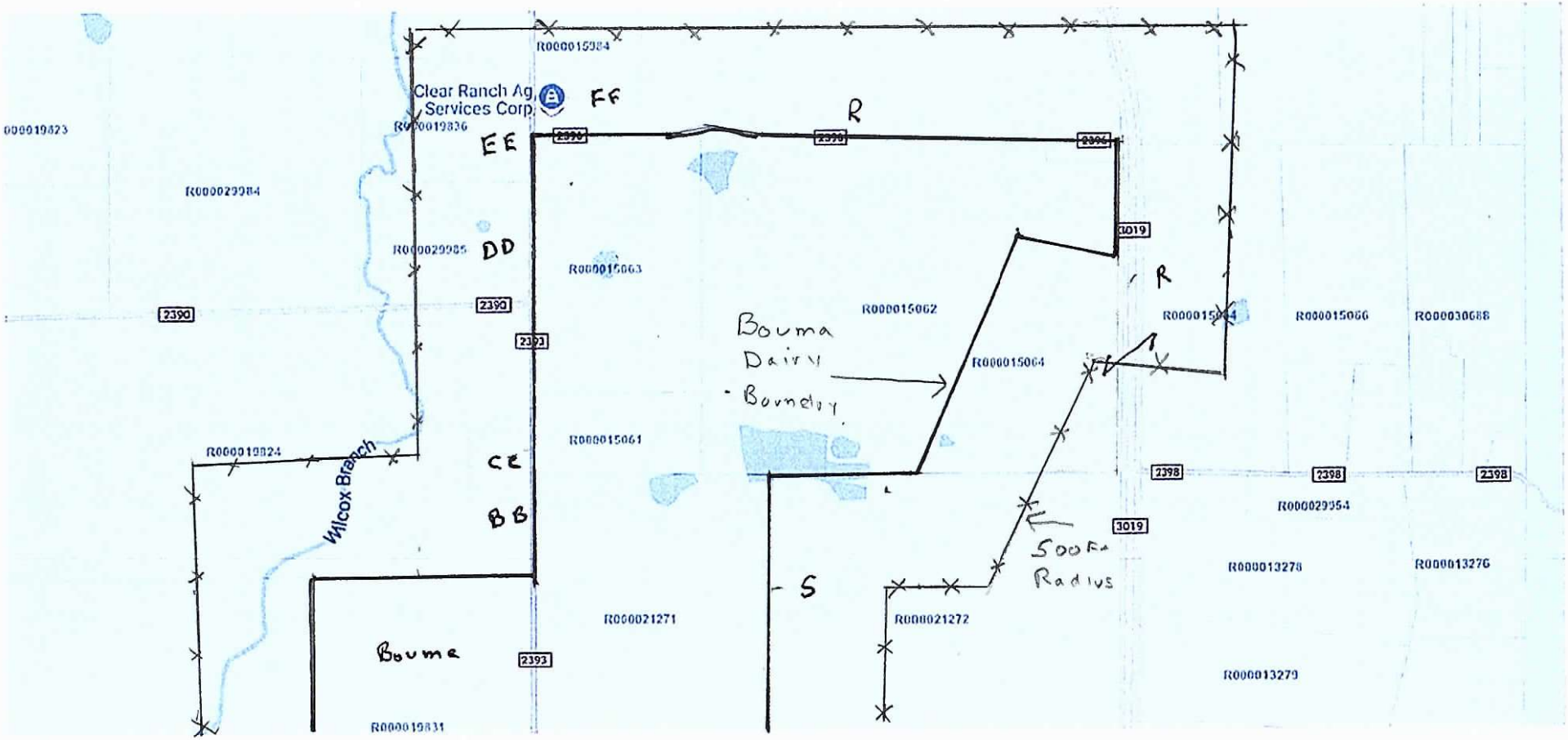
HOPKINS COUNTY
APPRAISAL DISTRICT

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MAP D

Property Year 2024 Map/GIS
Property ID: R000021285 Geo ID: 65.0898.000.005.01

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Google

Map data ©2024 100 m Report a map error

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MAP E ↓

MAP D ↑

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APPRAISAL DISTRICT

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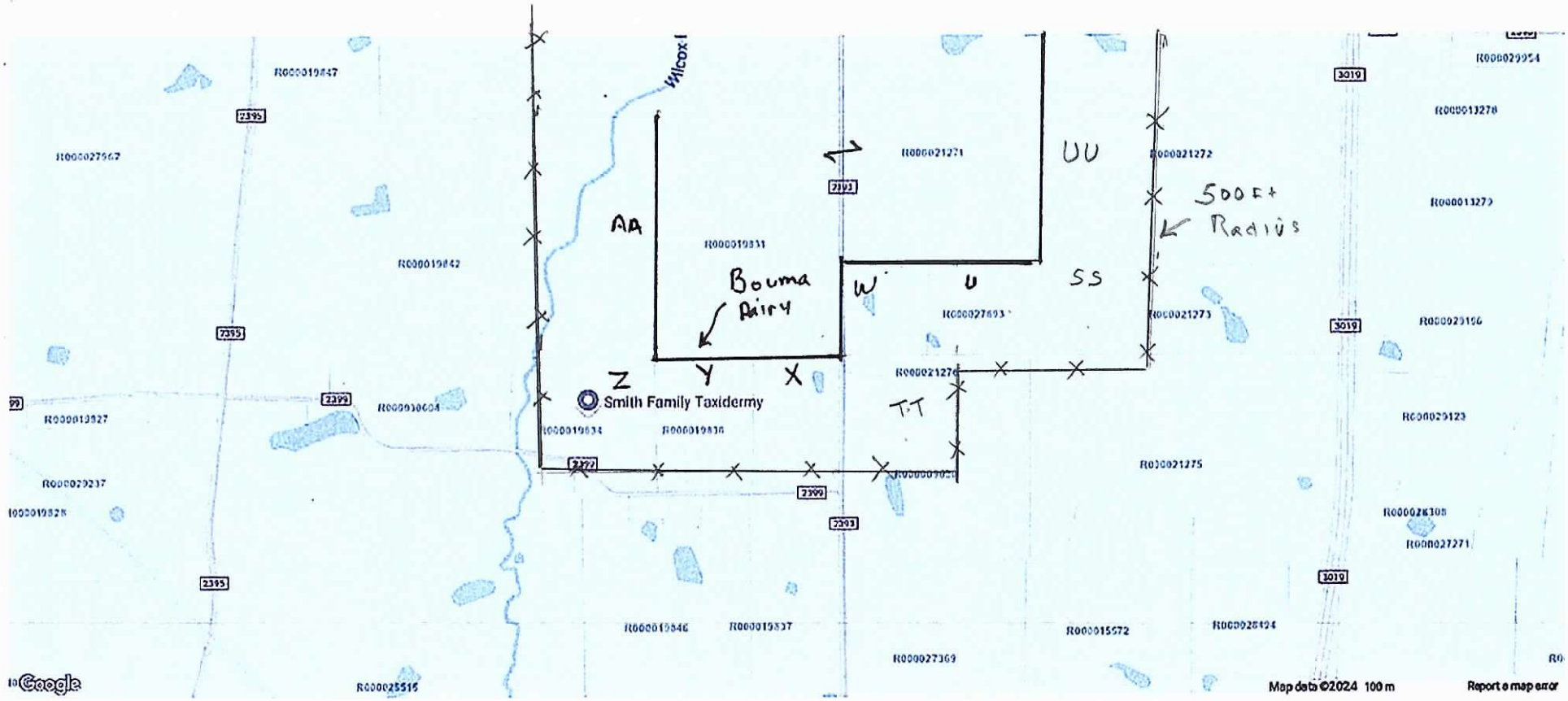
MAP E

Property Year 2024 Map/GIS

Property ID: R000021285 Geo ID: 65.0898.000.005.01

Information Updated 10/24/2024

« Previous Property 19 / 27 | Next Property »



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Bouma Dary Land Owners Map

A	R000027529 R000019171	AISE J & CHARLOTTE BOUMA 902 MAIN ST HALSTEAD, KS 67056
B	R000021921	DUSTIN BRODY ALLEN 2430 CR 2410 WINNSBORO, TX 75494
C	R000021920	MISTY GAYLE & JEFFERY ALAN ETAL MCBRIDE 3259 CR 2408 WINNSBORO, TX 75494
D	R000021923	SHANE NICHOLS 2745 CR 2403 WINNSBORO, TX 75494
E	R000021918	CARL & KATHERINE KASTNER 1195 CR 2403 WINNSBORO, TX 75494
F	R000021279	JODY W & ROSE M RIOJAS 3999 CR 2408 WINNSBORO, TX 75494
G	R000021278	JOHN P & LESLIE A MOORE P O BOX 724 WINNSBORO, TX 75494
H	R000013292	GEORGE JAMES PIERCE 20343 HWY 11 E WINNSBORO, TX 7549
I	R000013308	LAUZON PETER G & SHEILA M REVOCABLE LIVING TRUST PETER G LAUZON & SHEILA M LAUZON AS CO TRUSTEES 20262 HWY 11 E WINNSBORO, TX 75494
J	R000013310	PHILLIP GILBREATH 7750 LYNDON B JOHNSON FWY 201 DALLAS, TX 75251
K	R000022685	BLAKE C & REGINA BAIN 4360 CR 2310 SULPHUR SPRINGS, TX 75482
L II	R000022705 R000022704	DENNIS RAY & SHERRY G NICHOLS 2342 CR 2403 WINNSBORO, TX 75494

Bouma Dary Land Owners Map

M	R000022703	ROYCE EUGENE & VERA LEE CARTER P O BOX 941 VAN ALSTYNE, TX 75495
N HH	R000019900 R000019900	RAGSDALE LAND COMPANY LLC PO BOX 822 WINNSBORO, TX 75494
O	R000028423 R000019895 R000019897	AISE & CHARLOTTE BOUMA 902 MAIN ST HALSTEAD, KS 67056
P	R000019224	DUSTIN BRODY ALLEN 2430 CR 2410 WINNSBORO, TX 75494
Q	R000028089 R000028180	SHIRLEY JACKSON MAY 2822 CR 2408 WINNSBORO, TX 75494-4136
R	R000015060 R000015064 R000015064	TEMPLEMAN LIVING TUST TRUSTEE IRIS ANNETTE TEMPLEMAN 1901 WISTERIA WAY MCKINNEY, TX 75071
S	R000021272	RIDDLES ELLEN GRUBBS & GARY NEAL GRUBBS 1205 CEDARWOOD DR FLOWER MOUND, TX 75028
U	R000027893	KARI GAYE NOLEN 1577 CR 2393 WINNSBORO, TX 75494
W	R000021274	CHARLESTON DAVID GREEN 203 E CEDAR ST WINNSBORO, TX 75494
X	R000027089	JOHN DAVID & ANNA LAURISSA STONE 1923 CR 2399 WINNSBORO, TX 75494-4241
Y	R000019838	AMELIA ANN L/E GREEN LAQUITA RACHELLE SAVAGE 1801 CR 2399 WINNSBORO, TX 7549
Z	R000019834	RICHARD & TAMMY SMITH 1671 CR 2399 WINNSBORO, TX 75494

Bouma Dary Land Owners Map

AA	R000019842	ANTHONY TY & TAMMY LYNNE MARLER 1179 CR 2399 WINNSBORO, TX 75494
BB	R000019824	ANTHONY TY & TAMMY LYNNE MARLER 1179 CR 2399 WINNSBORO, TX 75494
CC	R000026415	PHUONG LAN T TRAN 1394 CR 2393 WINNSBORO, TX 75494
DD	R000029985	WIEPIE & JENNIFER SANDLIN JONGSMA 4705 CR 2390 WINNSBORO, TX 75494
EE	R000019836	ANASTASIA & MATTHEW PERRY PO BOX 917 WINNSBORO, TX 75494
FF	R000015984	RAMONA L LONG 1143 CR 2393 WINNSBORO, TX 75494

MABRY JOHN MATTHEW ETAL
20657 HWY 11 E
WINNSBORO, TX 75494-9407

POAG L DWAYNE
1186 CR 2403
WINNSBORO, TX 75494

VAQUEZ-JACOBO GENARO & MARIA AGUSTINA
HERNANDEZ CONCEPCION
585 COUNTY ROAD 2405
WINNSBORO, TX 7549

KASTNER CARL & KATHERINE
1195 CR 2403
WINNSBORO, TX 7549

BUI TAN DINH
3776 CR 2408
WINNSBORO, TX 75494

RIOJAS JODY W & ROSE M
3999 CR 2408
WINNSBORO, TX 75494

LOVE RICHARD RAY II
137 CR 3103
GREENVILLE, TX 75402

GRUBBS RIDDLES ELLEN & GARY NEAL GRUBBS
1205 CEDARWOOD DR
FLOWER MOUND, TX 75028

AISE J & CHARLOTTE BOUMA
902 MAIN ST
HALSTEAD, KS 67056

SHANE NICHOLS
2745 CR 2403
WINNSBORO, TX 75494

JOHN P & LESLIE A MOORE
P O BOX 724
WINNSBORO, TX 75494

PHILLIP GILBREATH
7750 LYNDON B JOHNSON FWY 201
DALLAS, TX 75251

ROYCE EUGENE & VERA LEE CARTER
P O BOX 941
VAN ALSTYNE, TX 75495

RIDDLES ELLEN GRUBBS & GARY NEAL GRUBBS
1205 CEDARWOOD DR
FLOWER MOUND, TX 75028

JOHN DAVID & ANNA LAURISSA STONE
1923 CR 2399
WINNSBORO, TX 75494-4241

ANTHONY TY & TAMMY LYNNE MARLER
1179 CR 2399
WINNSBORO, TX 75494

WIEPIE & JENNIFER SANDLIN JONGSMA
4705 CR 2390
WINNSBORO, TX 75494

RAMONA L LONG
1143 CR 2393
WINNSBORO, TX 75494

DUSTIN BRODY ALLEN
2430 CR 2410
WINNSBORO, TX 75494

CARL & KATHERINE KASTNER
1195 CR 2403
WINNSBORO, TX 75494

GEORGE JAMES PIERCE
20343 HWY 11 E
WINNSBORO, TX 7549

BLAKE C & REGINA BAIN
4360 CR 2310
SULPHUR SPRINGS, TX 75482

RAGSDALE LAND COMPANY LLC
PO BOX 822
WINNSBORO, TX 75494

SHIRLEY JACKSON MAY
2822 CR 2408
WINNSBORO, TX 75494-4136

KARI GAYE NOLEN
1577 CR 2393
WINNSBORO, TX 75494

AMELIA ANN L/E GREEN
LAQUITA RACHELLE SAVAGE
1801 CR 2399
WINNSBORO, TX 7549

ANASTASIA & MATTHEW PERRY
PO BOX 917
WINNSBORO, TX 75494

PATRICK JOHN
417 W BROADWAY
WINNSBORO, TX 75494

MISTY GAYLE & JEFFERY ALAN ETAL MCBRIDE
3259 CR 2408
WINNSBORO, TX 75494

JODY W & ROSE M RIOJAS
3999 CR 2408
WINNSBORO, TX 75494

PETER G LAUZON & SHEILA M LAUZON AS CO TRUSTEES
20262 HWY 11 E
WINNSBORO, TX 75494

DENNIS RAY & SHERRY G NICHOLS
2342 CR 2403
WINNSBORO, TX 75494

RAMONA L LONG
1143 CR 2393
WINNSBORO, TX 75494

TEMPLEMAN LIVING TUST
TRUSTEE IRIS ANNETTE TEMPLEMAN
1901 WISTERIA WAY
MCKINNEY, TX 75071

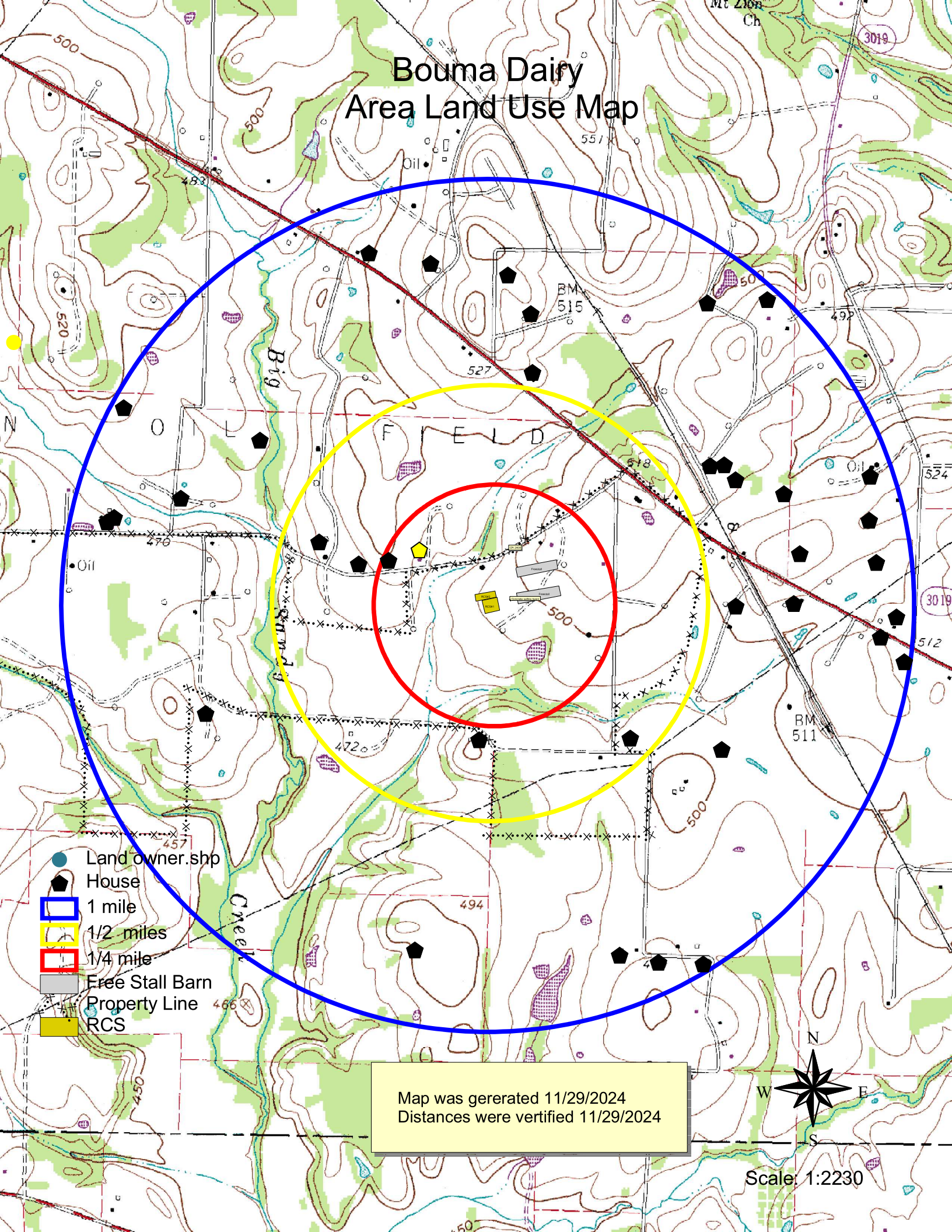
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WINNSBORO, TX 75494

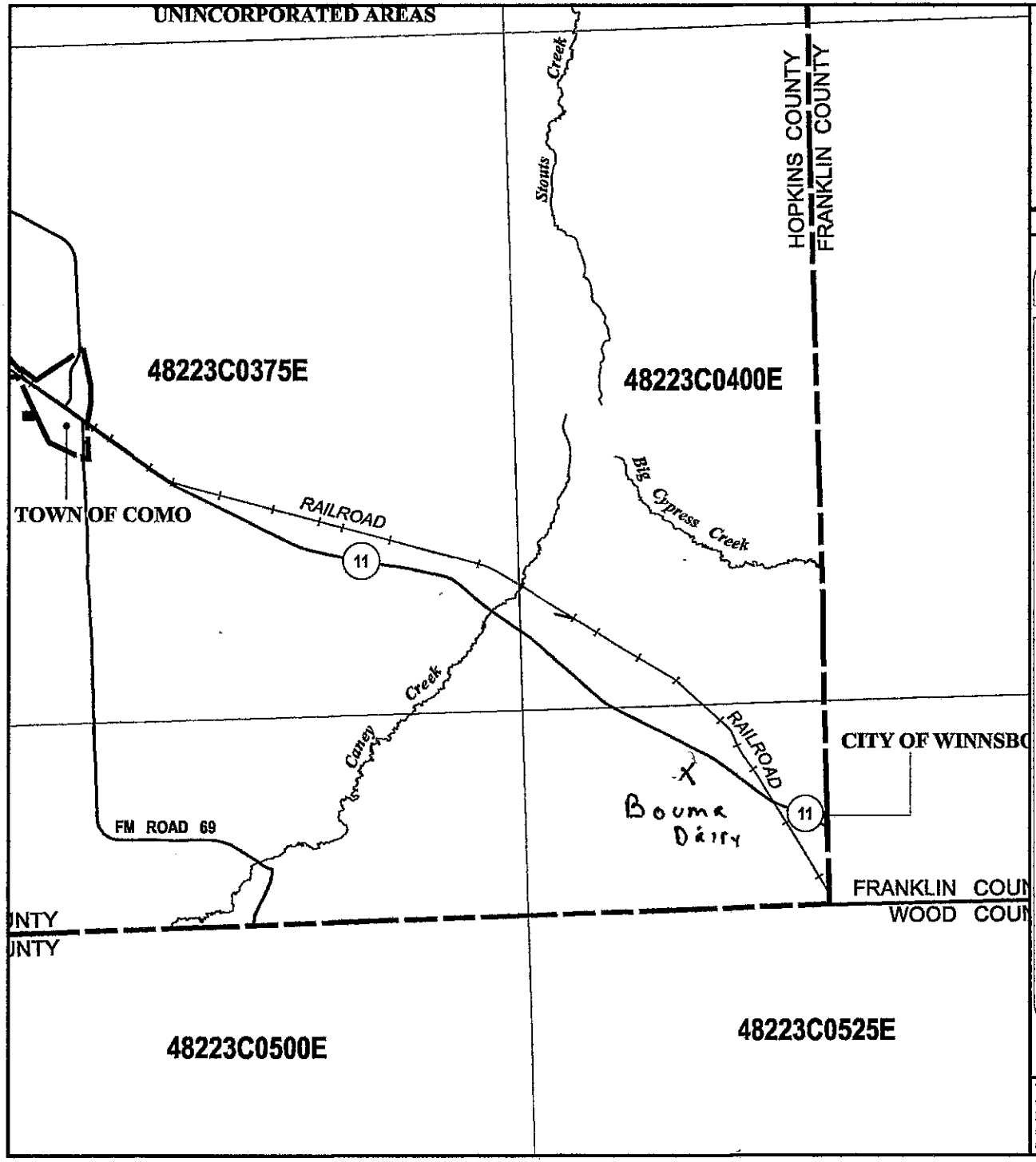
RICHARD & TAMMY SMITH
1671 CR 2399
WINNSBORO, TX 75494

PHUONG LAN T TRAN
1394 CR 2393
WINNSBORO, TX 75494

RAGSDALE LAND COMPANY LLC
PO BOX 822
WINNSBORO, TX 75494

Bouma Dairy
Area Land Use Map





NFIP

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

HOPKINS COUNTY, TEXAS AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

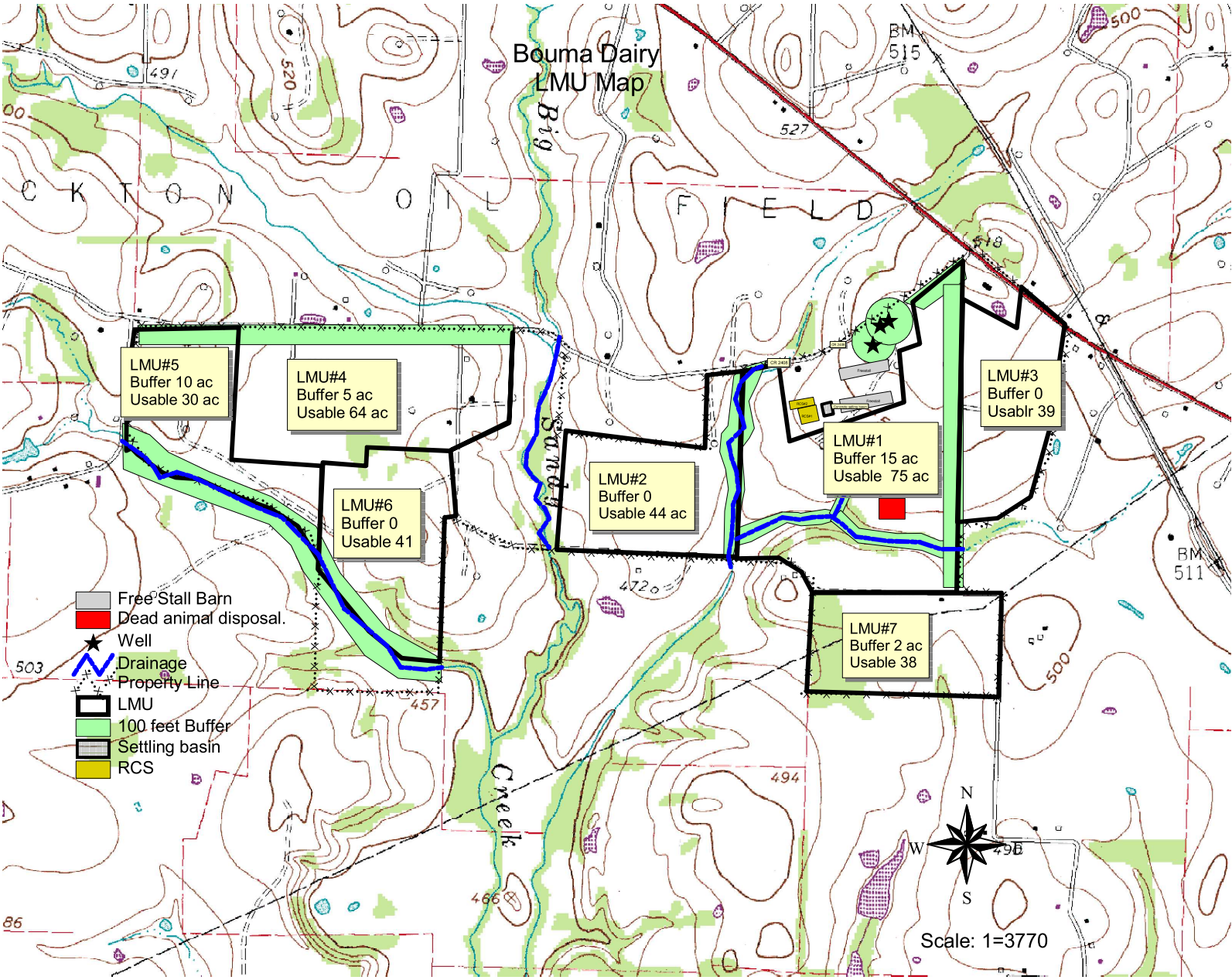
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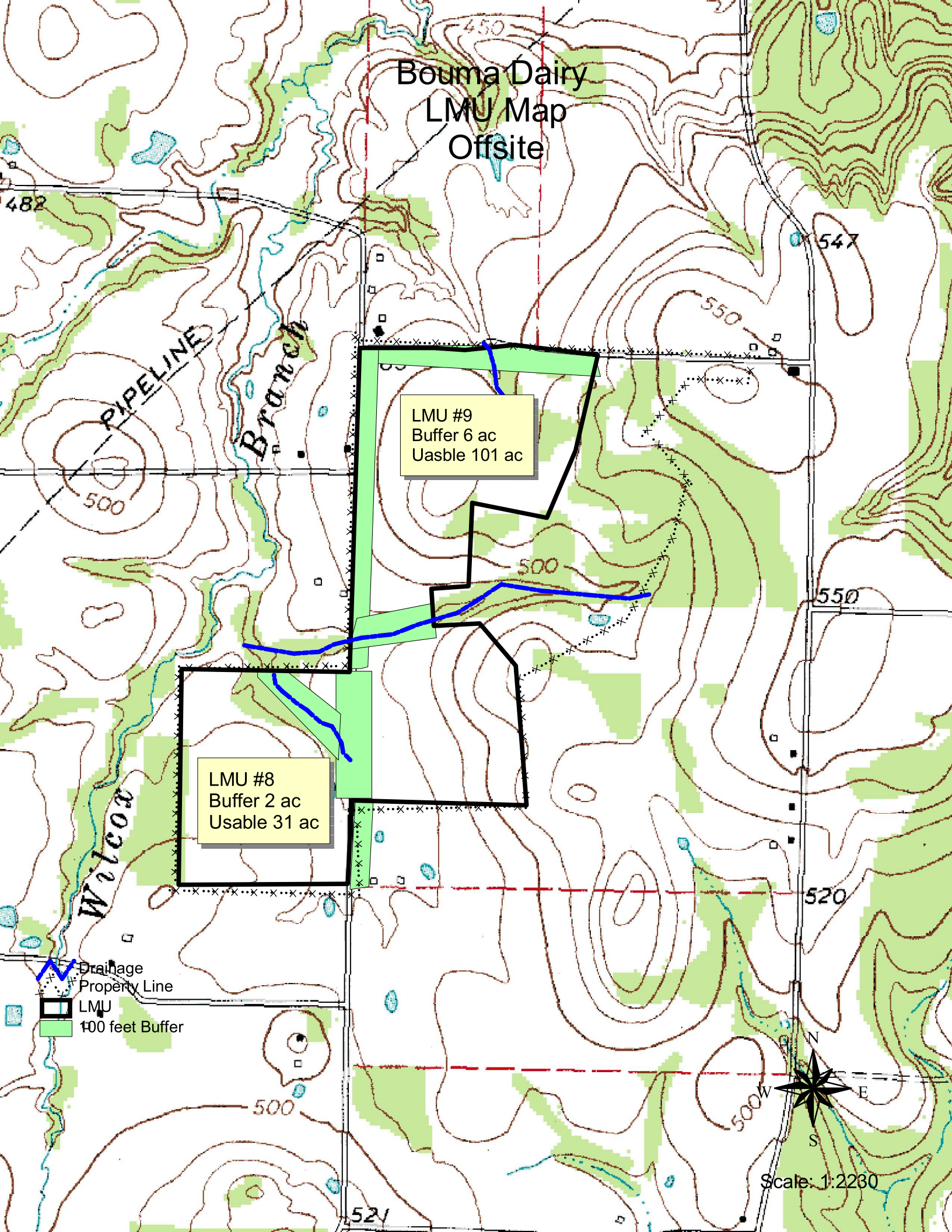
MAP NUMBER
48223CIND0A

EFFECTIVE DATE
MARCH 17, 2011

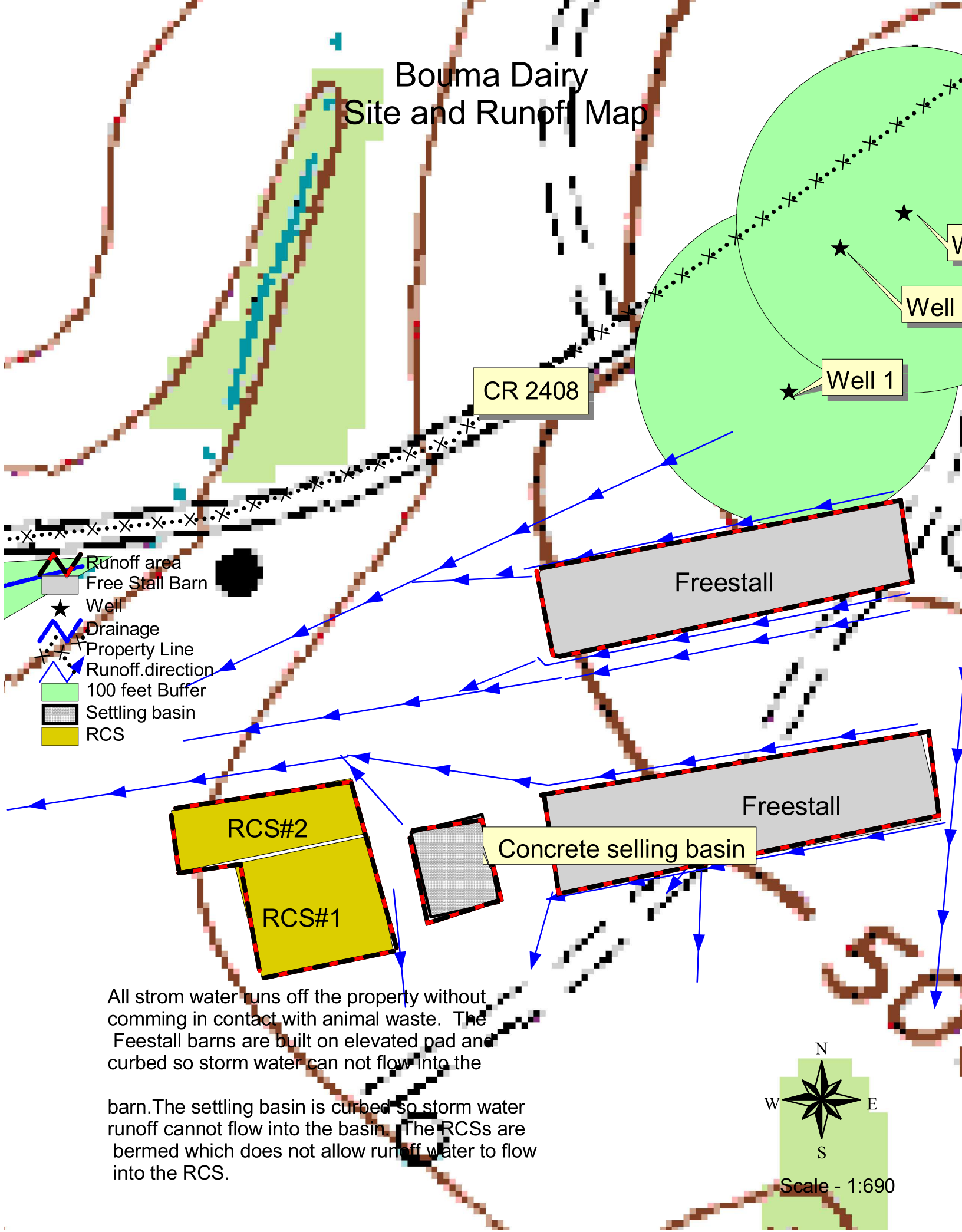
Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.


Bouma Dairy
LMU Map
LMU#5
Buffer 10 ac
Usable 30 ac
LMU#4
Buffer 5 ac
Usable 64 ac
LMU#6
Buffer 0
Usable 41
LMU#2
Buffer 0
Usable 44 ac
LMU#1
Buffer 15 ac
Usable 75 ac
LMU#3
Buffer 0
Usablr 39
LMU#7
Buffer 2 ac
Usable 38
Free Stall Barn
Dead animal disposal.
Well
Drainage
Property Line
LMU
100 feet Buffer
Settling basin
RCS
Big Sioux
Creek
N
W
S
Scale: 1=3770


Bouma Dairy
LMU Map
Offsite
LMU #9
Buffer 6 ac
Uasble 101 ac
LMU #8
Buffer 2 ac
Usable 31 ac
Pipeline
Branch
Wilcox
450
482
547
550
500
520
521
Drainage
Property Line
LMU
100 feet Buffer
N
W
E
S
Scale: 1:2230

Bouma Dairy
Site and Runoff Map



All strom water runs off the property without comming in contact with animal waste. The Feestall barns are built on elevated pad and curbed so storm water can not flow into the

barn.The settling basin is curbed so storm water runoff cannot flow into the basin. The RCSs are bermed which does not allow runoff water to flow into the RCS.

Scale - 1:690

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hopkins and Rains Counties, Texas

Bouma Dairy



August 21, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

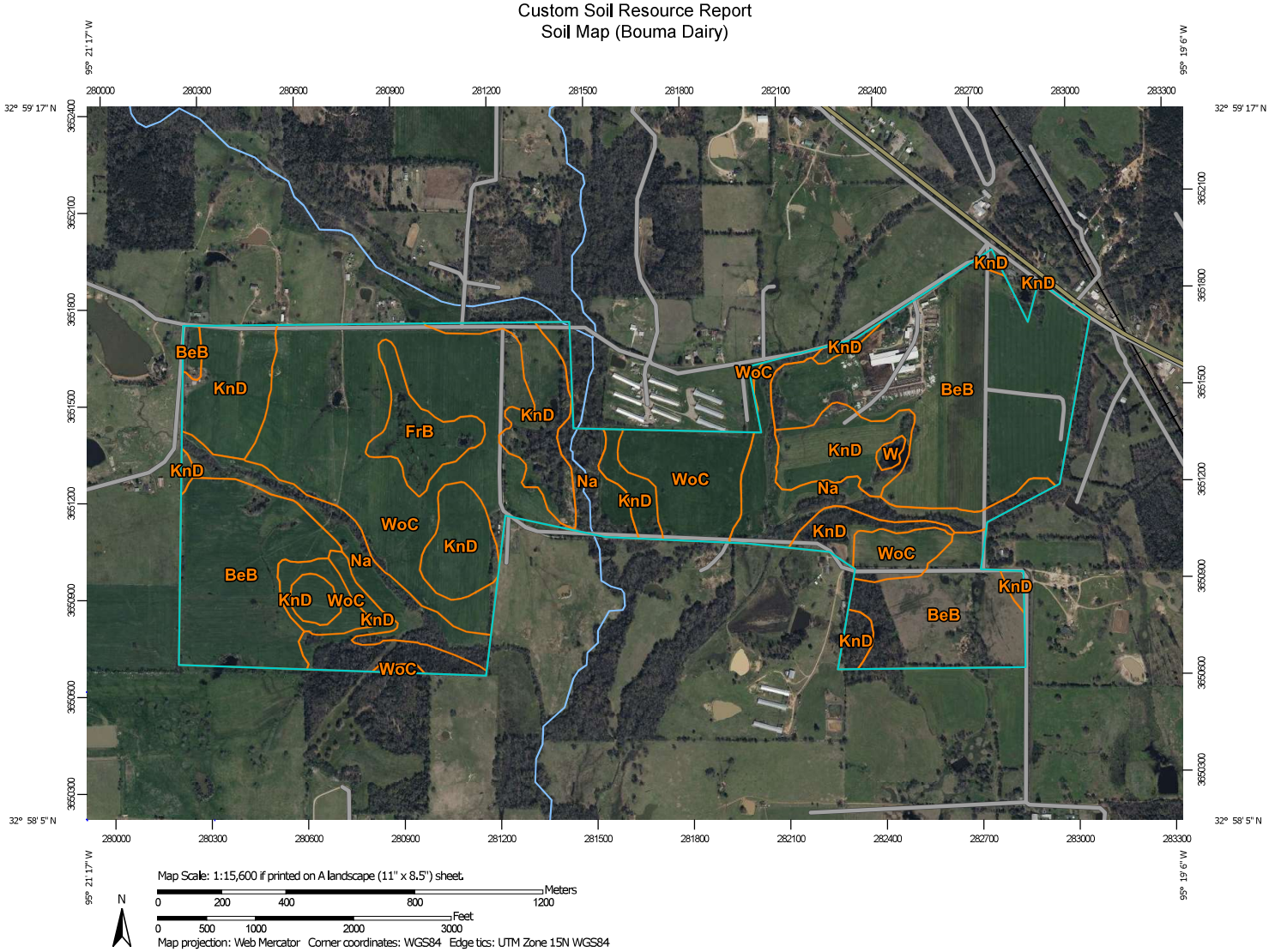
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Bouma Dairy)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hopkins and Rains Counties, Texas
Survey Area Data: Version 19, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 19, 2023—Mar 5, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Bouma Dairy)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Bernaldo fine sandy loam, 1 to 3 percent slopes	203.2	36.0%
FrB	Freestone fine sandy loam, 1 to 3 percent slopes	16.1	2.9%
KnD	Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	122.5	21.7%
Na	Nahatche soils, frequently flooded	67.5	12.0%
W	Water	1.5	0.3%
WoC	Wolfpen loamy fine sand, 2 to 5 percent slopes	153.3	27.2%
Totals for Area of Interest		**564.2**	**100.0%**

Map Unit Descriptions (Bouma Dairy)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hopkins and Rains Counties, Texas

BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tf44
Elevation: 200 to 720 feet
Mean annual precipitation: 42 to 51 inches
Mean annual air temperature: 54 to 75 degrees F
Frost-free period: 240 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bernaldo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernaldo

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

A - 0 to 4 inches: fine sandy loam
E - 4 to 12 inches: fine sandy loam
Bt - 12 to 47 inches: sandy clay loam
Bt/E - 47 to 80 inches: sandy clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 42 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F133BY013TX - Terrace
Hydric soil rating: No

Minor Components

Freestone

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

FrB—Freestone fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wg9c
Elevation: 140 to 790 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 62 to 66 degrees F
Frost-free period: 218 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Freestone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freestone

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy alluvium derived from shale and siltstone

Typical profile

Ap - 0 to 4 inches: fine sandy loam
E - 4 to 11 inches: fine sandy loam
Bt - 11 to 20 inches: sandy clay loam

B/Et1 - 20 to 28 inches: clay loam
B/Et2 - 28 to 44 inches: clay
B't - 44 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Minor Components

Raino

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Mounds
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

Woodtell

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tlk3
Elevation: 230 to 630 feet
Mean annual precipitation: 42 to 49 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 195 to 242 days
Farmland classification: Not prime farmland

Map Unit Composition

Kirvin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 4 inches: gravelly fine sandy loam
E - 4 to 12 inches: gravelly fine sandy loam
Bt - 12 to 31 inches: clay
BCt - 31 to 43 inches: clay loam
C - 43 to 80 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

Minor Components

Briley
Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Bowie
Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

Na—Nahatche soils, frequently flooded

Map Unit Setting
National map unit symbol: dklg
Elevation: 100 to 400 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 235 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition
Nahatche and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nahatche

Setting
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium of holocene age

Typical profile
H1 - 0 to 7 inches: clay loam
H2 - 7 to 65 inches: loam

H3 - 65 to 80 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R087BY007TX - Loamy Bottomland
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 5 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tcnz
Elevation: 210 to 570 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 204 to 236 days
Farmland classification: Not prime farmland

Map Unit Composition

Wolfpen and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wolfpen

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 27 inches: loamy fine sand
Bt - 27 to 55 inches: sandy clay loam
Bt/E - 55 to 70 inches: sandy clay loam
B't - 70 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Minor Components

Oakwood

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

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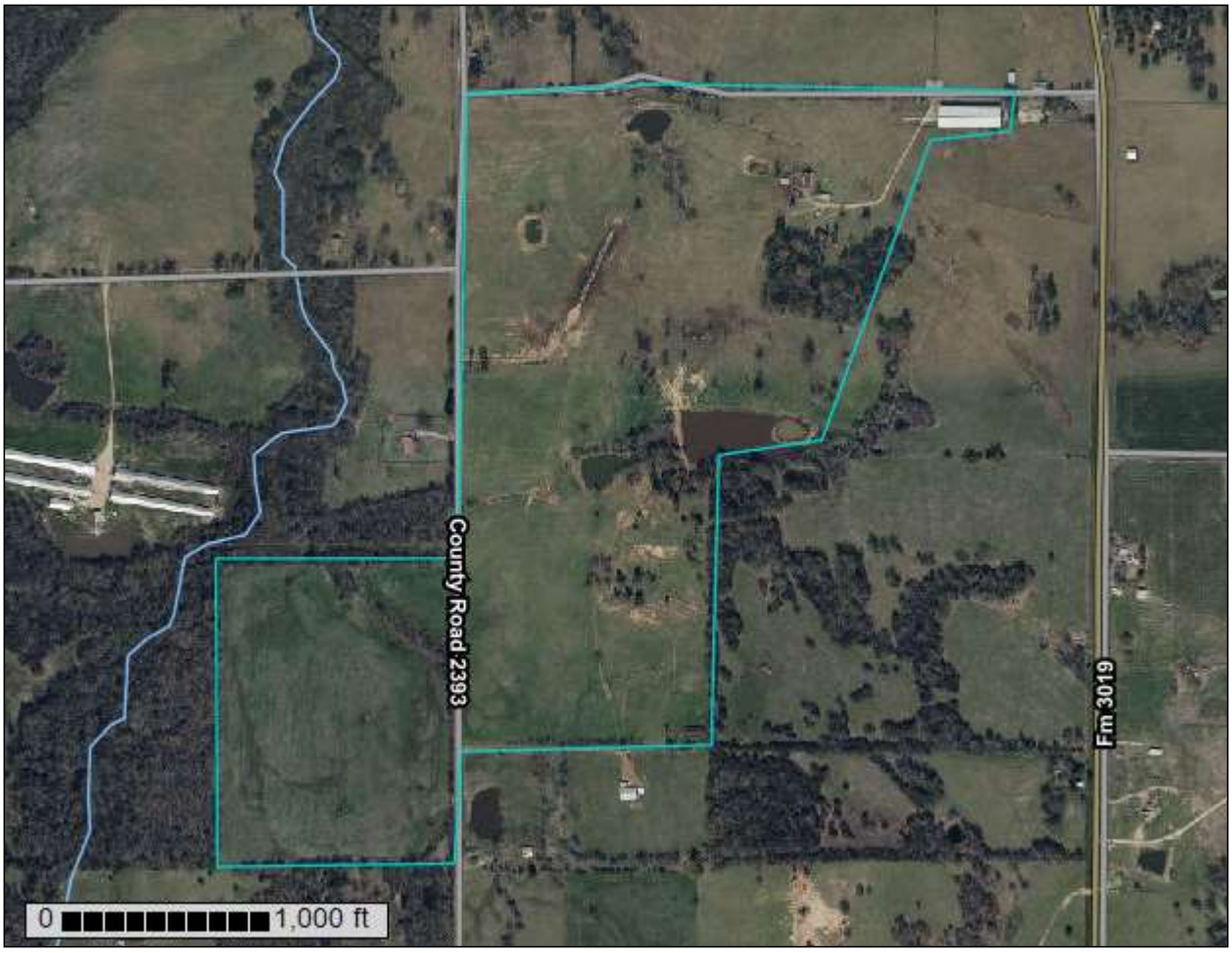
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hopkins and Rains Counties, Texas



August 21, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

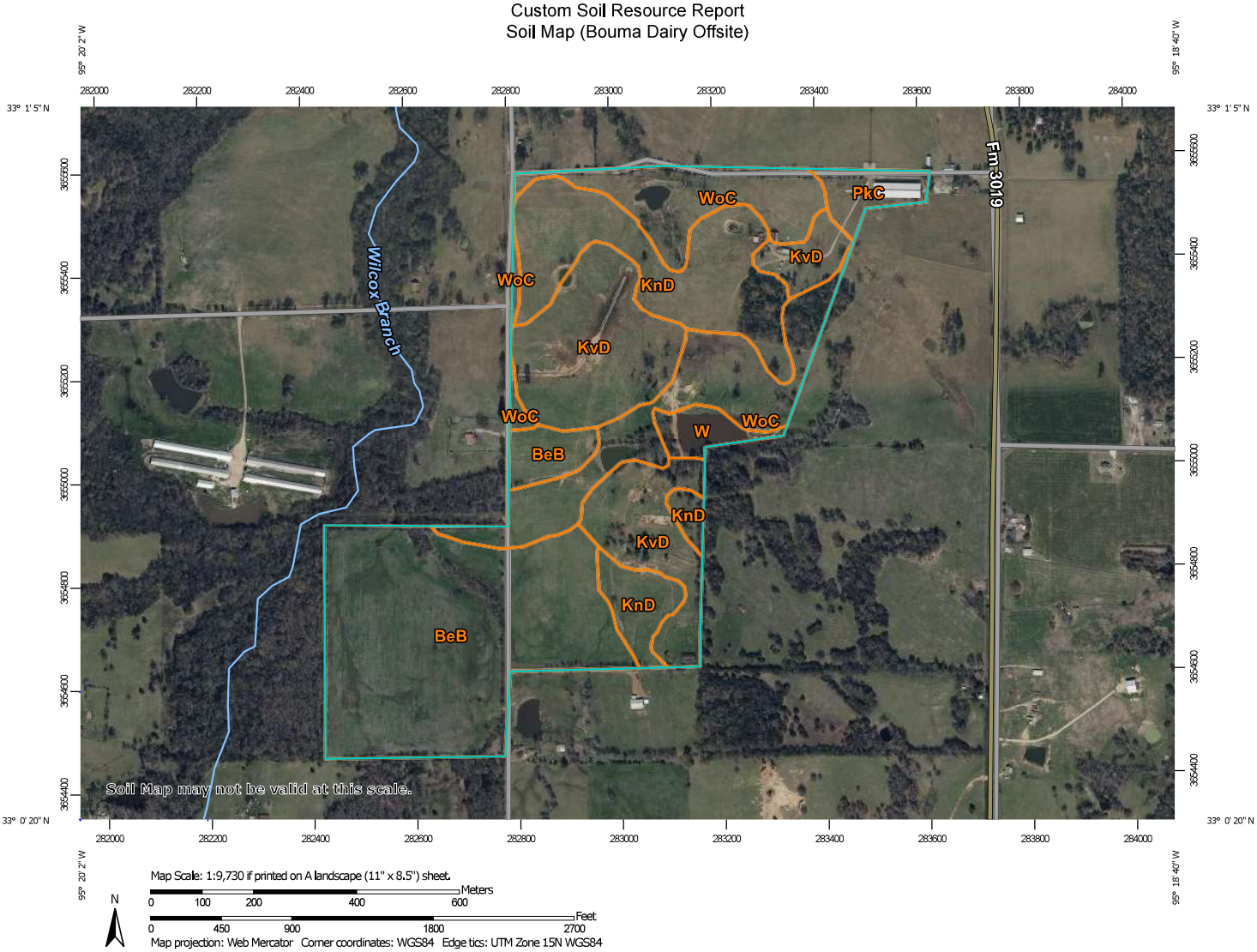
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Bouma Dairy Offsite)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hopkins and Rains Counties, Texas
Survey Area Data: Version 19, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 30, 2021—Mar 5, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Bouma Dairy Offsite)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Bernaldo fine sandy loam, 1 to 3 percent slopes	55.2	33.7%
KnD	Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	29.9	18.2%
KvD	Kirvin soils, 3 to 8 percent slopes	36.5	22.3%
PkC	Pickton loamy fine sand, 2 to 5 percent slopes	4.3	2.6%
W	Water	3.5	2.1%
WoC	Wolfpen loamy fine sand, 2 to 5 percent slopes	34.5	21.1%
Totals for Area of Interest		**163.8**	**100.0%**

Map Unit Descriptions (Bouma Dairy Offsite)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hopkins and Rains Counties, Texas

BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tf44
Elevation: 200 to 720 feet
Mean annual precipitation: 42 to 51 inches
Mean annual air temperature: 54 to 75 degrees F
Frost-free period: 240 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bernaldo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernaldo

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

A - 0 to 4 inches: fine sandy loam
E - 4 to 12 inches: fine sandy loam
Bt - 12 to 47 inches: sandy clay loam
Bt/E - 47 to 80 inches: sandy clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 42 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F133BY013TX - Terrace
Hydric soil rating: No

Minor Components

Freestone

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tlk3
Elevation: 230 to 630 feet
Mean annual precipitation: 42 to 49 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 195 to 242 days
Farmland classification: Not prime farmland

Map Unit Composition

Kirvin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 4 inches: gravelly fine sandy loam
E - 4 to 12 inches: gravelly fine sandy loam

Bt - 12 to 31 inches: clay
BCt - 31 to 43 inches: clay loam
C - 43 to 80 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

Minor Components

Briley

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Bowie

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

KvD—Kirvin soils, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: dklb

Elevation: 400 to 650 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 235 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition
Kirvin and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting
Landform: Interfluves
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from sandstone and shale

Typical profile
H1 - 0 to 4 inches: sandy clay loam
H2 - 4 to 37 inches: clay
H3 - 37 to 64 inches: clay loam

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

PkC—Pickton loamy fine sand, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 2tf4k
Elevation: 220 to 670 feet
Mean annual precipitation: 43 to 50 inches
Mean annual air temperature: 63 to 68 degrees F
Frost-free period: 228 to 239 days
Farmland classification: Not prime farmland

Map Unit Composition

Pickton and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pickton

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 8 inches: loamy fine sand
E - 8 to 54 inches: loamy fine sand
Bt1 - 54 to 63 inches: sandy clay loam
Bt2 - 63 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 56 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F133BY008TX - Northern Deep Sandy Upland
Hydric soil rating: No

Minor Components

Tonkawa

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F133BY010TX - Very Deep Sandy Upland
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Ridges

Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tcnz
Elevation: 210 to 570 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 204 to 236 days
Farmland classification: Not prime farmland

Map Unit Composition

Wolfpen and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wolfpen

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand

E - 6 to 27 inches: loamy fine sand
Bt - 27 to 55 inches: sandy clay loam
Bt/E - 55 to 70 inches: sandy clay loam
B't - 70 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Minor Components

Oakwood

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

AOI Inventory

This folder contains a collection of tabular reports that present a variety of soil information. Included are various map unit description reports, special soil interpretation reports, and data summary reports.

Map Unit Description (Brief) (Bouma Dairy Offsite)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the selected area. The component descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit. A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the associated soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas (components) for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The "Map Unit Description (Brief)" report gives a brief, general description of the soil components that occur in a map unit. Descriptions of nonsoil (miscellaneous areas) and minor map unit components may or may not be included. This description is written by the local soil scientists responsible for the respective soil survey area

data. A more detailed description can be generated by the "Map Unit Description" report.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief) (Bouma Dairy Offsite)

Hopkins and Rains Counties, Texas

Map Unit: KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Description Category: PHG

8C - LOAMY UPLAND - Moderately deep to very deep uplands with loamy surfaces and friable loamy subsoils; slopes 0 to 8 percent; medium natural fertility; medium to high water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: WSG

4f2 - Rock fragments cause seedling mortality to increase during dry periods. Erosion hazards increase with slope. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 70. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 130 board feet (Doyle rule) per acre per year. Native species important to wildlife include red oak, post oak, American beautyberry, and tickclover. High value grasses and forbs used by livestock include pinehill bluestem, big bluestem, longleaf uniola, indiangrass, and sedge. Stocking rates depend on canopy density and range from 6-40 acres per animal unit.

Map Unit: KvD—Kirvin soils, 3 to 8 percent slopes

Description Category: WSG

4f2 - Rock fragments cause seedling mortality to increase during dry periods. Erosion hazards increase with slope. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 70. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 130 board feet (Doyle rule) per acre per year. Native species important to wildlife include red oak, post oak, American beautyberry, and tickclover. High value grasses and forbs used by livestock include pinehill bluestem, big bluestem, longleaf uniola, indiangrass, and sedge. Stocking rates depend on canopy density and range from 6-40 acres per animal unit.

Map Unit: PkC—Pickton loamy fine sand, 2 to 5 percent slopes

Description Category: PHG

9B - DEEP SANDY UPLAND - Deep and very deep, sandy uplands with sandy surfaces greater than 40 inches; low natural fertility; low water holding capacity with good plant-soil-moisture relationship; low to medium production potential.

Description Category: WSG

3s2 - Sandy texture may cause moderate equipment limitations and seedling mortality. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 80. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 230 board feet (Doyle rule) per acre per year. Native species important to wildlife include post oak, dogwood, and yaupon. High value grasses and forbs used by livestock include pinehill bluestem, little bluestem, longleaf uniola, and indiangrass. Stocking rates depend on canopy density and range from 8-40 acres per animal unit.

Map Unit: WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Description Category: PHG

9A - SANDY UPLAND - Deep and very deep, sandy uplands with clayey or loamy subsoils within 40 inches; low natural fertility; low to medium water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: WSG

3s2 - Sandy texture may cause moderate equipment limitations and seedling mortality. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 80. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 230 board feet (Doyle rule) per acre per year. Native species important to wildlife include post oak, dogwood, and yaupon. High value grasses and forbs used by livestock include pinehill bluestem, little bluestem, longleaf uniola, and indiangrass. Stocking rates depend on canopy density and range from 8-40 acres per animal unit.

Map Unit Description (Brief, Generated) (Bouma Dairy Offsite)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, provide information on the composition of map units and properties of their components.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic

class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated) (Bouma Dairy Offsite)

Hopkins and Rains Counties, Texas

Map Unit: BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Component: Bernaldo (90%)

The Bernaldo component makes up 90 percent of the map unit. Slopes are 1 to 3 percent. This component is on stream terraces on coastal plains. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 47 inches during January, February, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY013TX Terrace ecological site. Nonirrigated land capability classification is 2e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Freestone (5%)

Generated brief soil descriptions are created for major soil components. The Freestone soil is a minor component.

Component: Wolfpen (5%)

Generated brief soil descriptions are created for major soil components. The Wolfpen soil is a minor component.

Map Unit: KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Component: Kirvin (90%)

The Kirvin component makes up 90 percent of the map unit. Slopes are 2 to 8 percent. This component is on interfluves on coastal plains. The parent material consists of clayey fluviomarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY003TX Loamy Over Clayey Upland ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Briley (5%)

Generated brief soil descriptions are created for major soil components. The Briley soil is a minor component.

Component: Bowie (5%)

Generated brief soil descriptions are created for major soil components. The Bowie soil is a minor component.

Map Unit: KvD—Kirvin soils, 3 to 8 percent slopes

Component: Kirvin (100%)

The Kirvin component makes up 100 percent of the map unit. Slopes are 3 to 8 percent. This component is on interfluves on coastal plains. The parent material consists of clayey residuum weathered from sandstone and shale. Depth to a root restrictive layer, bedrock, densic, inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY003TX Loamy Over Clayey Upland ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map Unit: PkC—Pickton loamy fine sand, 2 to 5 percent slopes

Component: Pickton (90%)

The Pickton component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on interfluves on coastal plains. The parent material consists of sandy and loamy fluviomarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 54 inches during January, February, March, April. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY008TX Northern Deep Sandy Upland ecological site. Nonirrigated land capability classification is 3s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Tonkawa (5%)

Generated brief soil descriptions are created for major soil components. The Tonkawa soil is a minor component.

Component: Wolfpen (5%)

Generated brief soil descriptions are created for major soil components. The Wolfpen soil is a minor component.

Map Unit: W—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map Unit: WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Component: Wolfpen (90%)

The Wolfpen component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on interfluves on coastal plains. The parent material consists of sandy and loamy fluviomarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 55 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY006TX Northern Sandy Loam Upland ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Oakwood (10%)

Generated brief soil descriptions are created for major soil components. The Oakwood soil is a minor component.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (Bouma Dairy Offsite)

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)

Physical Soil Properties–Hopkins and Rains Counties, 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*					
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes														
Bernaldo	0-4	55-69- 73	15-22- 30	3- 9- 15	1.48-1.49	14.00-42.00	0.12-0.16	0.0-1.0	0.5-2.0	.28	.28	5	3	86
	4-12	55-69- 73	15-22- 30	3- 9- 15	1.58-1.67	14.00-42.00	0.11-0.15	0.0-1.0	0.1-1.0	.37	.37			
	12-47	47-61- 65	15-17- 25	18-22- 30	1.44-1.61	4.00-14.00	0.16-0.20	0.9-1.7	0.1-0.3	.28	.28			
	47-80	47-62- 65	15-17- 25	18-21- 30	1.44-1.61	4.00-14.00	0.16-0.20	0.9-1.8	0.0-0.3	.28	.28			
KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes														
Kirvin	0-4	53-65- 73	12-27- 40	2- 9- 15	1.49-1.52	14.00-42.00	0.07-0.11	0.0-2.9	0.5-2.0	.15	.32	4	5	56
	4-12	53-65- 73	12-27- 40	2- 9- 15	1.57-1.62	14.00-42.00	0.07-0.11	0.0-2.9	0.3-1.0	.15	.32			
	12-31	21-23- 55	5-29- 44	35-48- 59	1.29-1.63	1.40-4.00	0.11-0.15	3.0-5.9	0.1-1.0	.20	.20			
	31-43	20-30- 55	10-35- 39	25-35- 50	1.43-1.64	1.40-4.00	0.11-0.15	3.0-5.9	0.1-1.0	.28	.28			
	43-80	20-35- 44	20-33- 45	28-33- 39	1.63-1.75	1.40-4.00	0.08-0.14	3.0-5.9	0.1-1.0	.32	.32			
KvD—Kirvin soils, 3 to 8 percent slopes														
Kirvin	0-4	-56-	-15-	20-30- 40	1.20-1.40	1.40-4.00	0.12-0.15	3.0-5.9	0.5-1.0	.20	.20	4	5	56
	4-37	-23-	-29-	35-48- 60	1.30-1.45	1.40-4.00	0.11-0.15	3.0-5.9	0.1-1.0	.20	.20			
	37-64	-35-	-33-	28-33- 40	1.40-1.60	0.42-1.40	0.08-0.14	3.0-5.9	0.1-1.0	.32	.32			

Physical Soil Properties–Hopkins and Rains Counties, 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*					
PkC—Pickton loamy fine sand, 2 to 5 percent slopes														
Pickton	0-8	71-85-87	5-7-24	4-8-12	1.30-1.60	42.00-141.00	0.07-0.11	0.0-2.9	0.5-1.0	.15	.15	5	2	134
	8-54	71-86-90	5-7-24	3-8-12	1.30-1.60	42.00-141.00	0.07-0.11	0.0-2.9	0.1-0.8	.15	.15			
	54-63	42-58-65	10-18-28	18-24-30	1.30-1.65	4.00-14.00	0.12-0.17	0.0-2.9	0.1-0.4	.24	.24			
	63-80	42-58-65	10-18-28	18-24-30	1.30-1.65	4.00-14.00	0.12-0.17	0.0-2.9	0.1-0.3	.24	.24			
W—Water														
Water	—	—	—	—	—	—	—	—	—					
WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes														
Wolfpen	0-6	70-86-90	0-7-27	3-8-12	1.30-1.60	42.00-141.00	0.06-0.09	0.0-2.9	0.5-2.0	.17	.17	5	2	134
	6-27	70-86-90	0-7-27	3-8-12	1.30-1.65	42.00-141.00	0.05-0.09	0.0-2.9	0.2-0.5	.15	.15			
	27-55	40-58-75	5-18-30	18-24-30	1.30-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.2-0.3	.24	.24			
	55-70	40-57-75	5-18-30	15-25-35	1.30-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.1-0.2	.24	.24			
	70-80	40-57-75	5-18-30	15-25-35	1.30-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.0-0.2	.24	.24			

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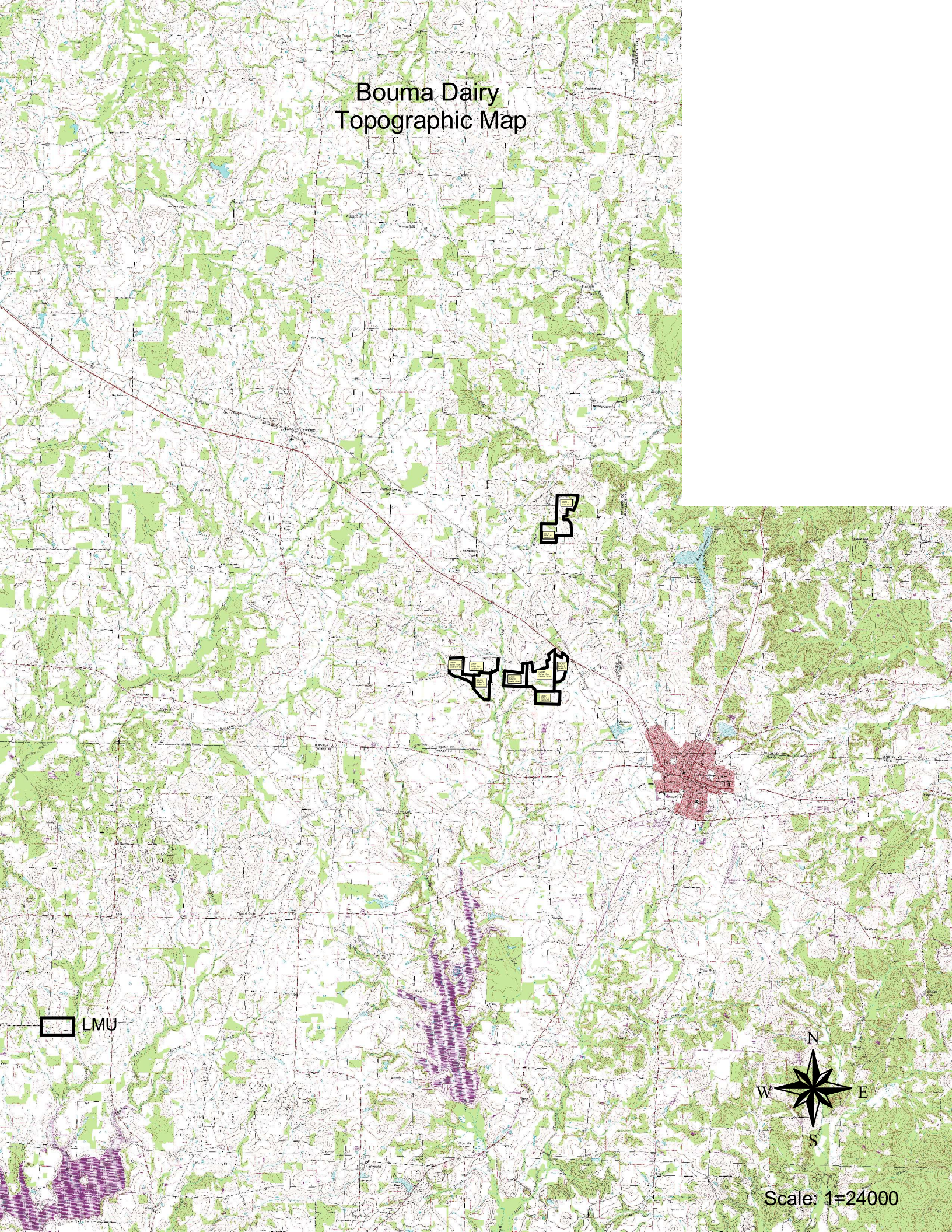
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United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

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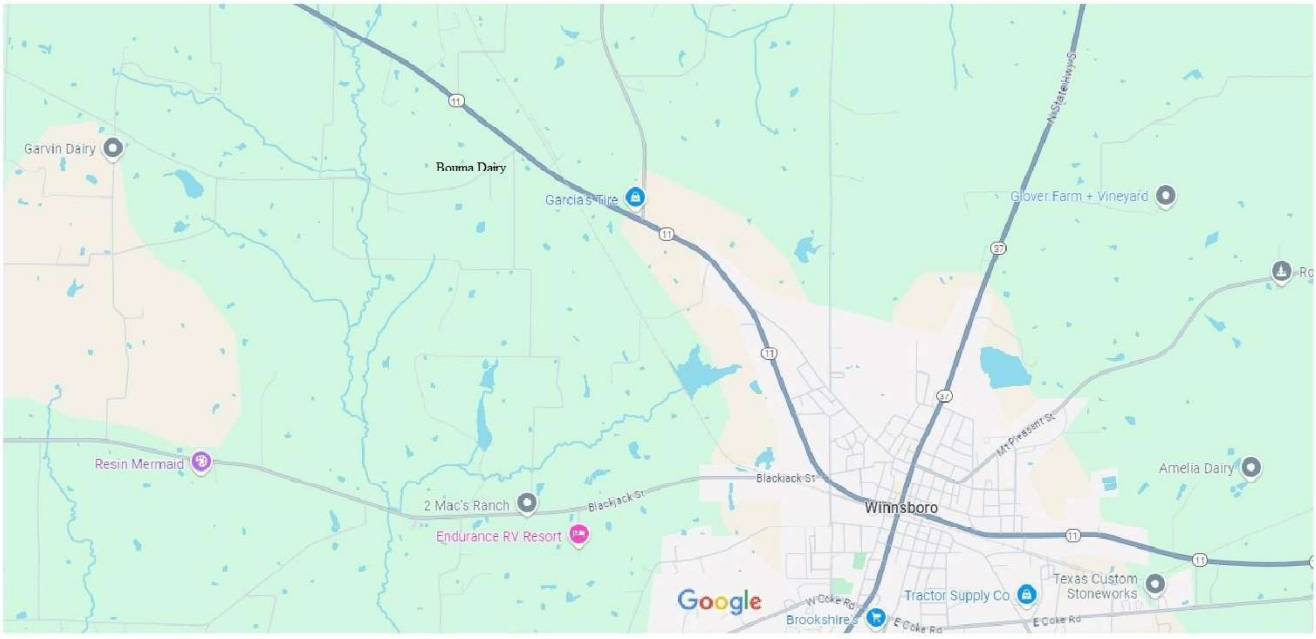
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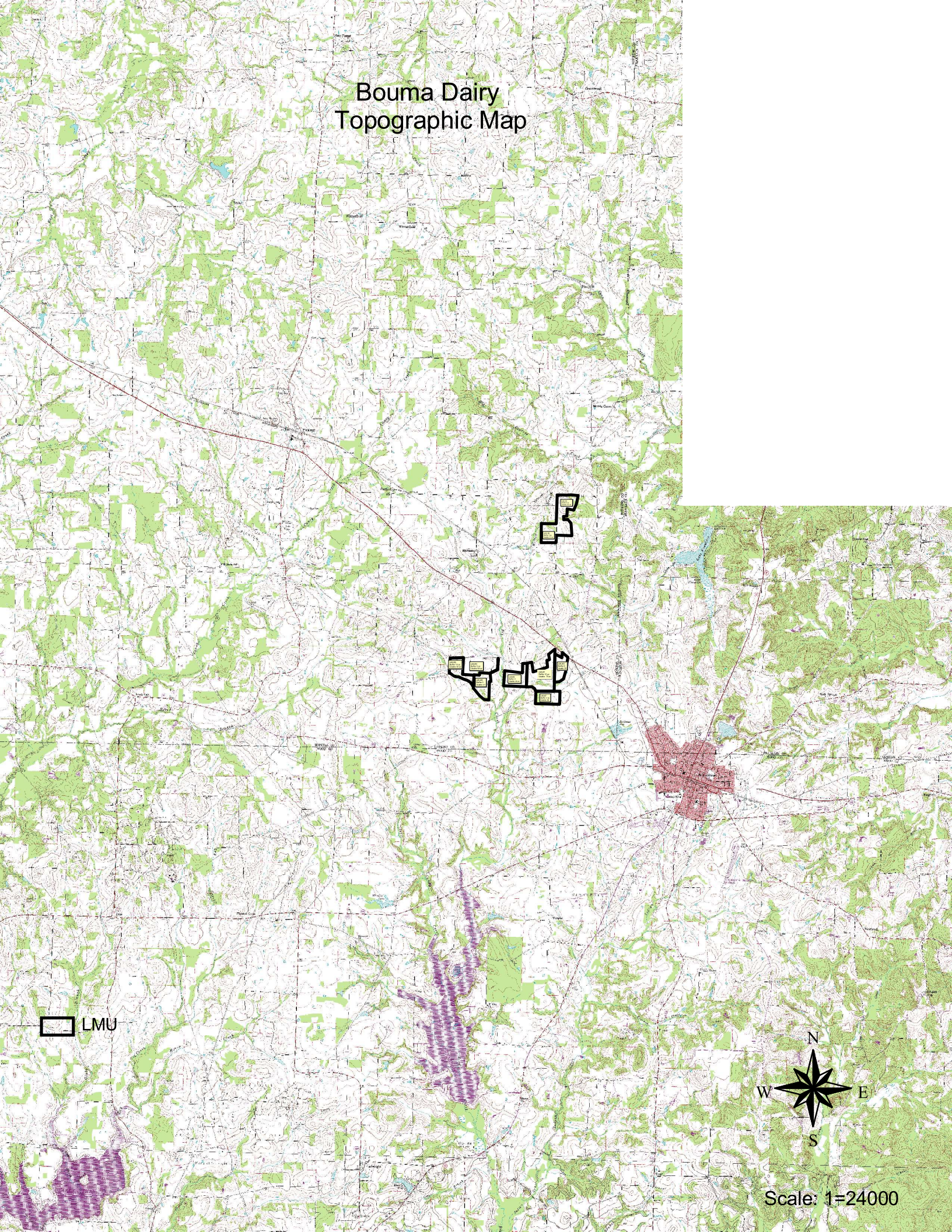
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Bouma Dairy
Topographic Map
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Scale: 1=24000

Google Maps

Bouma Dairy
Vicinity Map




Bouma Dairy
Topographic Map
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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: BOUMA DAIRY FARM

B. If this is an existing permitted site, provide the Regulated Entity Number (RN) issued to this site? RN 102334539

C. Site Address/Location:

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: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO TX 75494

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: 754494

D. County or counties if more than 1: Hopkins

E. Latitude: 32.980666 Longitude: -95.328666

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: 1200

Proposed Maximum Number of Animals: 999

H. What is the total LMU acreage? 463

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.

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application.)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 601231814		RN 102334539

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	9/3/2024

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
MAIKO HESSEL BOUMA	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer:

☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☒ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ Yes ☐ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:	4252 COUNTY ROAD 2408						
	City	WINNSBORO	State	TX	ZIP	75494	ZIP + 4	4100

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(903) 855-2748		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

BOUMA DAIRY FARM

23. Street Address of the Regulated Entity: *(No PO Boxes)*	4252 COUNTY ROAD 2408								
	City	WINNSBORO	State	TX	ZIP	75494		ZIP + 4	4100
24. County	HOPKINS								

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:			
26. Nearest City		State	Nearest ZIP Code
WINNSBORO		TX	75494

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	32.980666		28. Longitude (W) In Decimal:	-95.328666	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
0241			

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

MILK PRODUCTION

34. Mailing Address:	4252 COUNTY ROAD 2408								
	City	WINNSBORO	State	TX	ZIP	75494		ZIP + 4	4100
35. E-Mail Address:	boumadairy@hotmail.com								

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(903) 855-2748		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☒ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Jim C. Wyrick	41. Title:	Consultant

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(903) 521-3095		( ) -	wyrick@suddenlink.net

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	East Texas Environmental Services	Job Title:	Consultant
Name *(In Print)*:	Jim C, Wyrick	Phone:	(903) 243- [illegible]
Signature:	Jim C. Wyrick	Date:	8/3/2024

City, State and Zip Code: WINNSBORO TX 75494

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: 754494

D. County or counties if more than 1: Hopkins

E. Latitude: 32.980666 Longitude: -95.328666

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: 1200

Proposed Maximum Number of Animals: 999

H. What is the total LMU acreage? 463

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.

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: 24665
Check/Money Order Amount: $350.00
Name Printed on Check: Maiko Bouma DBA Bouma Dairy

EPAY — Voucher Number: Click here to enter text
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: Click here to enter text

E. For existing permits:
What is the permit number? Click here to enter text
What is the EPA I.D. Number? TX Click here to enter text

SECTION 3. FACILITY OWNER (APPLICANT) INFORMATION

A. What is the legal name of the facility owner?
BOUMA, MAIKO HESSEL

B. If the applicant is an existing TCEQ customer, provide the Customer Number (CN) issued to this entity? CN 601231814

C. What is the contact information for the owner?

Mailing Address: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO, TX 75494 4100

Phone Number: 903 855 2748 Fax Number: na

E-mail Address: boumadairy@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: Click here to enter text

What is the Charter Filing Number issued by the Texas Secretary of State: Click here to enter text

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?

Click here to enter text

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 co-applicant?

Mailing Address: Click here to enter text

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

Phone Number: Fax Number: Click here to enter text

E-mail Address: Click here to enter text

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: Click here to enter text

What is the Charter Filing Number issued by the Texas Secretary of State: Click here to enter text

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: Jim Wyrick

Title: Consultant Credentials: Professional Geoscientist

Company Name: East Texas Environmental Services

Mailing Address: 317 Highland Dr,

City, State and Zip Code: Sulphur Springs, TX 75482

Phone Number: 903 243-0400 Fax Number: Click here to enter text

E-mail Address: wyrick@suddenlink.net

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: Jim Wyrick

Title: Consultant Credentials: PG

Company Name: East Texas Environmental Services

Mailing Address: 317 Highland Dr.

City, State and Zip Code: Sulphur Springs, TX 75482

Phone Number: 903-243-0400 Fax Number: na E-mail Address: wyrick@suddenlink.net

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

Permit Contact First and Last Name: MAIKO BOUMA

Title: Owner Credentials: Click here to enter text.

Company Name: BOUMA DAIRY

Mailing Address: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO, TX 75494 4100

Phone Number: 903 855 2748 Fax Number: Click here to enter text. E-mail Address: boumadairy@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)

MAIKO HESSEL BOUMA

☐ 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: MAIKO HESSEL BOUMA

B. Landowner of the land management units (LMUs)

Landowner Name: MAIKO HESSEL BOUMA

SECTION 9. PUBLIC NOTICE INFORMATION

A. Individual responsible for publishing the notices in the newspaper

Prefix (Mr., Ms., Miss): Mr. First and Last Name: JIM WYRICK

Title: Consultant Credentials: PG

Company Name: EAST TEXAS ENVIRONMENTAL SERVICES

Mailing Address: 317 HIGHLAND DR.

City, State and Zip Code: SULPHUR SPRINGS, TX 75482

Phone Number: 903-243-0400 Fax Number: Click here to enter text. E-mail Address: wyrick@suddenlink.net

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

☐ E-mail: Click here to enter text.

☐ Fax Number: Click here to enter text.

☒ Regular Mail:

Mailing Address: 317 Highland Dr.

City, State and Zip Code: Sulphur Springs, TX 75482

C. Contact person to be listed in the notice

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

First and Last Name: MAIKO BOUMA

Title: OWNER Credentials: Click here to enter text.

Company Name: BOUMA DAIRY

Phone Number: 903 855 2748

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: Click here to enter text.

Physical Address of Building: Click here to enter text.

City: Click here to enter text. County: Click here to enter text.

Phone Number: Click here to enter text.

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: Bouma Dairy

B. If this is an existing permitted site, provide the Regulated Entity Number (RN) issued to this site? RN 102334539

C. Site Address/Location:

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: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO TX 75494 4100

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: Click here to enter text.

D. County or counties if more than 1: Hopkins Co.

E. Latitude: 32.980666 Longitude: -95.328666

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: 1200

Proposed Maximum Number of Animals: 999

H. What is the total LMU acreage? 463

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.

Click here to enter text.

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: Click here to enter text.

Applicant: Click here to enter text.

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: Click here to enter text.

Title: Click here to enter text.

Signature: _____Date: _____

SUBSCRIBED AND SWORN to before me by the said _____on

this_____day of_____, 20_____

My commission expires on the_____day of_____, 20_____

(Seal)

_____
Notary Public

_____
County, Texas

Attachment 1
Individual Information

Complete this attachment if the facility owner or co-applicant is an individual. Make additional copies of this attachment if both are individuals.

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

Full Legal Name, including middle name: Click here to enter text.

Driver's License or State Identification Number: Click here to enter text.

State that Issued the License or Identification Number: Click here to enter text.

Date of Birth: 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.

For TCEQ Use Only

Customer Number _____
Regulated Entity Number _____
Permit Number _____

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: Click here to enter text.
2. Permit Number: Click here to enter text. EPA ID Number: Click here to enter text.
3. Address of the project (location description that includes street/highway, city/vicinity, and county). Click here to enter text.
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: Jim Wyrick

   Company Name: East Texas Environmental Services

   Mailing Address: 317 Highland Dr.

   City, State, and Zip Code: 75482

   Phone Number: 903-243-0400 Fax Number: Click here to enter text.
5. County where the facility is located: Click here to enter text.
6. If the property is publicly owned and the owner is different than the permittee/applicant, please identify the owner. Click here to enter text.
7. Identify the name of the water body (receiving waters) and TCEQ segment number that will receive the discharge. Click here to enter text.
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): none
12. Describe existing disturbances, vegetation & land use (plowing, other ground disturbances):

Aeriation of hayland, no-till of winter pasture, plowing and seeding

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

13. List construction dates of any buildings or structures on the property: unknown
14. Provide a brief history of the property, and name of the architect/builder, if known: unknown

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

15. List each Retention Control Structure and its required capacity (Acre Feet). SP-.65, RCS1-5.56 AND RCS#2-6.92
16. Provide the location and number of acres where wastewater and manure are land applied: LMU#1-75, LMU#2-44, LMU#3-39, LMU#4-64, LMU#5-30, LMU#6-41, LMU#7-38, LMU#8-31 AND LMU#9-101
17. List the maximum number of head to be permitted. 999

WATER QUALITY PERMIT

PAYMENT SUBMITTAL FORM

Use this form to submit you APPLICATION FEE, if you are mailing your payment.

- Complete items 1 through 5 below:
- Staple your check in the space provided at the bottom of this document.
- Do not mail this form with your application form.
- Do not mail this form to the same address as your application.
- Do not submit a copy of the application with this form as it could cause duplicate permit entries.

Mail this form and your check to:

BY REGULAR U.S. MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

BY OVERNIGHT/EXPRESS MAIL
Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
12100 Park 35 Circle
Austin, TX 78753

Fee Code: WQP Wastewater Permit Number: WQ000not issued

1. Check / Money Order Number: 24665
2. Amount of Check/Money Order: $350.00
3. Date of Check or Money Order: 12/16/24
4. Name on Check or Money Order: Maiko Bouma DBA Bouma Dairy
5. APPLICATION INFORMATION

   If the check is for more than one application, attach a list of each Project/Site (RE) Name and Physical Address exactly as provided on the application.
   Project/Site (RE) Name: Bouma Dairy

   Project/Site (RE) Physical Address: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100

Staple Check in This Space

TCEQ - 20134

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 601231814		RN 102334539

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	9/3/2024

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
MAIKO HESSEL BOMUA	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer:	☐ Corporation	☐ Individual	Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☒ Sole Proprietorship	☐ Other:

12. Number of Employees	13. Independently Owned and Operated?
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher	☒ Yes ☐ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant
☐ Other:

15. Mailing Address:	4252 COUNTY ROAD 2408						
	City	WINNSBORO	State	TX	ZIP	75494	ZIP + 4	4100

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(903) 855-2748		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

BOUMA DAIRY FARM

23. Street Address of the Regulated Entity: *(No PO Boxes)*	4252 COUNTY ROAD 2408								
	City	WINNSBORO	State	TX	ZIP	75494		ZIP + 4	4100
24. County	HOPKINS								

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:			
26. Nearest City		State	Nearest ZIP Code
WINNSBORO		TX	75494

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	32.980666		28. Longitude (W) In Decimal:	-95.328666	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	30. Secondary SIC Code (4 digits)	31. Primary NAICS Code (5 or 6 digits)	32. Secondary NAICS Code (5 or 6 digits)
0241			

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

MILK PRODUCTION

34. Mailing Address:	4252 COUNTY ROAD 2408								
	City	WINNSBORO	State	TX	ZIP	75494		ZIP + 4	4100
35. E-Mail Address:	boumadairy@hotmail.com								

36. Telephone Number	37. Extension or Code	38. Fax Number *(if applicable)*
(903) 855-2748		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☒ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Jim C. Wyrick	41. Title:	Consultant

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(903) 521-3095		( ) -	wyrick@suddenlink.net

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	East Texas Environmental Services	Job Title:	Consultant
Name *(In Print)*:	Jim C, Wyrick	Phone:	(903) 243- [illegible]
Signature:	Jim C. Wyrick	Date:	8/3/2024

MABRY JOHN MATTHEW ETAL
20657 HWY 11 E
WINNSBORO, TX 75494-9407

POAG L DWAYNE
1186 CR 2403
WINNSBORO, TX 75494

VAQUEZ-JACOBO GENARO & MARIA AGUSTINA
HERNANDEZ CONCEPCION
585 COUNTY ROAD 2405
WINNSBORO, TX 7549

KASTNER CARL & KATHERINE
1195 CR 2403
WINNSBORO, TX 7549

BUI TAN DINH
3776 CR 2408
WINNSBORO, TX 75494

RIOJAS JODY W & ROSE M
3999 CR 2408
WINNSBORO, TX 75494

LOVE RICHARD RAY II
137 CR 3103
GREENVILLE, TX 75402

GRUBBS RIDDLES ELLEN & GARY NEAL GRUBBS
1205 CEDARWOOD DR
FLOWER MOUND, TX 75028

AISE J & CHARLOTTE BOUMA
902 MAIN ST
HALSTEAD, KS 67056

SHANE NICHOLS
2745 CR 2403
WINNSBORO, TX 75494

JOHN P & LESLIE A MOORE
P O BOX 724
WINNSBORO, TX 75494

PHILLIP GILBREATH
7750 LYNDON B JOHNSON FWY 201
DALLAS, TX 75251

ROYCE EUGENE & VERA LEE CARTER
P O BOX 941
VAN ALSTYNE, TX 75495

RIDDLES ELLEN GRUBBS & GARY NEAL GRUBBS
1205 CEDARWOOD DR
FLOWER MOUND, TX 75028

JOHN DAVID & ANNA LAURISSA STONE
1923 CR 2399
WINNSBORO, TX 75494-4241

ANTHONY TY & TAMMY LYNNE MARLER
1179 CR 2399
WINNSBORO, TX 75494

WIEPIE & JENNIFER SANDLIN JONGSMA
4705 CR 2390
WINNSBORO, TX 75494

RAMONA L LONG
1143 CR 2393
WINNSBORO, TX 75494

DUSTIN BRODY ALLEN
2430 CR 2410
WINNSBORO, TX 75494

CARL & KATHERINE KASTNER
1195 CR 2403
WINNSBORO, TX 75494

GEORGE JAMES PIERCE
20343 HWY 11 E
WINNSBORO, TX 7549

BLAKE C & REGINA BAIN
4360 CR 2310
SULPHUR SPRINGS, TX 75482

RAGSDALE LAND COMPANY LLC
PO BOX 822
WINNSBORO, TX 75494

SHIRLEY JACKSON MAY
2822 CR 2408
WINNSBORO, TX 75494-4136

KARI GAYE NOLEN
1577 CR 2393
WINNSBORO, TX 75494

AMELIA ANN L/E GREEN
LAQUITA RACHELLE SAVAGE
1801 CR 2399
WINNSBORO, TX 7549

ANASTASIA & MATTHEW PERRY
PO BOX 917
WINNSBORO, TX 75494

PATRICK JOHN
417 W BROADWAY
WINNSBORO, TX 75494

MISTY GAYLE & JEFFERY ALAN ETAL MCBRIDE
3259 CR 2408
WINNSBORO, TX 75494

JODY W & ROSE M RIOJAS
3999 CR 2408
WINNSBORO, TX 75494

PETER G LAUZON & SHEILA M LAUZON AS CO TRUSTEES
20262 HWY 11 E
WINNSBORO, TX 75494

DENNIS RAY & SHERRY G NICHOLS
2342 CR 2403
WINNSBORO, TX 75494

RAMONA L LONG
1143 CR 2393
WINNSBORO, TX 75494

TEMPLEMAN LIVING TUST
TRUSTEE IRIS ANNETTE TEMPLEMAN
1901 WISTERIA WAY
MCKINNEY, TX 75071

CHARLESTON DAVID GREEN
203 E CEDAR ST
WINNSBORO, TX 75494

RICHARD & TAMMY SMITH
1671 CR 2399
WINNSBORO, TX 75494

PHUONG LAN T TRAN
1394 CR 2393
WINNSBORO, TX 75494

RAGSDALE LAND COMPANY LLC
PO BOX 822
WINNSBORO, TX 75494

HOPKINS COUNTY APPRAISAL DISTRICT

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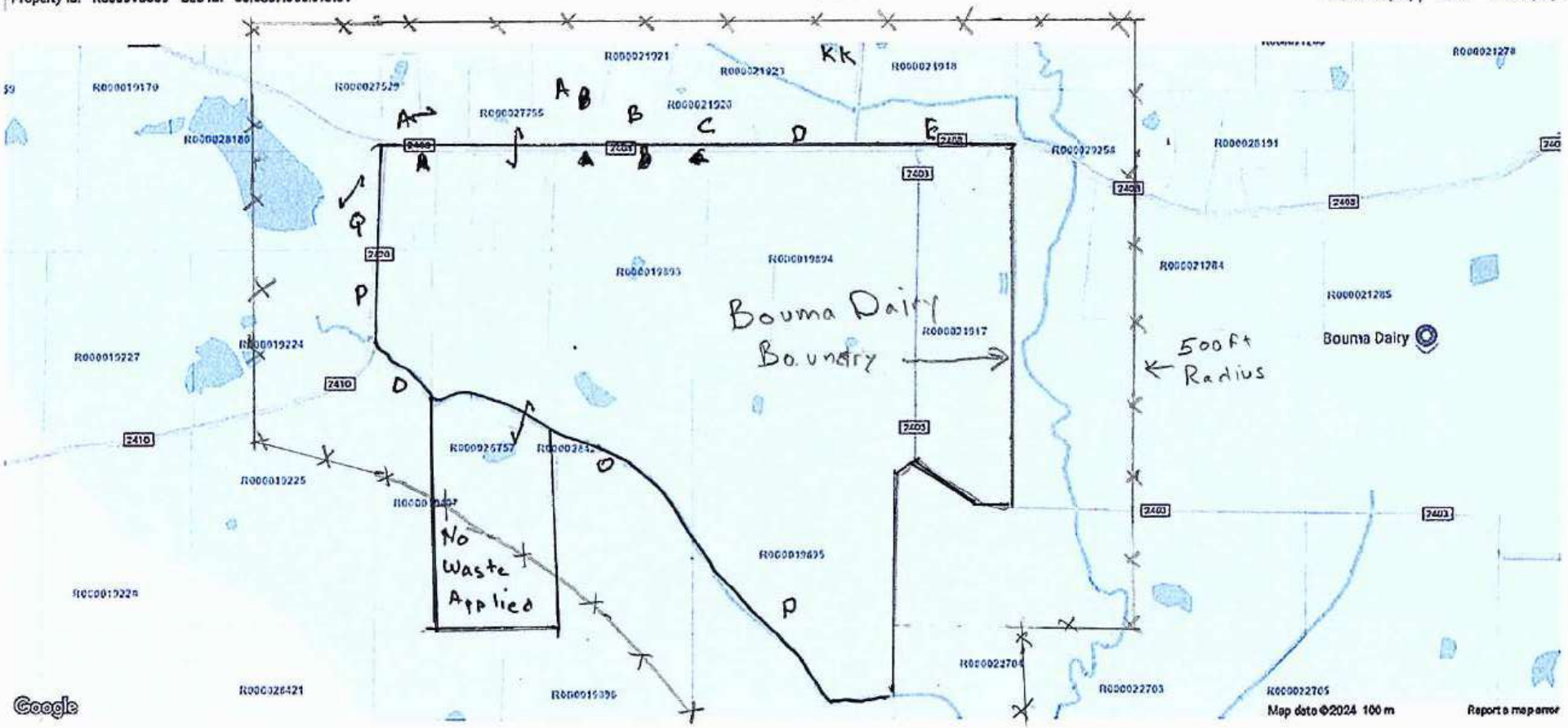
Property Year 2024 Map/GIS

Property ID: R000013309 Geo ID: 65.0307.000.013.01

MAP A

Information Updated 10/23/2024

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MAP F

↓

MAPA ↑

HOPKINS COUNTY

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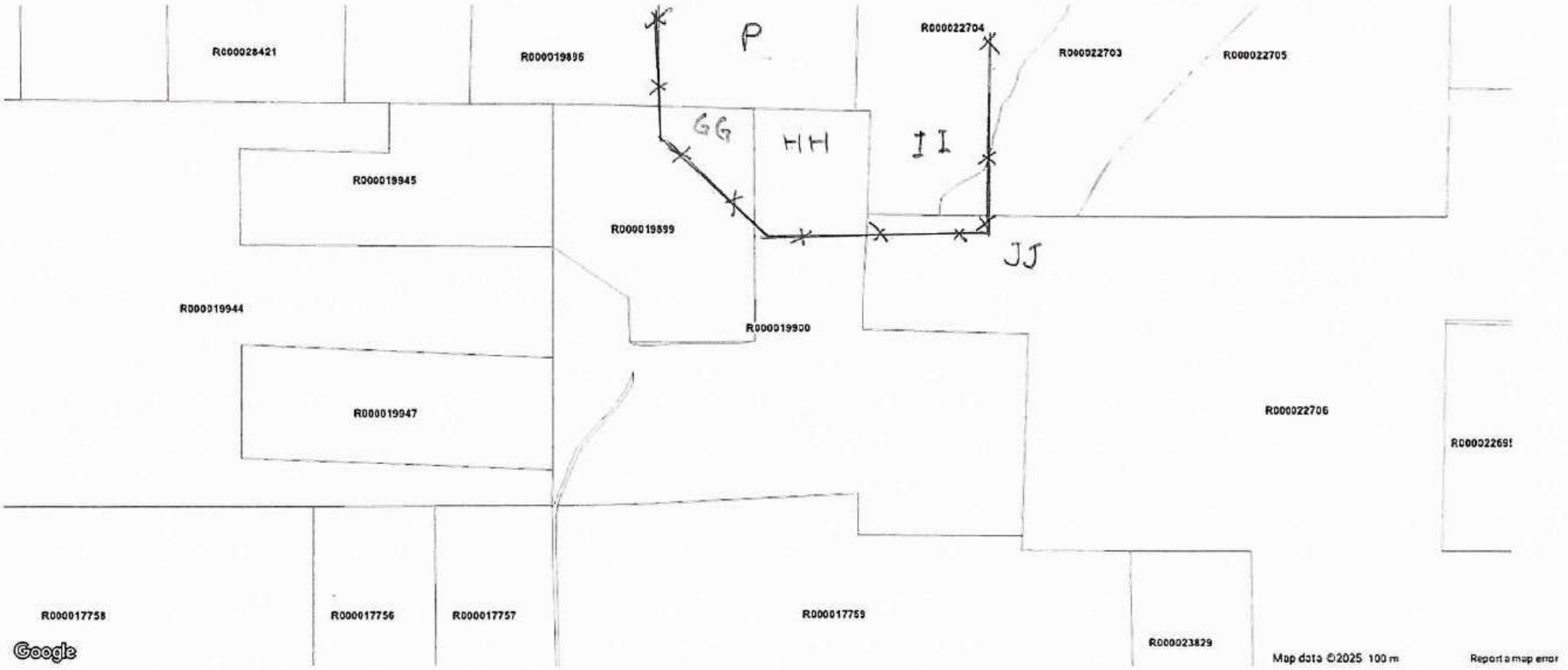
MAP F

Property Year 2024 Map/GIS

Property ID: R000015062 Geo ID: 65.0459.000.002.02

Information Updated 2/3/2025

< Previous Property 14 / 27 Next Property >



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MAPA ↑

HOPKINS COUNTY

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MAP G

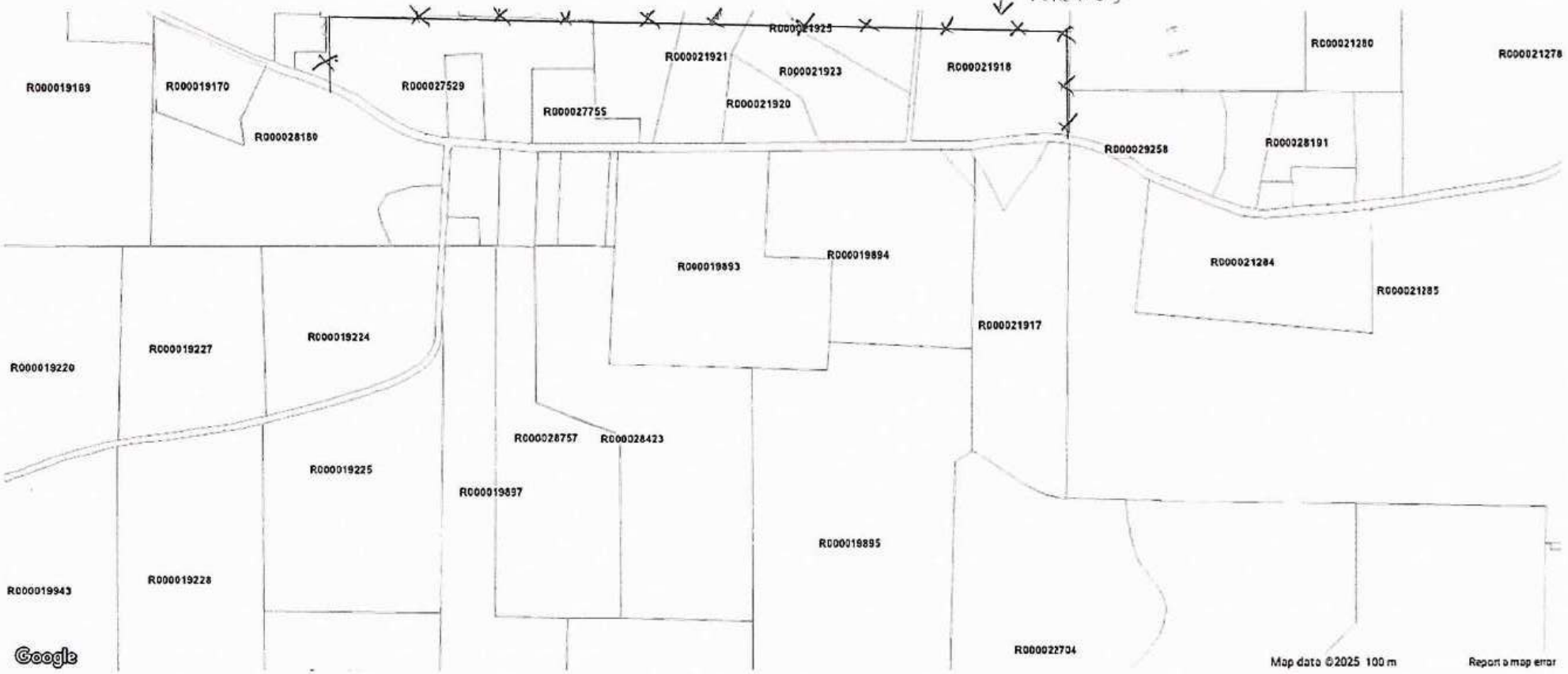
Property Year 2024 Map/GIS

Property ID: R000015062 Geo ID: 65.0459.000.002.02

Information Updated 2/3/2025

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500 Ft Radius



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HOPKINS COUNTY APPRAISAL DISTRICT

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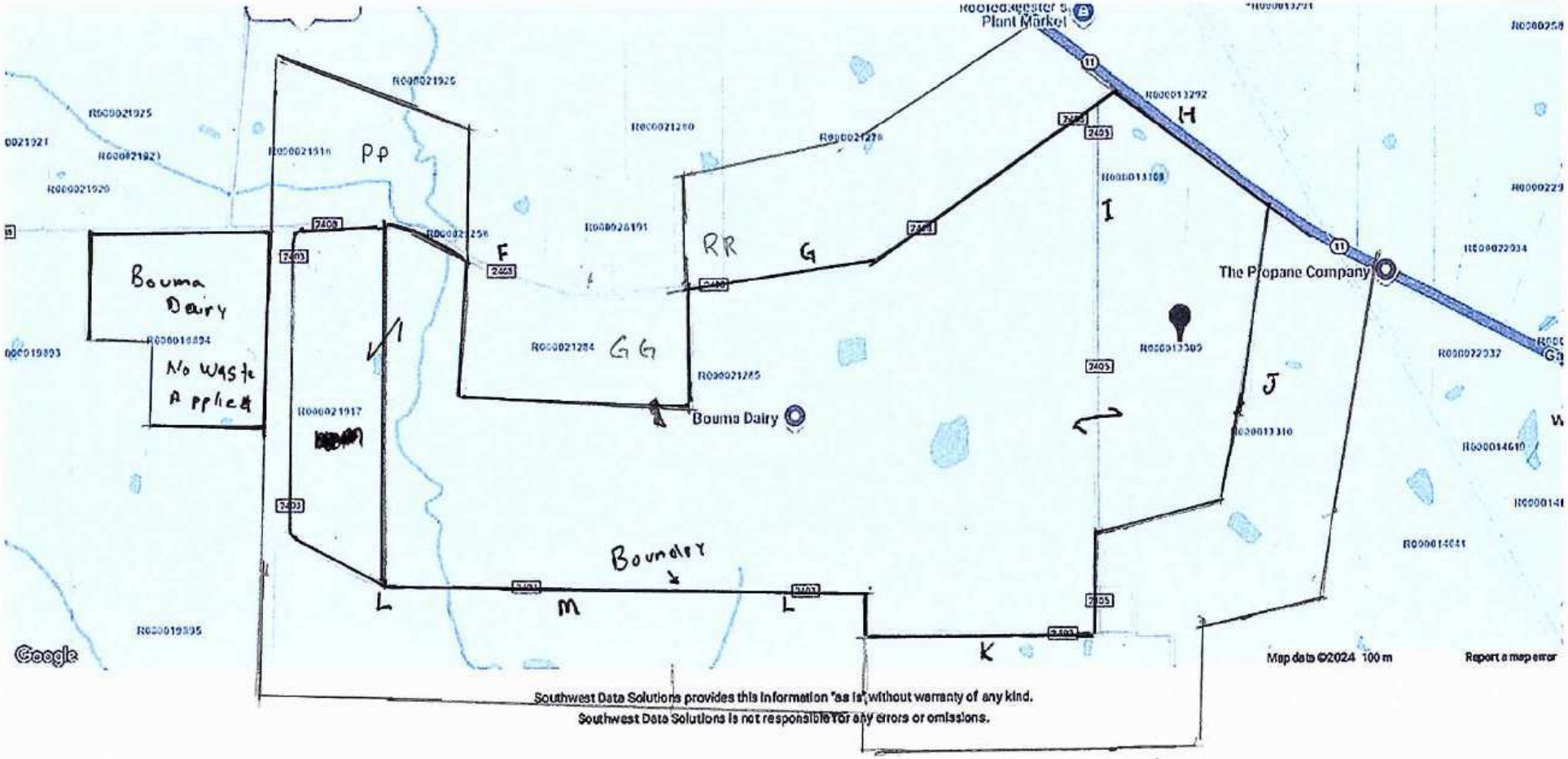
Property Year 2024 Map/GIS

Property ID: R000013309 Geo ID: 65.0307.000.013.01

MAP B

Information Updated 10/23/2024

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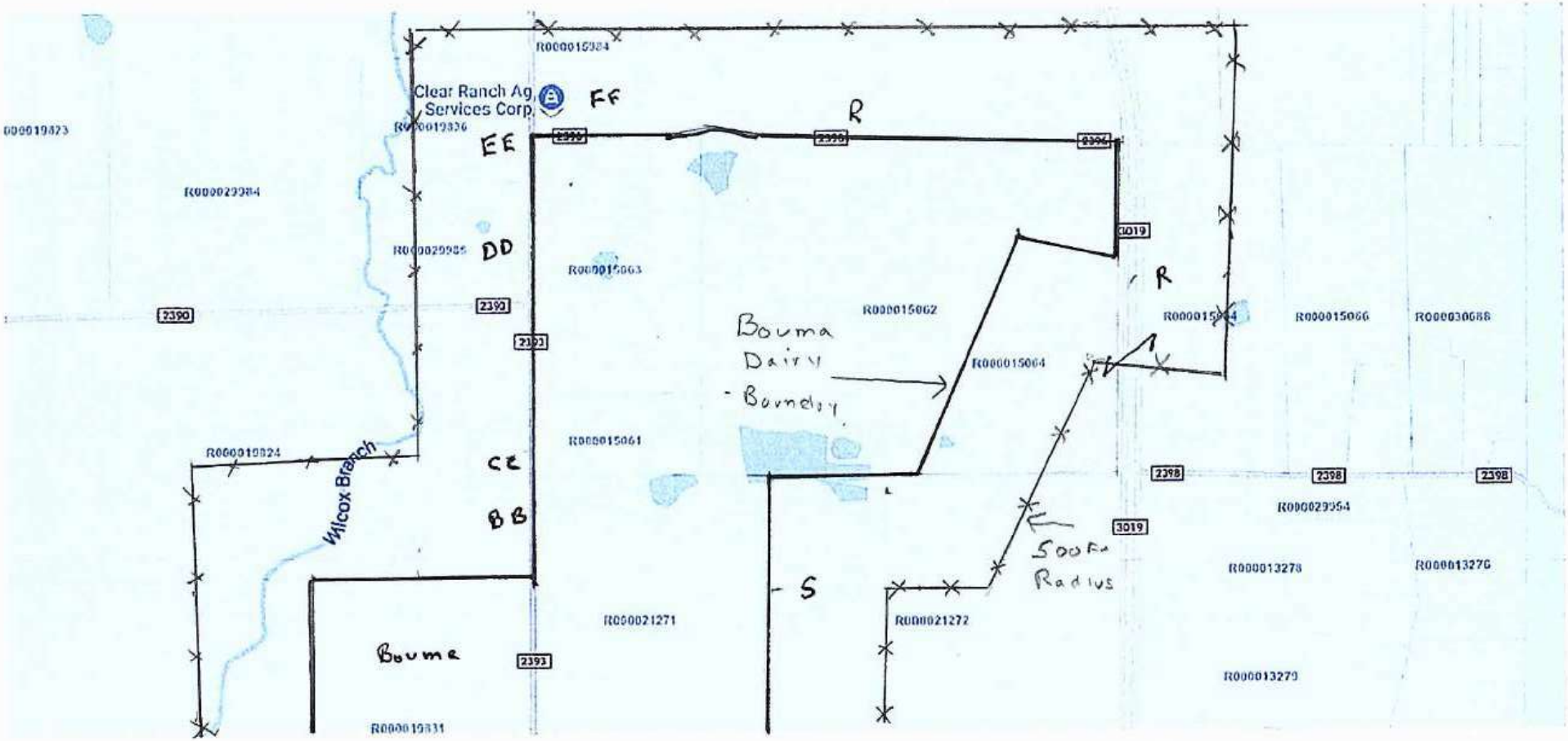
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MAP D

Property Year 2024 Map/GIS
Property ID: R000021285 Geo ID: 65.0898.000.005.01

Information Updated 10/24/2024
< Previous Property 19 / 27 Next Property >



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MAP E ↓

MAP D ↑

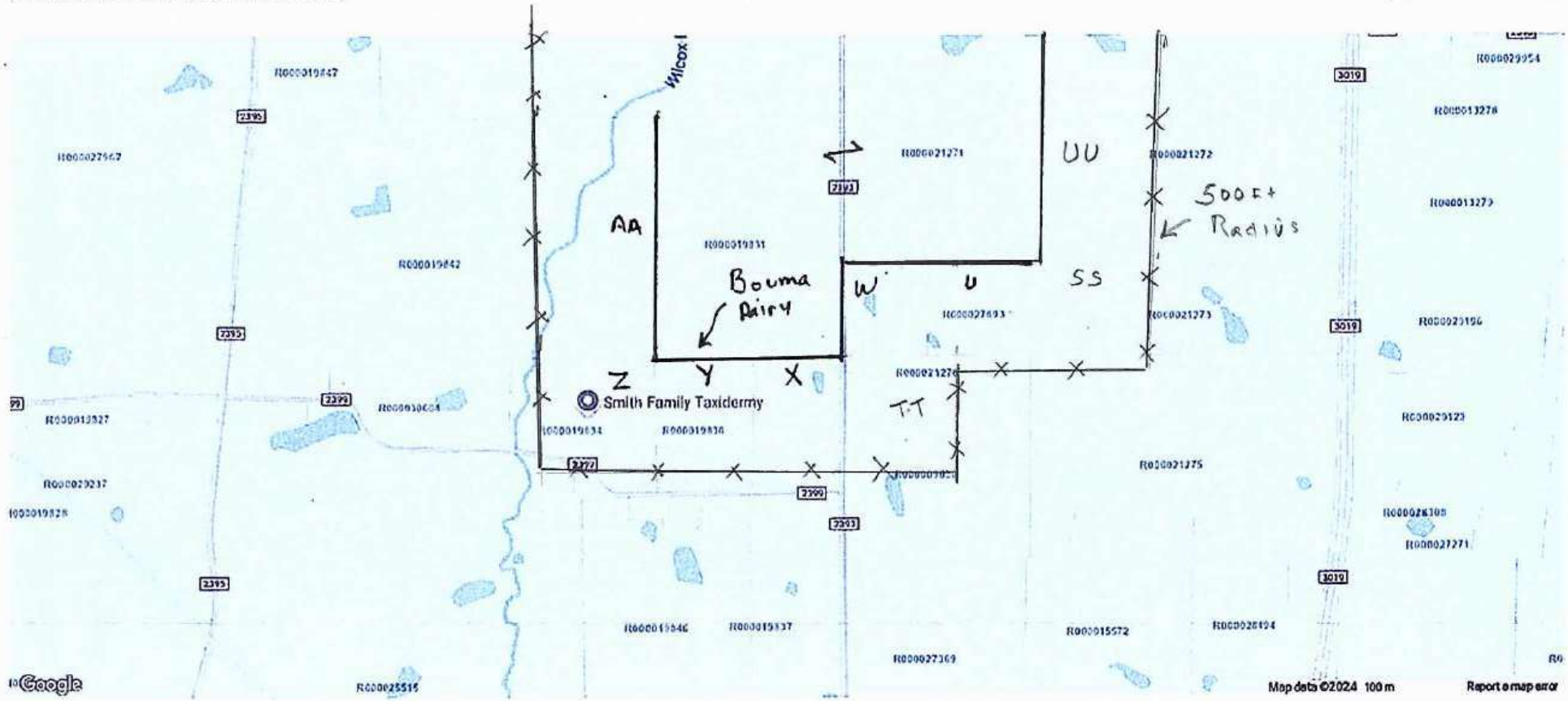
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MAP E

Property Year 2024 Map/GIS
Property ID: R000021285 Geo ID: 65.0898.000.005.01

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Bouma Dary Land Owners Map

A	R000027529 R000019171	AISE J & CHARLOTTE BOUMA 902 MAIN ST HALSTEAD, KS 67056
B	R000021921	DUSTIN BRODY ALLEN 2430 CR 2410 WINNSBORO, TX 75494
C	R000021920	MISTY GAYLE & JEFFERY ALAN ETAL MCBRIDE 3259 CR 2408 WINNSBORO, TX 75494
D	R000021923	SHANE NICHOLS 2745 CR 2403 WINNSBORO, TX 75494
E	R000021918	CARL & KATHERINE KASTNER 1195 CR 2403 WINNSBORO, TX 75494
F	R000021279	JODY W & ROSE M RIOJAS 3999 CR 2408 WINNSBORO, TX 75494
G	R000021278	JOHN P & LESLIE A MOORE P O BOX 724 WINNSBORO, TX 75494
H	R000013292	GEORGE JAMES PIERCE 20343 HWY 11 E WINNSBORO, TX 7549
I	R000013308	LAUZON PETER G & SHEILA M REVOCABLE LIVING TRUST PETER G LAUZON & SHEILA M LAUZON AS CO TRUSTEES 20262 HWY 11 E WINNSBORO, TX 75494
J	R000013310	PHILLIP GILBREATH 7750 LYNDON B JOHNSON FWY 201 DALLAS, TX 75251
K	R000022685	BLAKE C & REGINA BAIN 4360 CR 2310 SULPHUR SPRINGS, TX 75482
L II	R000022705 R000022704	DENNIS RAY & SHERRY G NICHOLS 2342 CR 2403 WINNSBORO, TX 75494

Bouma Dary Land Owners Map

M	R000022703	ROYCE EUGENE & VERA LEE CARTER P O BOX 941 VAN ALSTYNE, TX 75495
N HH	R000019900 R000019900	RAGSDALE LAND COMPANY LLC PO BOX 822 WINNSBORO, TX 75494
O	R000028423 R000019895 R000019897	AISE & CHARLOTTE BOUMA 902 MAIN ST HALSTEAD, KS 67056
P	R000019224	DUSTIN BRODY ALLEN 2430 CR 2410 WINNSBORO, TX 75494
Q	R000028089 R000028180	SHIRLEY JACKSON MAY 2822 CR 2408 WINNSBORO, TX 75494-4136
R	R000015060 R000015064 R000015064	TEMPLEMAN LIVING TUST TRUSTEE IRIS ANNETTE TEMPLEMAN 1901 WISTERIA WAY MCKINNEY, TX 75071
S	R000021272	RIDDLES ELLEN GRUBBS & GARY NEAL GRUBBS 1205 CEDARWOOD DR FLOWER MOUND, TX 75028
U	R000027893	KARI GAYE NOLEN 1577 CR 2393 WINNSBORO, TX 75494
W	R000021274	CHARLESTON DAVID GREEN 203 E CEDAR ST WINNSBORO, TX 75494
X	R000027089	JOHN DAVID & ANNA LAURISSA STONE 1923 CR 2399 WINNSBORO, TX 75494-4241
Y	R000019838	AMELIA ANN L/E GREEN LAQUITA RACHELLE SAVAGE 1801 CR 2399 WINNSBORO, TX 7549
Z	R000019834	RICHARD & TAMMY SMITH 1671 CR 2399 WINNSBORO, TX 75494

Bouma Dary Land Owners Map

AA	R000019842	ANTHONY TY & TAMMY LYNNE MARLER 1179 CR 2399 WINNSBORO, TX 75494
BB	R000019824	ANTHONY TY & TAMMY LYNNE MARLER 1179 CR 2399 WINNSBORO, TX 75494
CC	R000026415	PHUONG LAN T TRAN 1394 CR 2393 WINNSBORO, TX 75494
DD	R000029985	WIEPIE & JENNIFER SANDLIN JONGSMA 4705 CR 2390 WINNSBORO, TX 75494
EE	R000019836	ANASTASIA & MATTHEW PERRY PO BOX 917 WINNSBORO, TX 75494
FF	R000015984	RAMONA L LONG 1143 CR 2393 WINNSBORO, TX 75494

Comisión de Calidad Ambiental del Estado de Texas

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

PERMISO NO. WQoo05477000

SOLICITUD. _ MAIKO HESSEL BOUMA 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100 *[Applicant name, street address, city, state, zip code]* ha solicitado a la Comisión de Calidad Ambiental del Estado de Texas (TCEQ) para el propuesto Permiso No. WQoo05477000 que autoriza al solicitante a operar un nuevo operación de lecheras *[choose animal type:* ganado vacuno (beef cattle), lecheras (dairy), puerco (swine), avícola (poultry)] en un capacidad máxima de 999 *[maximum head count]* animales.

El sitio de aplicación al suelo está ubicado en Winnsboro, TX *[location from a major intersection or community]* en el Condado de Hopkins, *[County]* Texas. 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. [Insert web link from English notice]

La TCEQ recibió esta solicitud el día 01/13/2024 *[date application received by TCEQ]*. La solicitud para el permiso está disponible para leer y copiar en 1200 West Houston Street *[street address of public place where application is available in the county]*. La solicitud (cualquier actualización y aviso inclusive) está disponible electrónicamente en la siguiente página web: 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. 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 DE LA TCEQ. Todos los comentarios escritos del público y los para pedidos una reunión deben ser presentados a la Oficina del Secretario Principal, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 o por el internet at www.tceq.texas.gov/about/comments.html. 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. Si necesita más información en Español sobre esta solicitud para un permiso o el proceso del permiso, por favor llame a El Programa de Educación Pública de la TCEQ, sin cobro, al 1-800-687-4040. La información general sobre la TCEQ puede ser encontrada en nuestro sitio de la red: www.tceq.texas.gov.

También se puede obtener información adicional del MAIKO HESSEL BOUMA *[name of applicant]* a la dirección indicada arriba o llamando a Jim Wyrick *[name of applicant's representative]* al 903-243-0400 *[applicant's telephone number]*.

Fecha de emisión not isssued *[Date notice issued]*

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes	Too acid	Permanent Vegetation: High residue crop
FrB—Freestone fine sandy loam, 1 to 3 percent slopes	Depth to saturated zone	Permanent Vegetation: High residue crop
KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	Slow water movement, Too steep for surface application, too acid	Permanent Vegetation: High residue crop
KvD—Kirvin soils, 3 to 8 percent slopes	Slow water movement, Too steep for surface application, too acid	Permanent Vegetation: High residue crop
Lr—Lufkin-Raino complex		Permanent Vegetation: High residue crop
Na—Nahatche soils, frequently flooded	Flooding	Permanent Vegetation: High residue crop
PkC—Pickton loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop
WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop
WtC—Woodtell loam, 2 to 5 percent slopes	Slow water movement	Permanent Vegetation: High residue crop

TECHNICAL INFORMATION PACKET FOR CONCENTRATED ANIMAL FEEDING OPERATIONS (CAFOS)

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

Name of Site: BOUMA DAIRY

TCEQ Permit Number, if assigned: WQ000 Click here to enter text.

Date Prepared: 11/14/24

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	Manure generated in the freestalls is flushed into the settling basin then into RCS #1 and irrigated to the LMUs with the irrigation water. Very limited amount will be stockpiled at end of the freestalls and hauled to LMUs.
Wastewater	All wastewater gravity flows from the freestalls into the settling basin then into the RCS#1. Where it is stored until there is a crop demand for water and nutrients, and then applied to LMUs at an agronomic rate.
Sludge	Sludge will be cleaned from the RCSs before the sludge volume reaches the designed capacity. A system of irrigation and vacuum tanks will be used to with the sludge from the RCSs
Compost	NA
Feed and Bedding	Feed when spoiled, will be applied to LMUs. When applied it will be applied at a rate similar to that of manure.
Silage stockpiles	Most of the silage is stored under plastic. The plastic will be removed and disposed of in the appropriate waste containers. If the silage is not covered, any ruined silage will be land applied
Dead animals	All dead animals are collected within 24-hours and properly buried within 72 hours of death following TCEQ guidelines.
Dust	Water will be applied to the until the conductions for dust have passed.
Lubricants	All oil and lubricant products will be stored in a covered storage area in covered, waterproof container. Empty containers are to be disposed of following all precautionary guidelines on the container or placing in a commercial garbage

Potential Pollutant Source	Best Management Practices
Pesticides	All pesticides and herbicides application is contracted to an applicator and no chemicals are stored on the property. All pesticides will be used and disposed in accordance with the label rules
Bulk cleaning chemicals	Use and disposal of empty containers will be according to direction on the product label.
Inorganic fertilizers	NA
Fuel storage tanks	All fuels are stored in a properly maintained storage tank, away from wells. Care will be so spills do not occur when equipment is being filled. If a spill occurs, it will be immediately cleaned up and not allowed to flow from the tank area
Other, specify: Click here to enter text.	NA

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: Click here to enter text.

2) Total Number of Animals:
In Open Lots: 999 In Buildings: 999

3) Animal Housing Location, hours/day:
Open Lots: 7 Buildings: 17

4) Average Liveweight, pounds per head: 1400

5) Volatile Solids Removed by Separator System: NA

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

7) Spilled Drinking Water, gallons/day: 4995

8) Water for Cleanup, gallons/day: 4995

9) Water for Manure Removal, gallons/day: 14563

10) Recycled Wastewater, gallons/day: 58252

B. Wastewater Runoff

1) Design Rainfall Amount, inches: 8.00

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
RCS#1	.85	2.36	0	2.25	.10	5.56	5.56
RCS#2	.86	0	0	1.16	4.90	6.92	6.92

Indicate which RCSs are in-series: RCS#1 and RCS#2 are in series

D. RCS Liner or Lack of Hydrologic Connection Certification

Table 3: RCS Hydrologic Connection

RCS Name	Construction Date	Type of Hydrologic Connection Certification
RCS#1	1/6/2000	In-situ Soils – certified 3/1/2007
RCS#2	To be constructed	After completion of RCS

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)
LMU#1	75	Coastal graze 1 AU/1 ac, SG mod graze	14.0 Ac-ft/Ac/Year
LMU#2	44	Coastal graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#3	39	Coastal Hay 4 cut, RG mod Graze	16.3 Ac-ft/Ac/Year
LMU#4	64	Common graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#5	30	Common graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#6	41	Common graze 1 AU/1 ac, SG mod graze	36.2 Ac-ft/Ac/Year
LMU#7	38	Common graze 1 AU/1 ac, SG mod graze	4308.5 Tons/Ac/Year
LMU#8	31	Common graze 1 AU/1 ac, SG mod graze	11782.2 Tons/Ac/Year
LMU#9	101	Common graze 1 AU/1 ac, SG mod graze	11782.2 Tons/Ac/Year

1) Wastewater production, ac-in/year: 43.17
2) Estimated Wastewater application, ac-in/year: 43.17
3) Manure production, tons/year: 3752
4) Estimated manure application, tons/year: 0 as dry manure. 3752 in draghose irrigation
5) Estimated manure transferred to other persons, tons/year: 0

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. Click here to enter text.

F. Soil Limitations

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
	SEE ATTACHMENT	

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
#1	Domestic	Producing	Cased	Maintain 150' Buffer
#2	Domestic	Producing	Cased	Maintain 150' Buffer
#3	Domestic	Producing	Cased	Maintain 150' Buffer

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: 2

¼ - ½ mile: 4

½ - 1 mile: 32

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

RECHARGE FEATURE CERTIFICATION STATEMENT

I certify that potential recharge features, as defined in 30 Texas Administrative Code 321, Subchapter B, ☒ EXIST ☐ DO NOT EXIST on properties used in this application. All information presented on this page and the attached supporting documents is true and accurate to the best of my knowledge.

Certification Signature:_____ Seal and Date:_____

INSTRUCTIONS FOR TECHNICAL INFORMATION PACKET

Section 1. Pollutant Sources Management

For each potential pollutant source identified, describe the best management practices that you will use or are using to reduce the potential impact of the pollutant on the environment. If a pollutant source does not apply to your facility enter "Not Applicable".

Section 2. Retention Control Structure Design

A. Identify the design criteria used to calculate the required size of the control facilities (collection ditches, conduits, and swales for the collection of manure, sludge, or wastewater, and all retention control structures (RCS)). Information for completing the section will be found in the design calculations provided by a licensed Texas Professional Engineer.

B. Provide the design rainfall event amount, (inches), and the design rainfall event based on the location of the facility, animal type, and margin of safety (if required). Identify the source of the design rainfall event.

C. Provide the volume allocations for each RCS. This table is a summary of the specific volumes allocated to the sources of inputs to the RCS system. Information to complete this table will be found in the design calculations provided by a licensed Texas Professional Engineer.

   If applicable, identify which RCSs act in-series (i.e. an RCS that has a natural or artificial method of overflowing into another RCS).

D. For each RCS, provide the date that it was constructed and the type of hydrologic connection certification (i.e. liner certification or certification that no hydrologic connection exists).

E. Indicate if playa lakes are used for RCSs. Use of playas as RCSs for operations that were in existence prior to July 10, 1991, and that meet other conditions.

Section 3. Manure, Sludge and Wastewater Handling

A. Provide the method used to manage manure. If land application is used, indicate the location of the land application areas (i.e. on-site or off-site). Off-site is considered to be land that is owned, operated, controlled, rented or leased by the applicant that is detached from the production area. If composting is used, indicate the location of the compost facility.

B. Provide the method used to manage sludge. If land application is used, indicate the location of the land application areas (i.e. on-site or off-site). Off-site is considered to be land that is owned, operated, controlled, rented or leased by the applicant that is detached from the production area.

C. Provide the method used to manage wastewater. If land application is used, indicate the location of the land application areas (i.e. on-site or off-site). Off-site is considered to be land that is owned, operated, controlled, rented or leased by the applicant that is detached from the production area.

D. Complete this section using information from the nutrient management plan (NMP) that was submitted with the application. Provide the acreage, crop, yield goal, and estimated application rate for each land management unit (LMU).

   Provide the estimated amount of wastewater and manure produced, land applied and transferred annually to other persons, including third-party fields. These values should be taken from the RCS design calculations and NMP. The tons of manure generated, land applied and transferred must be represented either in wet or dry basis.

E. Indicate if part of the production area is in a 100-year floodplain. If yes, describe the best management practices used to protect the site from inundation and provide certification by a licensed Texas Professional Engineer that the facility is protected from inundation during a 100-year flood.

   Indicate if land application or temporary storage of solids is in a 100-year floodplain or near a water course. If yes, describe the best management practices used to minimize an impact to water in the state.

F. For each soil type that has limitations to land application of manure or wastewater, provide the name of the soil type, the characteristics of those soils that may limit land application of manure or wastewater, and the best management practice used to mitigate the limitation. Limiting characteristics include, but are not limited to, texture, permeability, depth to high water table, ponding, slope, depth to bedrock, depth to cemented pan, sodium adsorption ratio, flooding, stoniness, and soil pH. For more information on soil limitations, consult the NRCS National Soil Survey Handbook, Part 620.

G. For each on-site well, provide an identification number and the type of well (drinking water, irrigation water, oil, etc.). Indicate if the well is producing or non-producing; open, cased, or plugged; and the best management practice used to minimize impacts to groundwater.

Section 4. Air Authorization Summary

A. Indicate the type of air authorization this facility is seeking. All facilities must have air authorization. To determine if your facility qualifies for the Air Standard Permit, refer to 30 TAC §321.43.

B. If you selected Air Standard Permit, identify when the AFO started or plans to start operations, then select one option for meeting the buffer requirement of the Air Standard Permit.

C. Identify the number of odor receptors within each distance of permanent odor sources at the facility. Those odor sources that may emit odors 24 hours per day. Permanent odor sources include, but are not limited to, pens, confinement buildings, lagoons, retention control structures, manure stockpile areas, and solid separators. Permanent odor sources **do not** include any feed handling facilities, land application equipment, or land management units.

Section 5. Attachments

The following items must be attached to the Technical Information Packet prior to submittal to the TCEQ.

A. Maps

1) Site map. This map must show the layout of the production area and the location of all wells, water in the state, and required buffer zones in the production area.

2) Land Management Unit map. This map must show the location of all LMUs in relation to the production area. Identify the location of all wells, water in the state, and required buffer zones in the LMUs. Indicate the LMU number and the number of acres available for land application in each LMU. The map must show topographical features, such as waterways and roads.

3) Vicinity map. This map must be a general highway map that shows the location of the CAFO in relation to the nearest town or to the nearest intersection of two major (non-county) roads. All roads should be labeled.

4) Original United States Geological Survey 7.5-minute Quadrangle map. This map must show the location of the production area and LMUs in relation to topographic features within 1 mile of the property boundary.

5) 100-year floodplain map. This is a Federal Emergency Management Agency (FEMA) map which shows the extent of a 100-year flood in relation to the production area. If a FEMA map is not available, a licensed Professional Engineer may be required to certify that the production area is not located in or is protected from a 100-year flood.

6) Runoff Control map. This map must show the direction of runoff flow in the production area and how stormwater is diverted from the production area. The runoff flow may be shown in conjunction with the site map.

7) Natural Resource Conservation Service Soil Survey Map. This map must show the location of the production area and LMUs in relation to the soil types located on the facility. This map may be included as part of the Recharge Feature Certification supporting documents.

B. Professional Certifications. The Recharge Feature Certification Statement, RCS Design Calculations, RCS as-built capacity, and RCS hydrologic connection certifications must be certified by a licensed Texas professional engineer or licensed Texas professional geoscientist, in accordance with the 30 TAC 321, Subchapter B.

C. Land Application

1) Nutrient Management Plan (NMP) – Submit a NMP with this application. A plan based on the NRCS Practice Standard Nutrient Management Code 590, to address the amount (rate), source, placement (method of application), and timing of the application of plant nutrients and soil amendments. The NMP must be developed and certified by a Certified Nutrient Management Specialist or other approved person as listed in 30 TAC 321, Subchapter B. This plan must be developed using the NRCS 590 software.

2) Nutrient Utilization Plan (NUP) - A NMP to evaluate and address site specific characteristics of a LMU to ensure that the beneficial use of manure, sludge, or wastewater is conducted in a manner to prevent adverse impacts on water quality. It is required when the soil phosphorus level exceeds 200 ppm phosphorus in zone 1 of an LMU. If a NUP has already been approved by the TCEQ, attach the approval letter only. A NUP must be developed and certified by a Certified Nutrient

Management Specialist or other approved person as listed in 30 TAC 321, Subchapter B. This plan must be developed using the NRCS 590 software.

3) Provide a copy of the annual soil sampling analyses for each LMU that were used to calculate the application rates.

4) Provide a copy of the annual manure and wastewater analyses used to calculate the application rates.

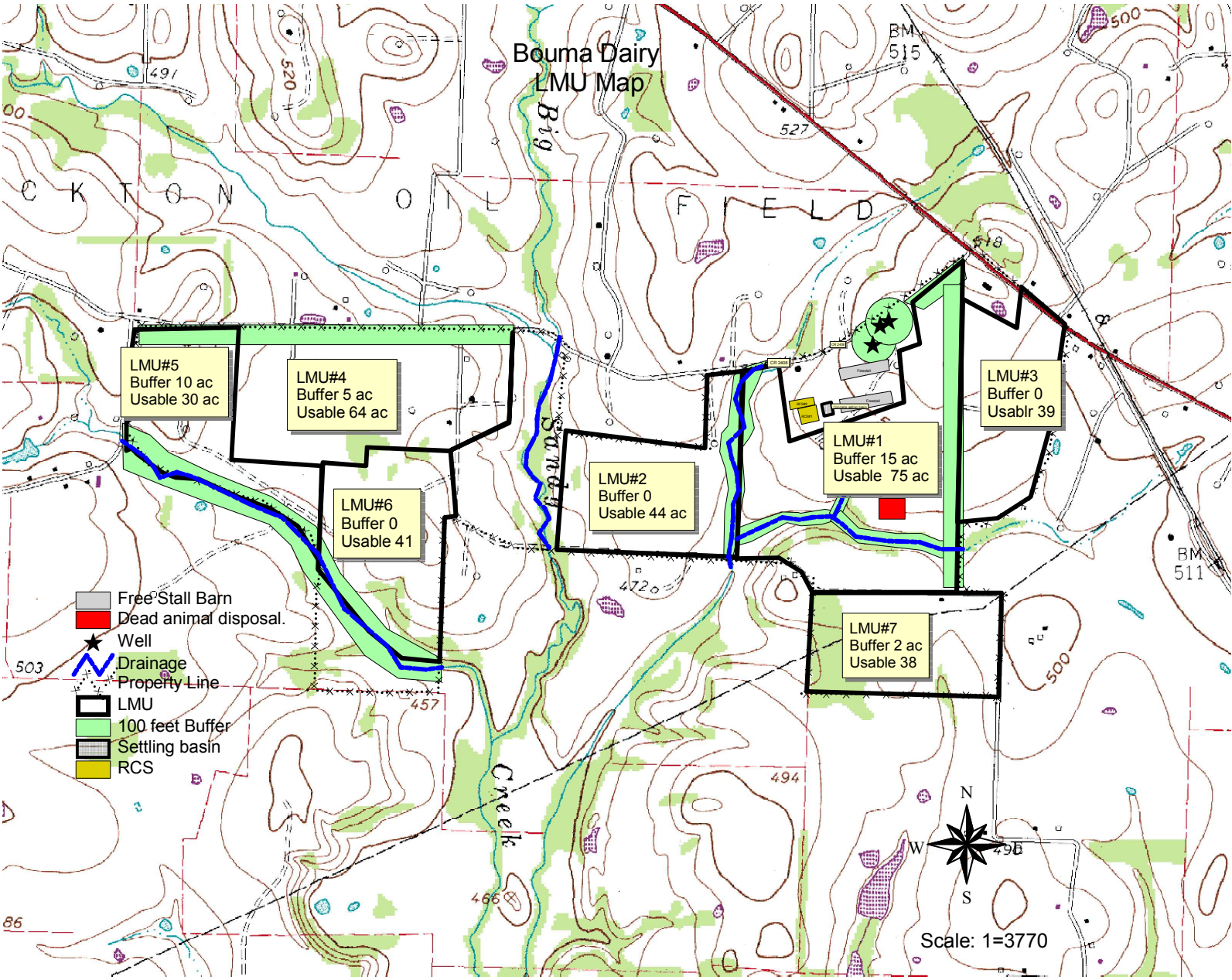
D. Air Standard Permit Documentation. This attachment is only required if you are requesting air authorization under the Air Standard Permit. To determine if you qualify for the Air Standard Permit, refer to 30 TAC 321.43.

1) Area Land Use map. A map that identifies property lines, permanent odor sources, and distances and direction to any occupied residence or business structure, school (including associated recreational areas), permanent structure containing a place of worship, or public park within a one-mile radius of the permanent odor sources at the AFO. The map must include a north arrow, scale of map, buffer zones, and the date the map was generated and the date the distances were verified.

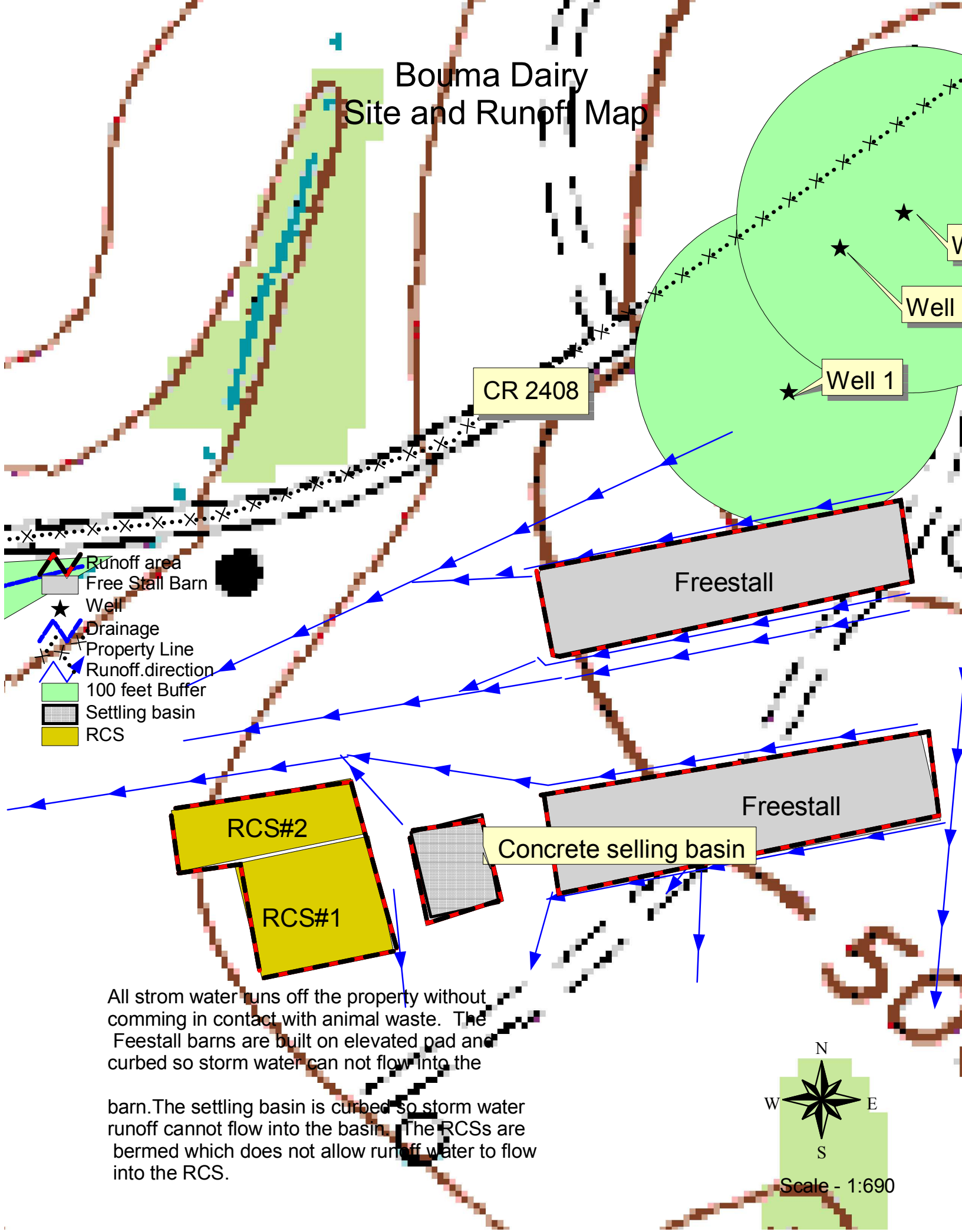
2) Odor Control Plan. This plan identifies best management practices used by the CAFO to minimize odors and nuisance conditions. It is only required if you choose a buffer option that includes an odor control plan.

3) Written Consent Letters. These letters may be used in lieu of the buffer requirements, in accordance with 30 TAC 321.43.

E. Groundwater Monitoring. If groundwater monitoring is required in the existing authorization, attach the groundwater monitoring plan and the previous year's groundwater sampling analyses.


Bouma Dairy
LMU Map
LMU#5
Buffer 10 ac
Usable 30 ac
LMU#4
Buffer 5 ac
Usable 64 ac
LMU#6
Buffer 0
Usable 41
LMU#2
Buffer 0
Usable 44 ac
LMU#1
Buffer 15 ac
Usable 75 ac
LMU#3
Buffer 0
Usablr 39
LMU#7
Buffer 2 ac
Usable 38
Free Stall Barn
Dead animal disposal.
Well
Drainage
Property Line
LMU
100 feet Buffer
Settling basin
RCS
Big Sioux
Creek
N
W
S
Scale: 1=3770

Bouma Dairy
Site and Runoff Map



All strom water runs off the property without comming in contact with animal waste. The Feestall barns are built on elevated pad and curbed so storm water can not flow into the

barn.The settling basin is curbed so storm water runoff cannot flow into the basin. The RCSs are bermed which does not allow runoff water to flow into the RCS.

Scale - 1:690

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hopkins and Rains Counties, Texas

Bouma Dairy



August 21, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

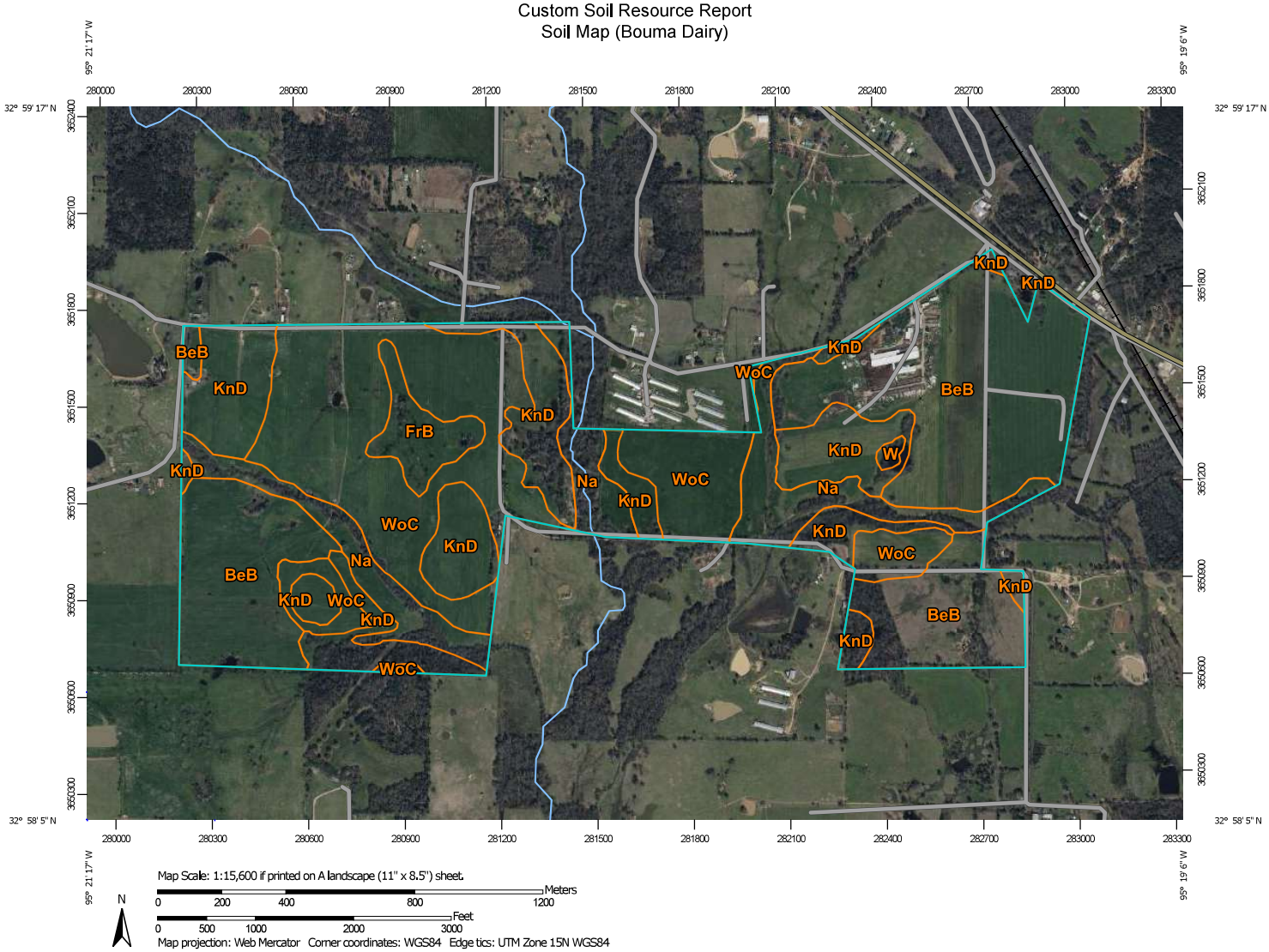
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Bouma Dairy)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hopkins and Rains Counties, Texas
Survey Area Data: Version 19, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 19, 2023—Mar 5, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Bouma Dairy)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Bernaldo fine sandy loam, 1 to 3 percent slopes	203.2	36.0%
FrB	Freestone fine sandy loam, 1 to 3 percent slopes	16.1	2.9%
KnD	Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	122.5	21.7%
Na	Nahatche soils, frequently flooded	67.5	12.0%
W	Water	1.5	0.3%
WoC	Wolfpen loamy fine sand, 2 to 5 percent slopes	153.3	27.2%
Totals for Area of Interest		**564.2**	**100.0%**

Map Unit Descriptions (Bouma Dairy)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hopkins and Rains Counties, Texas

BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tf44
Elevation: 200 to 720 feet
Mean annual precipitation: 42 to 51 inches
Mean annual air temperature: 54 to 75 degrees F
Frost-free period: 240 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bernaldo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernaldo

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

A - 0 to 4 inches: fine sandy loam
E - 4 to 12 inches: fine sandy loam
Bt - 12 to 47 inches: sandy clay loam
Bt/E - 47 to 80 inches: sandy clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 42 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F133BY013TX - Terrace
Hydric soil rating: No

Minor Components

Freestone

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

FrB—Freestone fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wg9c
Elevation: 140 to 790 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 62 to 66 degrees F
Frost-free period: 218 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Freestone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freestone

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy alluvium derived from shale and siltstone

Typical profile

Ap - 0 to 4 inches: fine sandy loam
E - 4 to 11 inches: fine sandy loam
Bt - 11 to 20 inches: sandy clay loam

B/Et1 - 20 to 28 inches: clay loam
B/Et2 - 28 to 44 inches: clay
B't - 44 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Minor Components

Raino

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Mounds
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

Woodtell

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tlk3
Elevation: 230 to 630 feet
Mean annual precipitation: 42 to 49 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 195 to 242 days
Farmland classification: Not prime farmland

Map Unit Composition

Kirvin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 4 inches: gravelly fine sandy loam
E - 4 to 12 inches: gravelly fine sandy loam
Bt - 12 to 31 inches: clay
BCt - 31 to 43 inches: clay loam
C - 43 to 80 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

Minor Components

Briley
Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Bowie
Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

Na—Nahatche soils, frequently flooded

Map Unit Setting
National map unit symbol: dklg
Elevation: 100 to 400 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 235 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition
Nahatche and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nahatche

Setting
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium of holocene age

Typical profile
H1 - 0 to 7 inches: clay loam
H2 - 7 to 65 inches: loam

H3 - 65 to 80 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R087BY007TX - Loamy Bottomland
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 5 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tcnz
Elevation: 210 to 570 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 204 to 236 days
Farmland classification: Not prime farmland

Map Unit Composition

Wolfpen and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wolfpen

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 27 inches: loamy fine sand
Bt - 27 to 55 inches: sandy clay loam
Bt/E - 55 to 70 inches: sandy clay loam
B't - 70 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Minor Components

Oakwood

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hopkins and Rains Counties, Texas



August 21, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

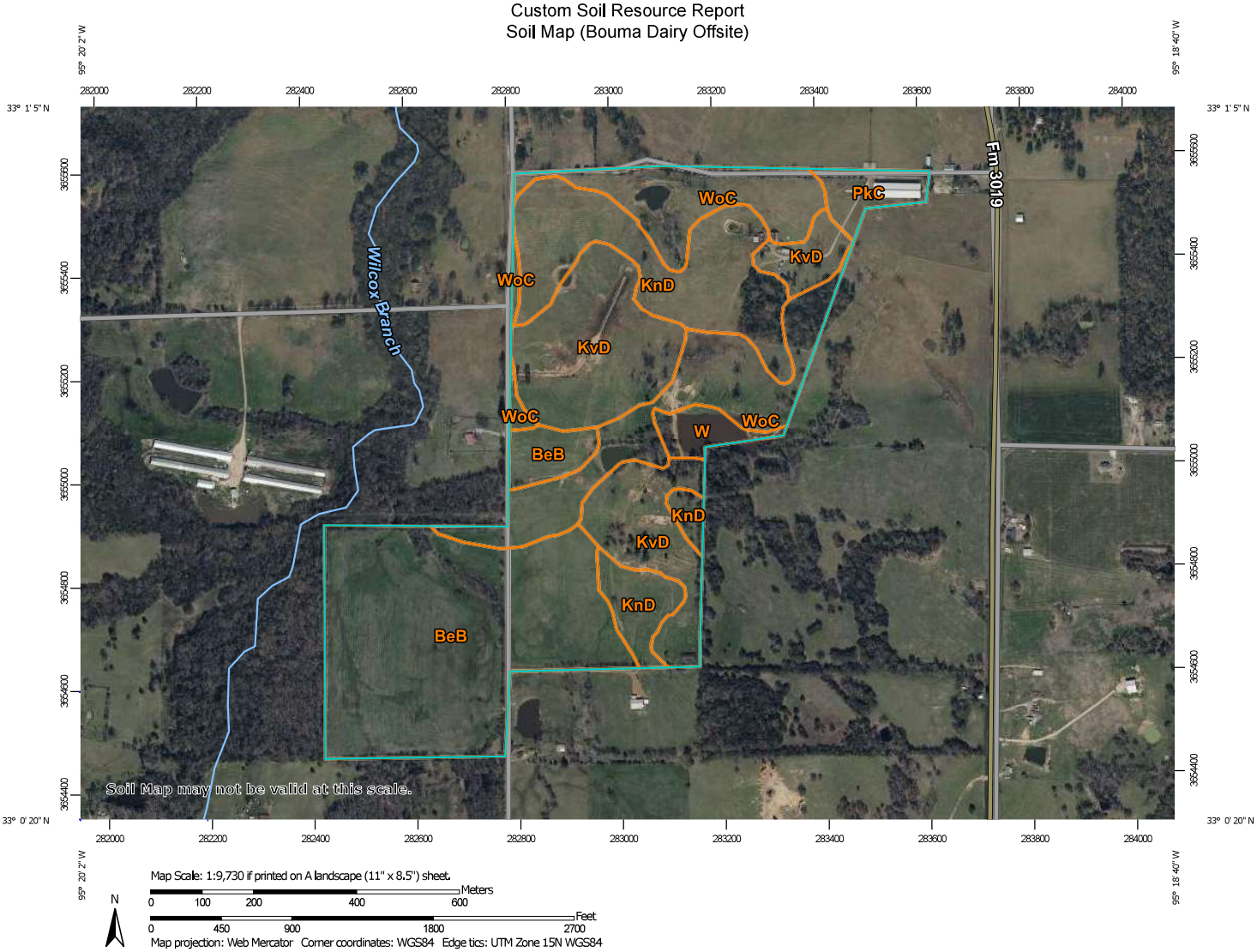
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Bouma Dairy Offsite)



Map Scale: 1:9,730 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hopkins and Rains Counties, Texas
Survey Area Data: Version 19, Sep 5, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 30, 2021—Mar 5, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Bouma Dairy Offsite)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Bernaldo fine sandy loam, 1 to 3 percent slopes	55.2	33.7%
KnD	Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	29.9	18.2%
KvD	Kirvin soils, 3 to 8 percent slopes	36.5	22.3%
PkC	Pickton loamy fine sand, 2 to 5 percent slopes	4.3	2.6%
W	Water	3.5	2.1%
WoC	Wolfpen loamy fine sand, 2 to 5 percent slopes	34.5	21.1%
Totals for Area of Interest		**163.8**	**100.0%**

Map Unit Descriptions (Bouma Dairy Offsite)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not

mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Hopkins and Rains Counties, Texas

BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tf44
Elevation: 200 to 720 feet
Mean annual precipitation: 42 to 51 inches
Mean annual air temperature: 54 to 75 degrees F
Frost-free period: 240 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bernaldo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernaldo

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

A - 0 to 4 inches: fine sandy loam
E - 4 to 12 inches: fine sandy loam
Bt - 12 to 47 inches: sandy clay loam
Bt/E - 47 to 80 inches: sandy clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 42 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F133BY013TX - Terrace
Hydric soil rating: No

Minor Components

Freestone

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tlk3
Elevation: 230 to 630 feet
Mean annual precipitation: 42 to 49 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 195 to 242 days
Farmland classification: Not prime farmland

Map Unit Composition

Kirvin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 4 inches: gravelly fine sandy loam
E - 4 to 12 inches: gravelly fine sandy loam

Bt - 12 to 31 inches: clay
BCt - 31 to 43 inches: clay loam
C - 43 to 80 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

Minor Components

Briley

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Bowie

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

KvD—Kirvin soils, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: dklb

Elevation: 400 to 650 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 235 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition
Kirvin and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting
Landform: Interfluves
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from sandstone and shale

Typical profile
H1 - 0 to 4 inches: sandy clay loam
H2 - 4 to 37 inches: clay
H3 - 37 to 64 inches: clay loam

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

PkC—Pickton loamy fine sand, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 2tf4k
Elevation: 220 to 670 feet
Mean annual precipitation: 43 to 50 inches
Mean annual air temperature: 63 to 68 degrees F
Frost-free period: 228 to 239 days
Farmland classification: Not prime farmland

Map Unit Composition

Pickton and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pickton

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 8 inches: loamy fine sand
E - 8 to 54 inches: loamy fine sand
Bt1 - 54 to 63 inches: sandy clay loam
Bt2 - 63 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 56 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F133BY008TX - Northern Deep Sandy Upland
Hydric soil rating: No

Minor Components

Tonkawa

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F133BY010TX - Very Deep Sandy Upland
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Ridges

Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tcnz
Elevation: 210 to 570 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 204 to 236 days
Farmland classification: Not prime farmland

Map Unit Composition

Wolfpen and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wolfpen

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand

E - 6 to 27 inches: loamy fine sand
Bt - 27 to 55 inches: sandy clay loam
Bt/E - 55 to 70 inches: sandy clay loam
B't - 70 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Minor Components

Oakwood

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

AOI Inventory

This folder contains a collection of tabular reports that present a variety of soil information. Included are various map unit description reports, special soil interpretation reports, and data summary reports.

Map Unit Description (Brief) (Bouma Dairy Offsite)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the selected area. The component descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit. A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the associated soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas (components) for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The "Map Unit Description (Brief)" report gives a brief, general description of the soil components that occur in a map unit. Descriptions of nonsoil (miscellaneous areas) and minor map unit components may or may not be included. This description is written by the local soil scientists responsible for the respective soil survey area

data. A more detailed description can be generated by the "Map Unit Description" report.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief) (Bouma Dairy Offsite)

Hopkins and Rains Counties, Texas

Map Unit: KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Description Category: PHG

8C - LOAMY UPLAND - Moderately deep to very deep uplands with loamy surfaces and friable loamy subsoils; slopes 0 to 8 percent; medium natural fertility; medium to high water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: WSG

4f2 - Rock fragments cause seedling mortality to increase during dry periods. Erosion hazards increase with slope. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 70. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 130 board feet (Doyle rule) per acre per year. Native species important to wildlife include red oak, post oak, American beautyberry, and tickclover. High value grasses and forbs used by livestock include pinehill bluestem, big bluestem, longleaf uniola, indiangrass, and sedge. Stocking rates depend on canopy density and range from 6-40 acres per animal unit.

Map Unit: KvD—Kirvin soils, 3 to 8 percent slopes

Description Category: WSG

4f2 - Rock fragments cause seedling mortality to increase during dry periods. Erosion hazards increase with slope. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 70. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 130 board feet (Doyle rule) per acre per year. Native species important to wildlife include red oak, post oak, American beautyberry, and tickclover. High value grasses and forbs used by livestock include pinehill bluestem, big bluestem, longleaf uniola, indiangrass, and sedge. Stocking rates depend on canopy density and range from 6-40 acres per animal unit.

Map Unit: PkC—Pickton loamy fine sand, 2 to 5 percent slopes

Description Category: PHG

9B - DEEP SANDY UPLAND - Deep and very deep, sandy uplands with sandy surfaces greater than 40 inches; low natural fertility; low water holding capacity with good plant-soil-moisture relationship; low to medium production potential.

Description Category: WSG

3s2 - Sandy texture may cause moderate equipment limitations and seedling mortality. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 80. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 230 board feet (Doyle rule) per acre per year. Native species important to wildlife include post oak, dogwood, and yaupon. High value grasses and forbs used by livestock include pinehill bluestem, little bluestem, longleaf uniola, and indiangrass. Stocking rates depend on canopy density and range from 8-40 acres per animal unit.

Map Unit: WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Description Category: PHG

9A - SANDY UPLAND - Deep and very deep, sandy uplands with clayey or loamy subsoils within 40 inches; low natural fertility; low to medium water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: WSG

3s2 - Sandy texture may cause moderate equipment limitations and seedling mortality. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 80. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 230 board feet (Doyle rule) per acre per year. Native species important to wildlife include post oak, dogwood, and yaupon. High value grasses and forbs used by livestock include pinehill bluestem, little bluestem, longleaf uniola, and indiangrass. Stocking rates depend on canopy density and range from 8-40 acres per animal unit.

Map Unit Description (Brief, Generated) (Bouma Dairy Offsite)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, provide information on the composition of map units and properties of their components.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic

class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated) (Bouma Dairy Offsite)

Hopkins and Rains Counties, Texas

Map Unit: BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Component: Bernaldo (90%)

The Bernaldo component makes up 90 percent of the map unit. Slopes are 1 to 3 percent. This component is on stream terraces on coastal plains. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 47 inches during January, February, November, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY013TX Terrace ecological site. Nonirrigated land capability classification is 2e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Freestone (5%)

Generated brief soil descriptions are created for major soil components. The Freestone soil is a minor component.

Component: Wolfpen (5%)

Generated brief soil descriptions are created for major soil components. The Wolfpen soil is a minor component.

Map Unit: KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Component: Kirvin (90%)

The Kirvin component makes up 90 percent of the map unit. Slopes are 2 to 8 percent. This component is on interfluves on coastal plains. The parent material consists of clayey fluviomarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY003TX Loamy Over Clayey Upland ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Briley (5%)

Generated brief soil descriptions are created for major soil components. The Briley soil is a minor component.

Component: Bowie (5%)

Generated brief soil descriptions are created for major soil components. The Bowie soil is a minor component.

Map Unit: KvD—Kirvin soils, 3 to 8 percent slopes

Component: Kirvin (100%)

The Kirvin component makes up 100 percent of the map unit. Slopes are 3 to 8 percent. This component is on interfluves on coastal plains. The parent material consists of clayey residuum weathered from sandstone and shale. Depth to a root restrictive layer, bedrock, densic, inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY003TX Loamy Over Clayey Upland ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map Unit: PkC—Pickton loamy fine sand, 2 to 5 percent slopes

Component: Pickton (90%)

The Pickton component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on interfluves on coastal plains. The parent material consists of sandy and loamy fluviomarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 54 inches during January, February, March, April. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY008TX Northern Deep Sandy Upland ecological site. Nonirrigated land capability classification is 3s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Tonkawa (5%)

Generated brief soil descriptions are created for major soil components. The Tonkawa soil is a minor component.

Component: Wolfpen (5%)

Generated brief soil descriptions are created for major soil components. The Wolfpen soil is a minor component.

Map Unit: W—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Map Unit: WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Component: Wolfpen (90%)

The Wolfpen component makes up 90 percent of the map unit. Slopes are 2 to 5 percent. This component is on interfluves on coastal plains. The parent material consists of sandy and loamy fluviomarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 55 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 1 percent. This component is in the F133BY006TX Northern Sandy Loam Upland ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: Oakwood (10%)

Generated brief soil descriptions are created for major soil components. The Oakwood soil is a minor component.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties (Bouma Dairy Offsite)

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)

Physical Soil Properties–Hopkins and Rains Counties, 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*					
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes														
Bernaldo	0-4	55-69- 73	15-22- 30	3- 9- 15	1.48-1.49	14.00-42.00	0.12-0.16	0.0-1.0	0.5-2.0	.28	.28	5	3	86
	4-12	55-69- 73	15-22- 30	3- 9- 15	1.58-1.67	14.00-42.00	0.11-0.15	0.0-1.0	0.1-1.0	.37	.37			
	12-47	47-61- 65	15-17- 25	18-22- 30	1.44-1.61	4.00-14.00	0.16-0.20	0.9-1.7	0.1-0.3	.28	.28			
	47-80	47-62- 65	15-17- 25	18-21- 30	1.44-1.61	4.00-14.00	0.16-0.20	0.9-1.8	0.0-0.3	.28	.28			
KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes														
Kirvin	0-4	53-65- 73	12-27- 40	2- 9- 15	1.49-1.52	14.00-42.00	0.07-0.11	0.0-2.9	0.5-2.0	.15	.32	4	5	56
	4-12	53-65- 73	12-27- 40	2- 9- 15	1.57-1.62	14.00-42.00	0.07-0.11	0.0-2.9	0.3-1.0	.15	.32			
	12-31	21-23- 55	5-29- 44	35-48- 59	1.29-1.63	1.40-4.00	0.11-0.15	3.0-5.9	0.1-1.0	.20	.20			
	31-43	20-30- 55	10-35- 39	25-35- 50	1.43-1.64	1.40-4.00	0.11-0.15	3.0-5.9	0.1-1.0	.28	.28			
	43-80	20-35- 44	20-33- 45	28-33- 39	1.63-1.75	1.40-4.00	0.08-0.14	3.0-5.9	0.1-1.0	.32	.32			
KvD—Kirvin soils, 3 to 8 percent slopes														
Kirvin	0-4	-56-	-15-	20-30- 40	1.20-1.40	1.40-4.00	0.12-0.15	3.0-5.9	0.5-1.0	.20	.20	4	5	56
	4-37	-23-	-29-	35-48- 60	1.30-1.45	1.40-4.00	0.11-0.15	3.0-5.9	0.1-1.0	.20	.20			
	37-64	-35-	-33-	28-33- 40	1.40-1.60	0.42-1.40	0.08-0.14	3.0-5.9	0.1-1.0	.32	.32			

Physical Soil Properties–Hopkins and Rains Counties, 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*					
PkC—Pickton loamy fine sand, 2 to 5 percent slopes														
Pickton	0-8	71-85- 87	5- 7- 24	4- 8- 12	1.30-1.60	42.00-141.00	0.07-0.11	0.0-2.9	0.5-1.0	.15	.15	5	2	134
	8-54	71-86- 90	5- 7- 24	3- 8- 12	1.30-1.60	42.00-141.00	0.07-0.11	0.0-2.9	0.1-0.8	.15	.15			
	54-63	42-58- 65	10-18- 28	18-24- 30	1.30-1.65	4.00-14.00	0.12-0.17	0.0-2.9	0.1-0.4	.24	.24			
	63-80	42-58- 65	10-18- 28	18-24- 30	1.30-1.65	4.00-14.00	0.12-0.17	0.0-2.9	0.1-0.3	.24	.24			
W—Water														
Water	—	—	—	—	—	—	—	—	—					
WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes														
Wolfpen	0-6	70-86- 90	0- 7- 27	3- 8- 12	1.30-1.60	42.00-141.00	0.06-0.09	0.0-2.9	0.5-2.0	.17	.17	5	2	134
	6-27	70-86- 90	0- 7- 27	3- 8- 12	1.30-1.65	42.00-141.00	0.05-0.09	0.0-2.9	0.2-0.5	.15	.15			
	27-55	40-58- 75	5-18- 30	18-24- 30	1.30-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.2-0.3	.24	.24			
	55-70	40-57- 75	5-18- 30	15-25- 35	1.30-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.1-0.2	.24	.24			
	70-80	40-57- 75	5-18- 30	15-25- 35	1.30-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.0-0.2	.24	.24			

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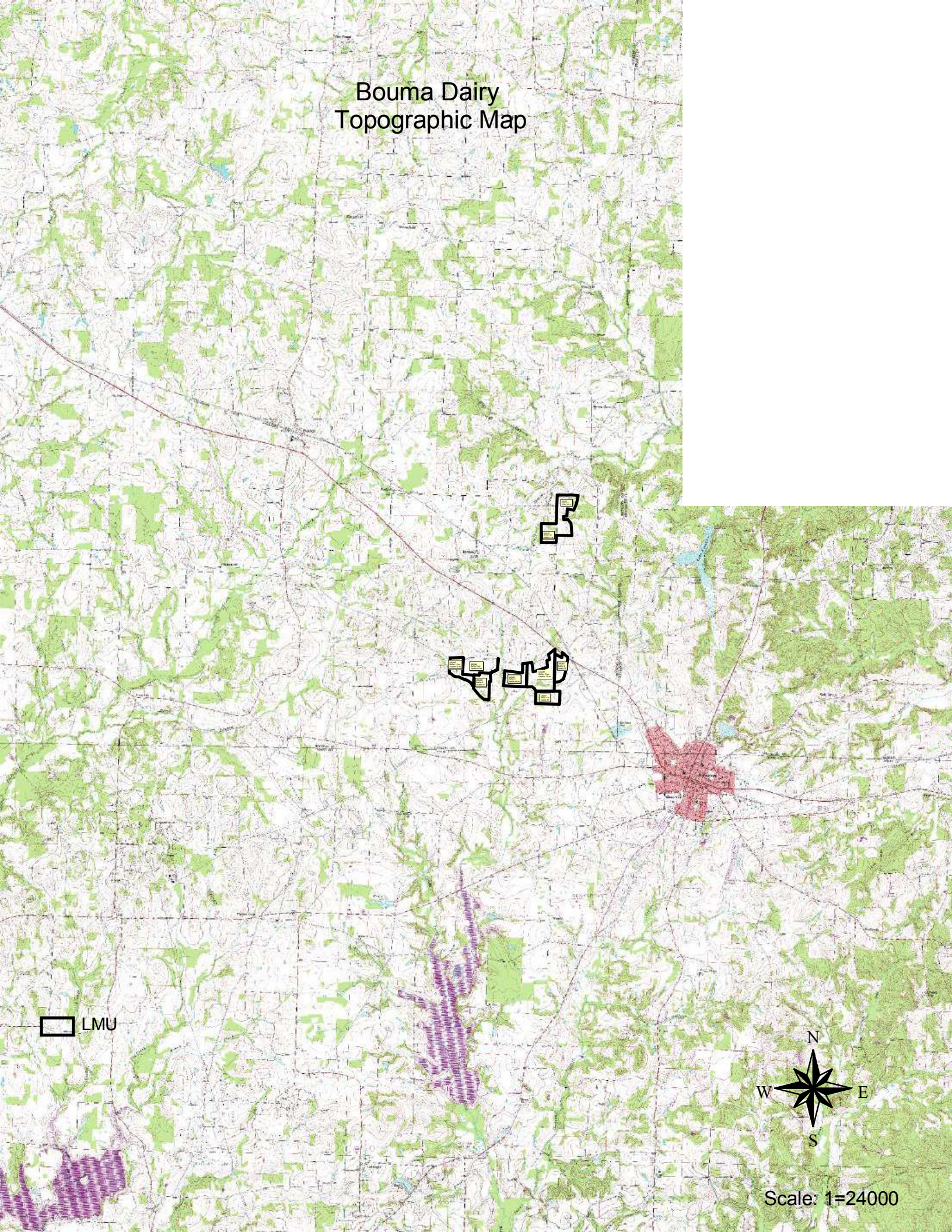
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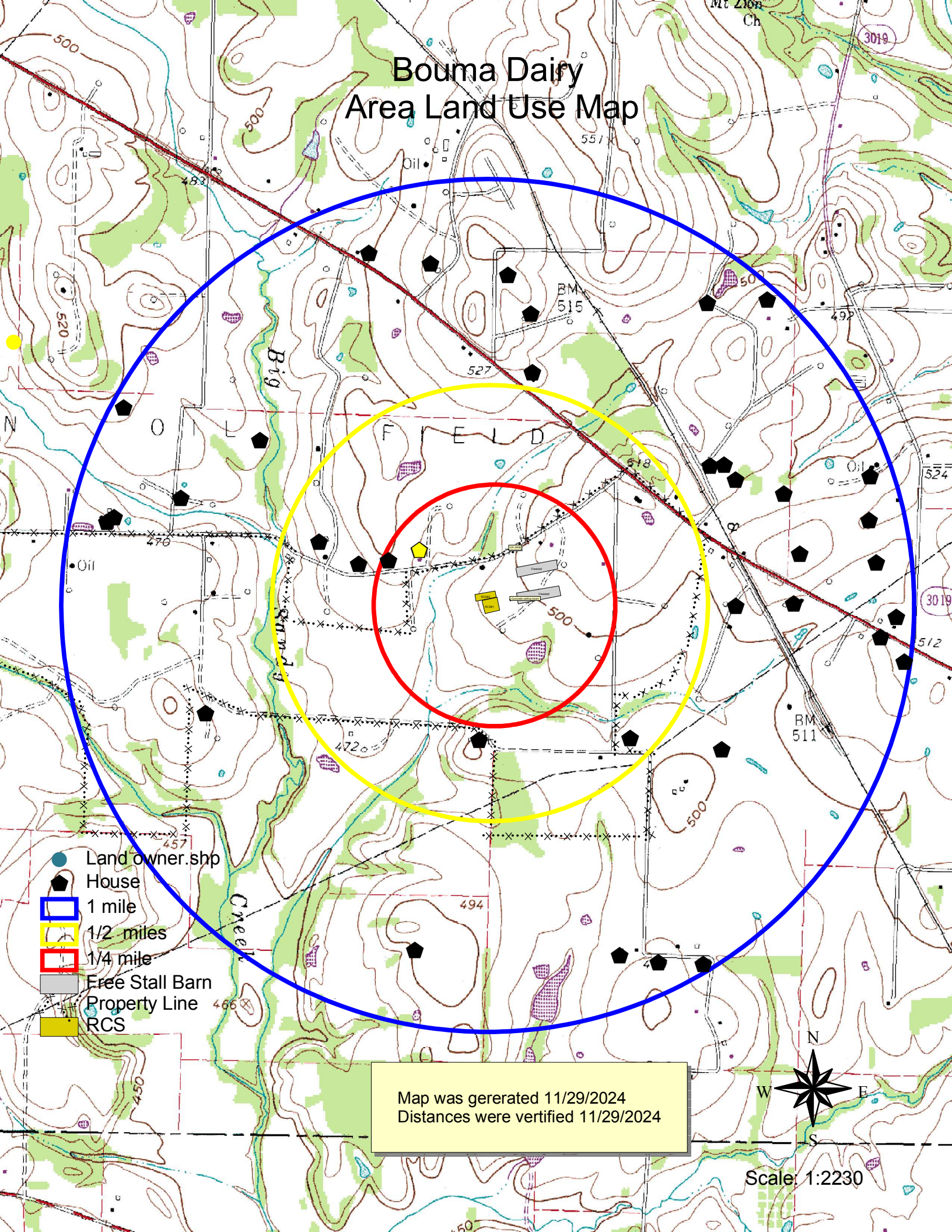
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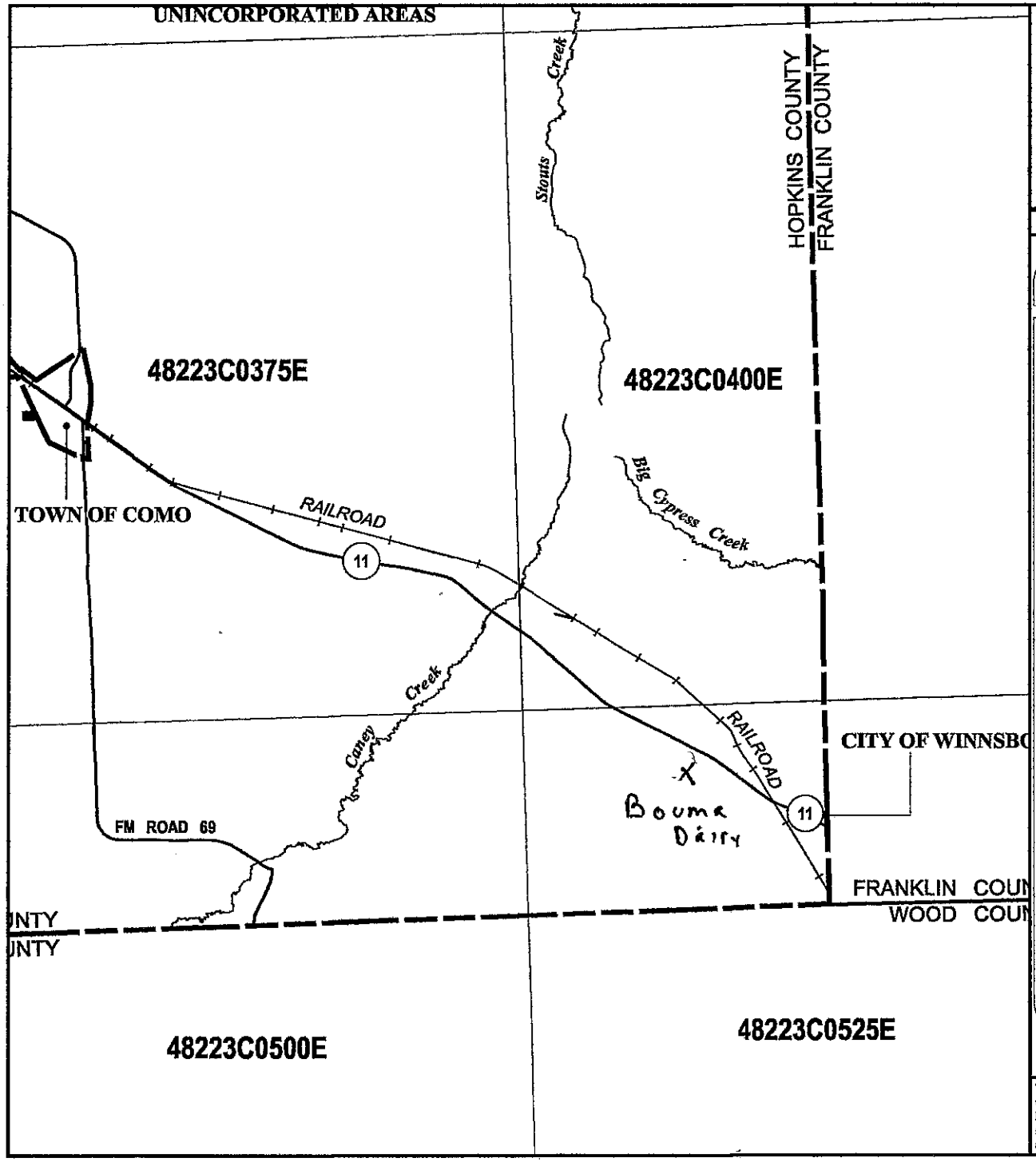
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Bouma Dairy
Topographic Map
LMU
N
W
E
S
Scale: 1=24000

Bouma Dairy
Area Land Use Map





NFIP

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

HOPKINS COUNTY, TEXAS AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

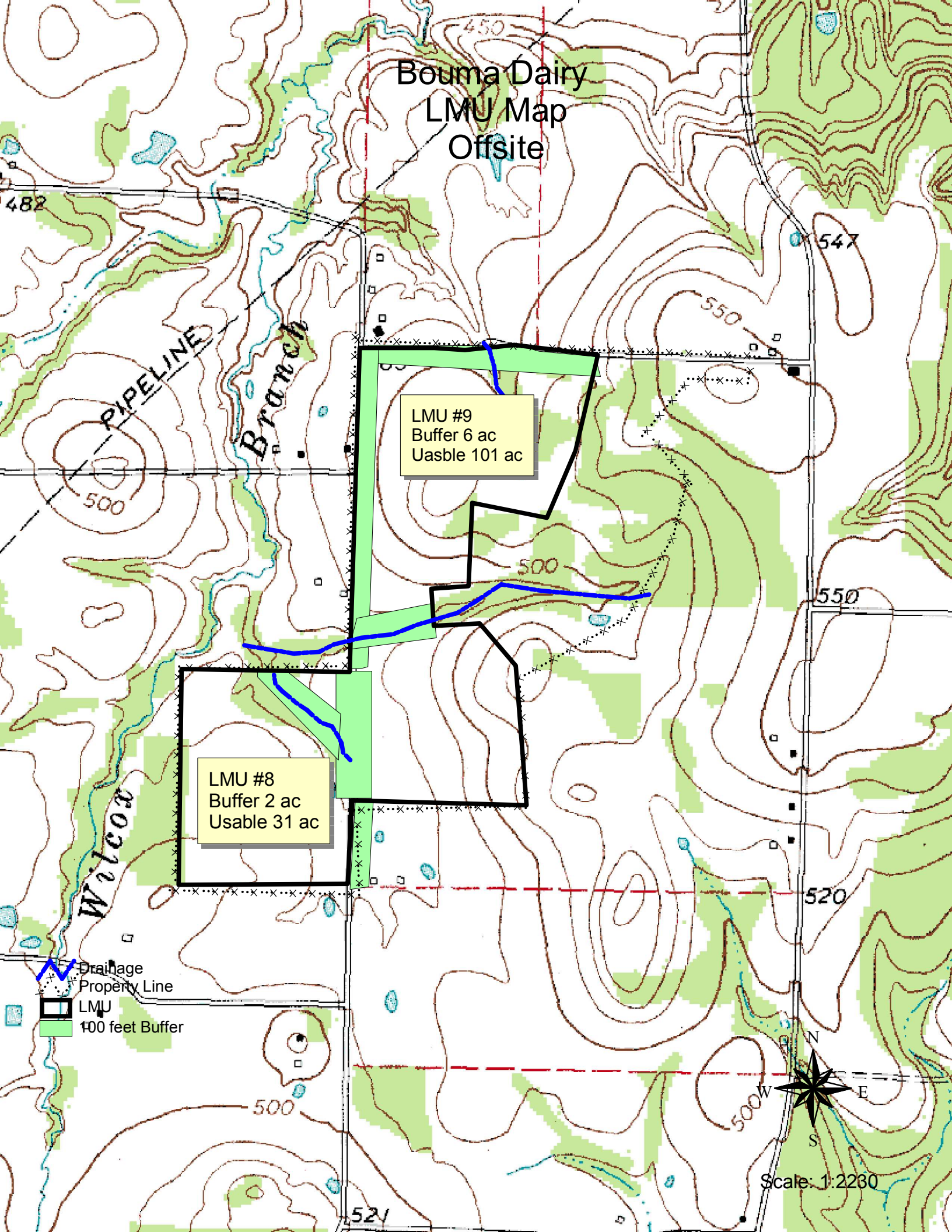
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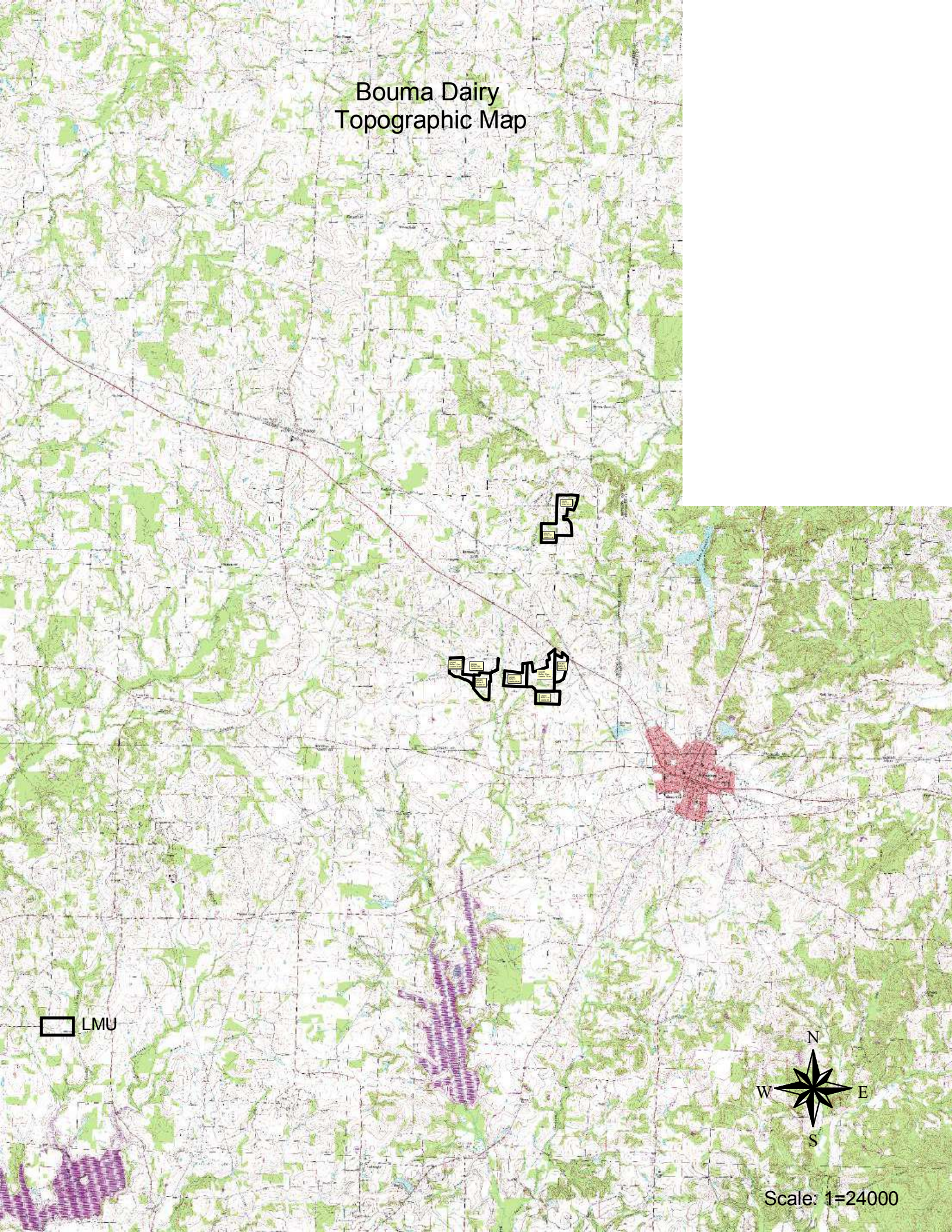
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EFFECTIVE DATE
MARCH 17, 2011

Federal Emergency Management Agency

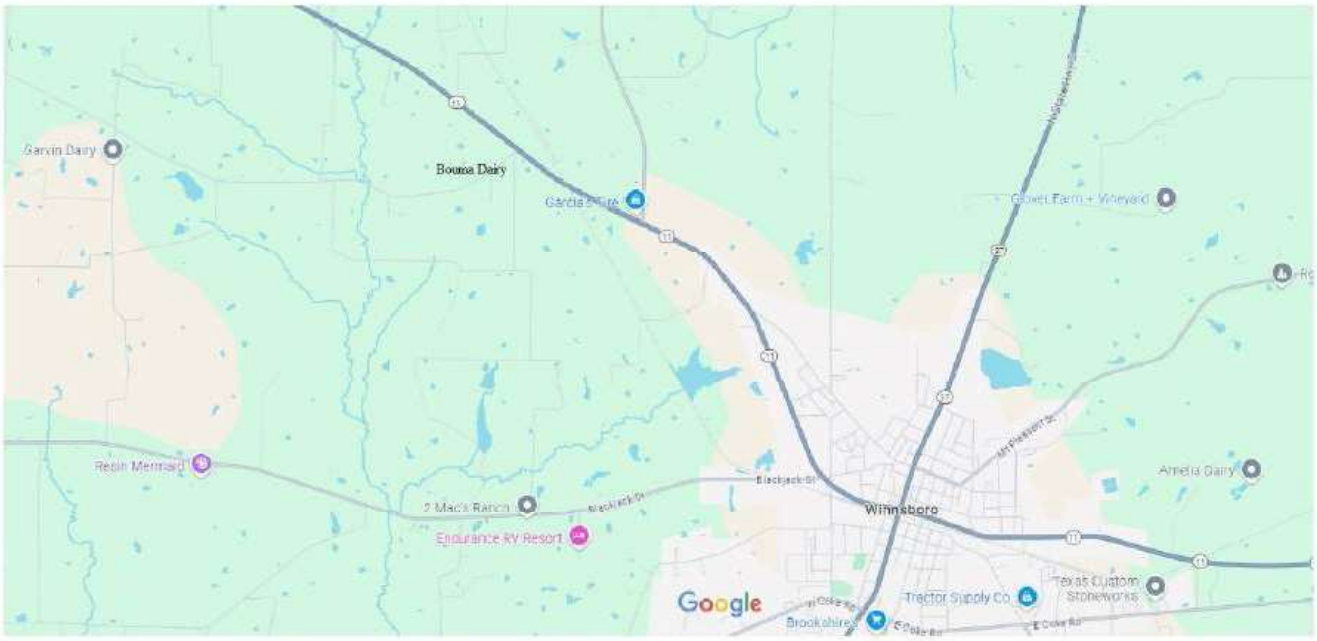
This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.


Bouma Dairy
LMU Map
Offsite
LMU #9
Buffer 6 ac
Uasble 101 ac
LMU #8
Buffer 2 ac
Usable 31 ac
Pipeline
Branch
Wilcox
Drainage
Property Line
LMU
100 feet Buffer
N
W
E
S
Scale: 1:2230

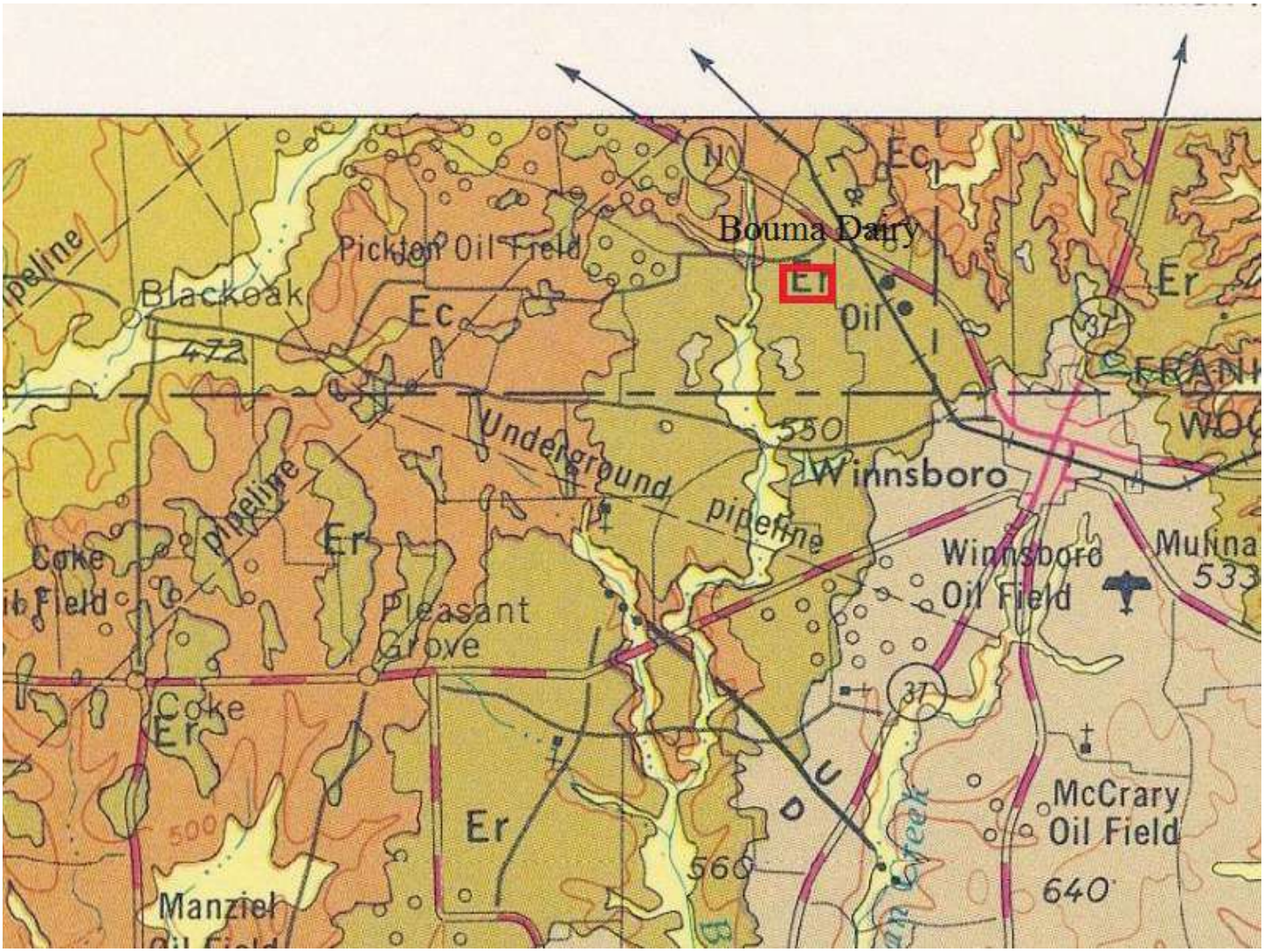

Bouma Dairy
Topographic Map
LMU
N
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Scale: 1=24000

Google Maps

Bouma Dairy
Vicinity Map

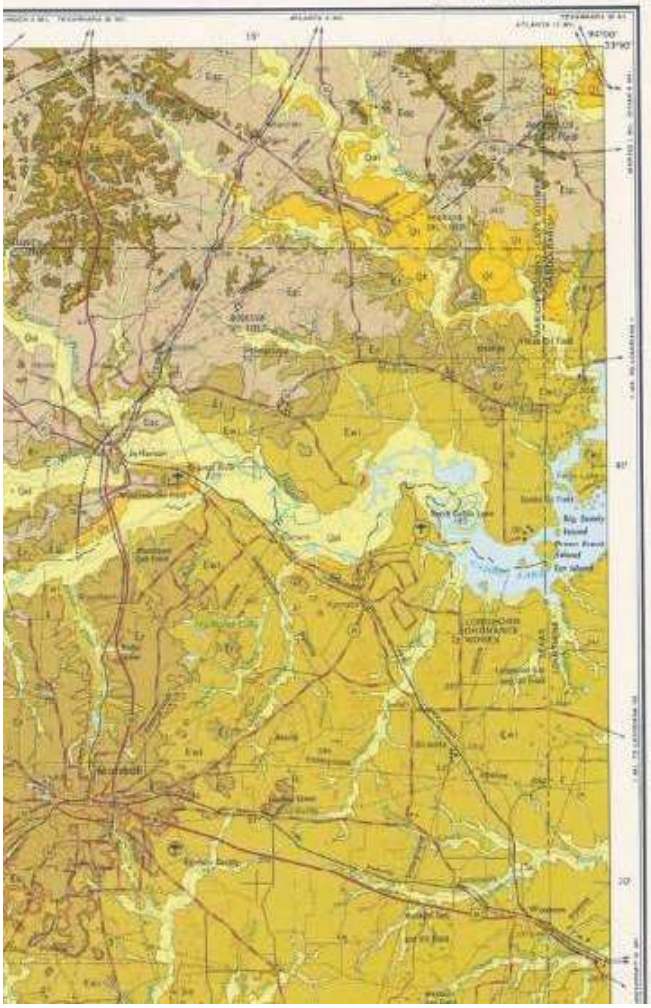


Map data ©2024 2000 ft


Bouma Dairy
Pickton Oil Field
Blackoak
Ec
Er
Oil
472
550
Underground pipeline
Winnsboro
Winnsboro Oil Field
Mulina
533
Coke
Pleasant Grove
Coke
Er
Er
500
560
640
McCrary Oil Field
Manziel

GEOLOGIC ATLAS OF TEXAS

TYLER SHEET



EXPLANATION

SEDIMENTARY ROCKS

Qal

Alluvium

Flood-plain deposits

Qt

Fluviatile terrace deposits undivided

Qtg

Qs

Sparta Sand

Quartz sand, fine to medium grained, light gray to moderate gray, slightly cohesive from silt and clay matrix, massive, locally cross-bedded; interbeds of sandy clay more abundant upward, locally carbonaceous; southern outcrops various shades of light gray, at base buff, brown, ferruginous cemented; lower part 150-200 feet thick, upper part absent. Locally includes Weches Greensand Member, 40± coarse-glauconitic greensand, greenish green, massive, locally cross-bedded; southern dark reddish brown, abundant limestone concretions.

Ew

Weches Formation

Glauconitic and quartz sand, greenish green to greenish olive green, thin bedded, locally cross-bedded to lenticular; clay variously light brown to moderate light gray, silty, micaceous; thin bedded; southern outcrops to dark reddish brown, locally forms limonitic and siliceous iron ore and clay ironstone concretions; marine megafossils in southern part; 30-70 feet thick, ranges 5-70 feet

Eqc

Queen City Sand

Quartz sand, fine grained to locally medium grained, light gray to brownish gray, locally carbonaceous and clay, gray to brown, silty, slightly limonitic, wind scoured to wind; southern red and white mottled, ironstone concretions and ledges common; local beds of glauconitic-quartz greensand, cross-bedded, concretions to ferruginous ledges and rubble; 200-400 feet thick, thins southwestward.

Er

Reklaw Formation

Upper 100± feet, clay, brownish black to brownish gray, silty, micaceous, carbonaceous, laminated, interbeds of moderate reddish-brown clay; southern light brown, limestone concretions common; a few marine fossils. Lower 200± feet, quartz sand, fine to very fine grained, greenish gray, glauconitic, argillaceous, massive, locally cross-bedded; southern outcrops brown to dark yellowish orange with clay ironstone ledges and rubble, fossils, clay treacherous, and clay decreases northward

Ec

Carrizo Sand

Upper part, very fine sand, silt, clayey silt, silty clay, medium to dark gray, carbonaceous; southern outcrops yellowish brown to dark reddish brown, indurated ledges of dark brownish-gray ferruginous concretions. Lower part, quartz sand, fine to medium grained, light brownish gray, weakly cohesive, massive, locally cross-bedded; southern light gray to various shades of red. Thickness 50-100 feet

Ewi

Wilcox Group undivided

Mostly silts and sandy clays, various shades of gray, local beds of clay, lignite, silt, and quartz sand, in part carbonaceous, interbedded to massive, locally cross-bedded, southern to various shades of gray, brown, yellow, and red. Calcareous siltstone and concretionary concretions common; abundant plant fossils, a few marine fossils in southeastern part; 400-1,000 feet thick.

E-Pc

Eocene and Paleocene rocks undivided

Sabine Formation, Carrizo Sand, Wilcox Group, and Midway Group on Neuces dome not separately shown

Pkwp

Wills Point Formation

Clay, medium bluish gray, greenish gray, grayish green, brownish gray, silt increases upward, laminated to locally massive, glauconitic near base, rough calcareous siltstone concretions common to upper part, locally lignitic in upper part. Thin bed of locally limestone near middle; southern medium gray to

QUATERNARY

TERTIARY

Pleistocene

Recent

Eocene

Paleocene

RECHARGE FEATURE CERTIFICATION
FOR
BOUMA DAIRY

GENERAL REMARKS:

Mr. Bouma is applying for a TCEQ Individual Permit for a concentrated animal feeding operation. He will be reducing the herd size to 999 animals of which 999 are milking cows and will be kept in confinement. This recharge feature evaluation and associated certification was conducted at the request of Miako Bouma of Bouma Dairy. Jim C. Wyrick, Professional Geoscientist, compiled the findings and recommendations, contained herein.

PURPOSE OF REPORT:

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 wastewater from the retention control structure or land application site into the underlying aquifer as according to GPTXG920000 requirements. The following records and/or maps from the following entities/agencies were reviewed to locate any recharge features: (a) Texas Railroad Commission, (b) well driller, (c) TCEQ, (d) Natural Resource Conservation Service, (e) owner of site, and (f) an on-site inspection. There are no previous landowners available to contact.

AREA OF EVALUATION

The site under evaluation consists of a retention control structure (RCS#1) and (RCS#2) to be constructed. The wastewater application area LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. The property is located on the side of CR 2408, .29 miles W of intersection Hwy 11 and CR 2408 in Hopkins County. Latitude: 32.980666 º N and Longitude: 95.328666º W. This property consists of approximately 477 acres located on Abstract 307, Tract 5-01, and Thomas B. Smith Survey in Hopkins, Texas. The facility is a dairy operation using a freestall system. The facility is located on a topographic ridge with uncontaminated surface runoff generally draining via overland flow and shallow concentrated flows west into unnamed drain and then into Big sandy Creek. The elevation of the dairy property ranges from approximately 460 to 520 feet above mean sea level (AMSL). The current land use of the property is agricultural (pasture and forage crops). All waste application areas are located on the property, and off-site manure application areas will be used by this facility.

SITE DESCRIPTIONS

The existing RCS is located west and down slope of the dairy barn. The RCS was constructed in 1999. Inland Engineering and Surveying certified the size of RCS#1 as having a capacity of 5.56 acre-feet. RCS#2 will be constructed north of the existing RCS will be built to a capacity of 6.92 ac ft. The RCSs will catch and contain all wastewater and manure generated from the dairy barn and 2 free stallbarns. Wastewater flows from the dairy barn and freestall barns into a concrete settling basin then though a six-inch PVC pipe into RCS#1 and then into RCS#2. The RCSs will be dewatered using a drag hose system attached to the back of a tractor. The wastewater application area is on 331acres, LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 LMU#6 and LMU#7 The fields generally drain via overland flow and shallow concentrated flows south into unnamed creek then into Big Sandy Creek.

DEFINITION OF RECHARGE ZONE FEATURE

For the purpose of this report, the definition of "recharge feature" shall be the same as the definition presented in TXG920000 Part 1. Recharge feature is defined as those natural or artificial features either on or beneath the ground surface at the site under evaluation that provide or create significant hydrologic connections 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 connection includes, but are not limited to: faults; fractures; sinkholes or other macro pores that allow direct surface infiltration; a permeable or a shallow soil material that overlies an aquifer; exposed geologic formations that are identified as an aquifer; or a water course bisecting an aquifer

LOCAL GEOLOGY

The site is located in the northern part of the East Texas Basin. Geologic units near the site crop out in bands running generally in an east-west direction. The fine sandy loams and loams of the Bernaldo Freestone, Nahatche, Kirvin and Wolfpen soils are immediately underlain by the Relaw Formation (Er) which consists of a layer of dark silty shale typically 30' to 40' thick over a layer of dark gray to green, very fine glauconitic silty sand typically 20' to 30' thick for a total formation thickness of 50' to 70', but is up to 130' thick in certain areas. The shale layer is important in that it provides an impermeable separation between the Queen City Formation and the Carrizo Formation. The Formation is not considered a source of water for water wells. Formations in descending order include The Carrizo Formation (Ec) which consists largely of white to light gray, fine to medium quartz sand. However, small amounts of silt and clay are present in the upper part of the formation. The Carrizo yields small to moderate quantities of water to wells. Typical thickness of the Carrizo is 50' to 100', but is up to 150' thick in some places and in other places is mostly shale so as to not be detectable. Wilcox Group Undivided (Ewi) which consists mostly of silty and sandy clay, very thinly bedded to massive, locally cross-bedded, in part carbonaceous, calcareous siltstone and ironstone concretions common various shades of gray; local beds of clay, lignite, silt, and quartz sand; weathers various shades of gray, brown, yellow, and red; abundant plant fossils; thickness 700 feet. Midway Group which includes the Wills Point Formation (Ewp) and Kincaid Formation (Ek). Wills Point Formation is mostly clay, upper part silty, locally liginitic, some calcareous siltstone concretions, thin bed of rosette limestone near middle, glauconitic near base thin bedded to locally massive, various shades of gray; weathers medium gray to yellowish gray; marine megafossils; thickness ±450 feet. Kincaid Formation is mostly clays calcareous, glauconitic, selenitic, in part silty and sandy locally phosphatic near base, some thin beds of hard gray limestone in upper part, various shades of gray; weathers medium gray: marine megafossils thickness ±150 feet. Navarro Group Undivided (Kna) Upper part mostly clay, salty, in part sandy, sand increases downward, calcareous, glauconitic, calcareous concretions common, some cone-in-cone, medium gray to bluish gray; weather light yellowish gray and medium greenish gray; marine mega fossils scarce. Lower part is mostly sand, fine grained, salty, clayey, weakly coherent, light to medium gray; weathers light yellowish gray; marine mega fossils abundant locally. Indistinctly to thinly bedded. Thickness ranges from 500-775 feet. Neylandville Formation (Kne) consists of clay, calcareous, silty, sandy, medium gray; weathers light gray, forms somewhat irregular topography; scattered marine megafossils; thickness ±75 feet. Marlbrook Marl (Kmb) is marl, slightly glauconitic in upper part, highly plastic when wet, strikingly uniform throughout, medium bluish gray to yellowish gray; weathers light gray to white, forms smooth, rolling topography; marine megafossils scarce; thickness 150-450 feet, thins eastward. (Barnes and others 1966).

GROUND WATER

The Wilcox Group undivided is a multi-aquifer system, composed of fluvial channel sand distributed within the lower permeability interchannel sands and clays. (Kaiser, 1990). These two are considered to be one aquifer in this area. They are considerate the primary and most productive aquifer in the area. These aquifers are tapped by most of the local moderate to large-capacity wells. Locally, this aquifer is tapped by wells between about 240 and 1,250 feet deep. The aquifers are recharged as part of the precipitation that falls on the outcrops infiltrates the soil layers and percolates to the generally shallow water table. Water also moves between overlying alluvial and terrace aquifers according to

hydraulic head differences. Recharge to the deeper sands is generally is limited to areas where these sands outcrop. In other areas, movement of groundwater into the deeper portions of the Wilcox Aquifer is insignificant because of the very low vertical permeability of the interbedded clay layers found in the Wilcox Group (Hall Southwest, 1990b). Water level fluctuations are mostly seasonal.

EVALUATIONS OF LOCAL RECHARGE POTIENTAL

Recharge from Precipitation

According to the National Weather Service (NOAA), the average annual precipitation rate in Hopkins County is about 38.1 inches per year. A significant amount of water that infiltrates to the water table moves slowly down the local hydraulic gradient and discharges through evapotranispiration or via seeps and springs into the surface drainage system. This rejected recharge supplies a major fraction of the base flow for streams in the area. The balance of the water is available to move downdip into the confined portions of the Wilcox Aquifer.

Retention Control Structures (RCS)

The USDA-NRCS Web Soil Survey for Hopkins-Rains Counties indicates the RCS was constructed in BeB - Bernaldo fine sandy loam. 1 to 3 percent slopes See Soil Interpretation Tables for detail information on theses soil. A Texas Licensed Professional Geoscientist certified the pond liner in the RCS. (See liner certification documents) as meeting the minimum requirements considered protective of groundwater as established by the TCEQ. An on-site evaluation was done on the RCSs. Mr. Bouma owner indicated there had not been any digging equipment in the RCS#1 since it was constructed. During the inspection no evidence was found to show any mechanical or structural damage to the liner. The RSC is being be properly maintained and there was no indication of seepage or leakage. The embankments are free of trash, brushes or trees and walls are stabilized and no erosion or deterioration has taken place. Based on these facts, there is little or no potential for hydraulic connection between the RCS and the underlying aquifer.

Wastewater Application Area

The USDA-NRCS Web Soil Survey for Hopkins-Rains Counties, Texas indicates that soils occurring on the wastewater application areas are: KnD - Kirvin gravelly fine sandy loam, 3 to 8 percent slopes, BeB - Bernaldo fine sandy loam. 1 to 3 percent slopes, Na - Nahatche soils, FrB - Freestone fine sandy loam, 1 to 3 percent slopes, and WoC - Wolfpen loamy fine sand, 1 to 5 percent slopes. Bernaldo, Nahatche and Wolfpen soils have a seasonal highwater table and Wolfpen soil has excessive permeability. See Soil Interpretation Tables for detail information on these soils. Sustaining and maintaining the bermuda grass cover and applying wastewater at agronomic rates will prevent nutrient build-up in the soil profile.

ARTIFICIAL RECHARGE FEATURE EVALUATION

Texas Railroad Commission Records

An inventory of oil and gas wells located on the property was conducted for this report. Texas Rail Road Commission records show there are fourteen abandoned or operating oil or gas wells located within a one-mile radius of the site.

Local Water District

Hopkins County does not have a local groundwater district. The rural water supply company for the area surrounding Bouma Dairy is in the Brinker Springs Water Supply Corporation. According to the Water Supply office, no public water supply wells are known to exist on the subject property.

Texas Water Development Board

Texas Water Development Board Water Data Interactive (TWDB WDI). was reviewed for registered wells within a 1-mile radius of the faculty site. There are no registered public

wells within the site.

Current and Previous Landowners

Mr. Bouma stated there are no abandoned or operating oil or gas wells are located on or near the facility. Three private water wells are located on the facility. A certified well driller constructed the wells. Surface completion was in accordance with a Specified Surface Slab (Rule 287.44 (2) (A). The wells are 100 feet deep and surface casing was cemented to a depth of 60 feet below ground level. The previous landowner is not available to be contacted to locate any artificial recharge features. The water wells are identified Site Map

USDA Natural Resources Conservation Service (Hopkins County)

An inquiry was made to the USDA-NRCS office in Sulphur Springs relating to artificial or natural recharge features, which may be present on the site. They were not aware of any additional features.

On-Site Inspection

The property comprising Bouma Dairy was inspected by ground reconnaissance on the dairy property for signs or features that could be adversely affected due to the operation of the facility. Other than the areas identified within the attached maps, no other suspect areas were observed.

METHODS USED

Natural and artificial recharge features were identified by the following techniques: on-site inspection of the dairy site, interviews with the landowner, review of Texas Railroad Commission records, review of published maps and reports (refer to bibliography), review of Soil Survey of Hopkins and Rains Counties, Texas, NRCS information, review of Texas Water Development Board maps, well driller's logs, the Geologic Atlas of Texas Texarkana and personal knowledge of the area. The previous owner was not available for interview regarding recharge features**.**

CONCLUSIONS

1) The Wilcox Aquifer is the major water-bearing unit beneath the area. Deep Wilcox sand aquifers (greater than 100 feet deep) provide an important source groundwater to the area. It is highly unlikely that operations at the dairy will affect these deeper aquifers because of file presence of frequent low permeability clay beds in the Wilcox Group

2) The site is located in an area where shallow Wilcox sand bodies exist. These sand bodies have sufficient permeability and capacity to serve as local aquifers for domestic purposes. Because they are typically of limited lateral extent, they do not constitute a major source of groundwater in the area. The shallow aquifers are partially recharged by precipitation where the sand units crop out at or near ground surface.

3) The shallow fine-grained sand units present at the site do not represent a classic recharge feature for the regional aquifer system. A significant pathway between ground surface and the regional aquifers does not appear to exist at the site; however, a percentage of the annual precipitation will infiltrate through the unsaturated zone to the shallow aquifers underlying the site. Therefore, protective measures as Best Management Practices (BMPs) should be carried out to prevent any potential negative impacts to the underlying aquifer.

4) There are three private water wells located on the facility. A records search and on-site inspection were made and no other wells were found. Other water wells not identified during this investigation could be near the site.

5) The existing RCS was constructed prior to this application and meets GPTXG920000

requirements for in-situ soil material pond liner. The RCSs are designed to hold all runoff water from the facility, including a 25-Year - 24-hour rainfall event.

RECOMMENDATIONS

Since a percentage of the annual precipitation will infiltrate through the unsaturated zone to the shallow, local aquifers underlying the site, the facility will employ BMPs, which are protective of the local aquifer underlying the site. These protective measures will be taken to prevent the possible migration of contaminants from, RCSs and the wastewater application areas to the underlying groundwater. As a minimum, these protective measures will include the following BMPs:

- Operations in and around the RCS will take care not to damage the in-suite clay liners. If the ponds are cleaned by a dragline, front-end loader or the waste storage pond liner disturbed, the dairy operator will request the pond liner be inspected and certified by a Texas Licensed Professional Engineer or Texas Licensed Professional Geoscientists
- The operator will prohibit livestock entry into the RCSs.
- Land application of wastewater in the recharge areas of the shallow, local aquifer will take place on designated application areas and at agronomic rates as an organic fertilizer. Wastewater application rates will not exceed the infiltration rates of the soil.
- Over watering of wastewater will be avoided to prevent leaching of nutrients below the crop root zone.
- Wastewater will not be applied when the ground is frozen or saturated or during rainfall events.
- Irrigation practices will be managed to minimize ponding and puddling of wastewater
- Wastewater and manure will be applied at agronomic rates and not allowed to runoff. Diversions or terraces will be constructed if necessary, to prevent wastewater from leaving the application areas.
- Wastewater will not be applied closer than 150 feet from any active water well. Wastewater will not be applied closer than 100 feet to waters of Texas. In addition, a vegetative buffer strip will be maintained between all waste application areas and waters of Texas.
- Dead animals will be properly buried in the designated burial area as identified on LMU Map. According to 30 TAC subchapter B: §§321.31-321.47 requirements.
- Pesticides and other chemicals will not be stored near the water wells or disposed of in the waste storage pond.
- Soils in the waste application areas will be sampled annually in accordance with TCEQ requirements.
- Thorough inspections of the RCSs, transport, treatment and disposal system will take place on regular intervals. If problems are encountered during these inspections, corrective action plans will be developed to address the specific problems encountered
- Any abandoned wells encountered will be reported, inspected and properly sealed to prevent possible point source contamination to the underlying aquifer.
- A 150-foot buffer zone will be maintained between any future water supply wells drilled and the waste storage facilities and other potential pollutants. The water wells will be properly cemented, cased and protected from inundation.
- If public water well is drilled on the dairy site, a 500 feet buffer will be maintained around the well and waste application areas.

CERTIFICATION

The undersigned hereby certifies that natural recharge features and three potential artificial recharge features exist as defined in 30 TAC subchapter B: §§321.31-321.47 Part I on tracts operated or controlled by Bouma Dairy and utilized under this application. See Aquifer Protection Plan for the natural and artificial recharge features impact on the Aquifer.

_____ _____

Jim C. Wyrick Date

Professional Geoscientist, License Number 770

REFERENCES

Ashworth J. B., and J. Hopkins, 1995. *Aquifers of Texas*. Texas Water Development Board, Report 345.

Barnes V. E., 1979, Bureau of Economic Geology Report. *Geologic Atlas of Texas Texarkana Sheet, Bureau of Economic Geology Report*, The University of Texas at Austin.

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Kaiser, W. R., 1990, *The Wilcox Group (Paleocene-Eocene) in the Sabine Uplift area, Texas: Depositional systems and deep-basin lignite*: The University of Texas at Austin, Bureau of Economic Geology Special Publication

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Parsons Engineering Science, Inc. *Groundwater Availability Model for the Northern Carrizo-Wilcox Aquifer Draft Report*, Prepared for: Texas Water Development Board Prepared September 2002

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Sellards E.H, Adkins, A. D. Plummer, F.B, 1954, *The Geology of Texas, Volume I, Stratigraphy* The University of Texas at Austin, Bureau of Economic Geology Bulletin No. 3232. pages 612-620.

Record of Wells and Test Holes Hopkins County, June 7, 2000, Texas Water Development Ground Water Database Report, page 1- 8

Texas Basin. *The University of Texas at Austin, Bureau of Economic Geology Report. Report of Investigations No.127.*

The Texas Water Development Board Well Location Report Submission and Retrieval System Website.

AQUIFER PROTECTION PLAN

The artificial recharge features are three private water wells. They are used exclusively for private water supply. The wells locations are shown on the Site and Runoff Map.

Well #1 is about 80 feet north of the commodity barn. Well #2 is about 75 feet west of the commodity barn and 140 feet north of the milking parlor. All runoff water from the commodity barns flows to the south away from the wells. The wastewater generated in the milking parlor flows south over a concrete lane and a pipeline into the RCS. Wastewater from the commodity or milking parlor could not enter the wells. The surrounding ground slopes away from the wells. Well #3 is about 110 feet north of the freestall barn and about 80 feet west of milking parlor. The wastewater generated in the milking parlor flows south over concrete and through a pipeline into the RCS. Wastewater generated in the freestall barns is flushed down a curbed concrete floor sloping to the south away from the well. Wastewater from the milking parlor or freestall cannot enter the wells. The surrounding ground slopes away from the well.

These BMPs are for use on all three wells. All wastewater is stored in the RCS. Wastewater application will not be applied near the wells. Cattle are not allowed to graze in the area around the wells. There are no other pollutant sources such as manure, sludge, wastewater, dust, fuel storage tanks, pesticide and lubricants stored near the wells. Dead animal burial area is not near the wells. The fuel storage tank is not located near the wells. Additional wellhead protective measures include, all wells have a sanitary seal, located on a concrete slab. The areas around the wells have a bermudagrass ground cover. Water wellhead backflow prevention devices have been added to the wells.

The wells and area around them will be inspected monthly to ensure contaminants are not running into the well. If for some reason a pollutant ever flows in the direction of the well, immediate action will be taken to divert the flow from the well. Any change in conditions of the wells will have corrective measures taken. The date Well#1 and Well#2 were drilled is unknown and well logs are not available. Well#3 was drilled on January 9, 2008 a copy of the well log is attached. The wells were completed in accordance with water well drilling rules at that time of drilling. These wellhead protective measures will prevent pollutants from entering the groundwater through the wells

The natural recharge features include surface water bodies, creeks, and tributaries. Structural and non-structural controls to be used to protect the natural recharge features are as follow:

- Vegetative filter strips of Bermuda grass will filter, contain, and prevent the lateral movement of wastewater irrigation and manure.
- Waste will be applied only where the LMU cover vegetation is growing and has crop demand for nutrients.
- Waste will be applied at the nutrient requirements of the vegetative cover at the agronomic application rates.
- Wastewater will be applied at a rate less than the permeability of the soil to prevent ponding and runoff.
- Wastewater application will be at rate that ensures that wastewater will be used by the vegetative cover.
- Vegetative buffers of 150 feet for will be maintained around any newly drilled private water wells.
- 100 feet of vegetative cover buffer between waste and wastewater application areas and surface water and watercourses will be maintained.
- Records of climatic conditions during waste application such as: temperature, precipitation and cloud cover.

The following BMPs are to protect the groundwater for LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 and LMU#6. These LMUs have Bernaldo, Nahatche and Wolfpen soils, which have a seasonal high-water table. LMU#1, LMU#2, LMU#5 and LMU#6 have Wolfpen soils which have excessive permeability. The LMU locations are shown on the LMU Map.

1. Application of wastewater will be applied following the Nutrient Management Plan. This will ensure:
    - Intensive nutrient management practices to manage LMU limitations
    - All agricultural waste shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies.
    - Wastewater application rates will not exceed the soil infiltration rate so not to cause leaching and groundwater contamination.
    - Wastewater application rates will not exceed the available water holding capacity of the soil profile at the time of application, so not to cause leaching and groundwater contamination.
    - Wastewater will be applied at nutrients levels to meet the bermudagrass ground cover needs. This will prevent the movement of nutrients through the soil profile to groundwater caused by over irrigation
    - Annual soil sampling to determine soil available nutrient and amount of nutrients needed for crop production, according to30 TAC subchapter B: §§321.31-321.47.
2. Use of proper timing, formulation, and application methods for nutrients that maximize plant utilization of nutrients and minimize the loss to the ground water,
3. Wastewater will not be applied to saturated soils.
4. Irrigation will be limited on these soils areas when the potential for the seasonal water table to be near the soil surface. (November – May).
5. Timing of manure or waste water application should coincide as nearly as possible to the time when plants can use the nutrients -- that is, during the normal growing season
6. Continual inspection and maintenance of waste handling facilities and equipment will prevent unwarranted waste discharges into surface water and groundwater.
7. Records of crop yields will be kept to determine realistic crop yield expectations.
8. Application equipment should be calibrated and inspected for wear and damage periodically, and repaired when necessary.
9. Records of nutrient application rates will be maintained along with other management records for each field.

These BMPs will provide adequate protective measures for the natural recharge features.

_____ _____

Jim C. Wyrick Date
Professional Geoscientist, License Number 770

Bouma Well Location



Texas Water Development Board

TWDB Groundwater

Well Reports

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

1:18,056

Esri, HERE, Garmin, (c) OpenStreetMap contributors

September 4, 2024

The data in Water Data Interactive represents the best available information provided by the TWDB and third-party cooperators of the TWDB.
The TWDB provides information via this web site as a public service. Neither the State of Texas nor the TWDB assumes any legal liability
or responsibility or makes any guarantees or warranties as to the accuracy, completeness or suitability of the information for any particular purpose.
The TWDB systematically revises or removes data discovered to be incorrect. If you find inaccurate information or have questions, please contact
WDI-Support@twdb.texas.gov.

TEXAS WATER DEVELOPMENT BOARD

STATE OF TEXAS WELL REPORT for Tracking #141111

Owner:	**Michael Bouma**	Owner Well #:	**1**
Address:	**4252 CR 2408 Winnsboro, TX 75494**	Grid #:	**34-06-2**
Well Location:	**4252 CR 2408 Winnsboro, TX 75494**	Latitude:	**32° 58' 54" N**
		Longitude:	**095° 19' 40" W**
Well County:	**Wood**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Domestic**

Drilling Start Date: **1/7/2008** Drilling End Date: **1/9/2008**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
7.875	**0**	**573**

Drilling Method: **Mud (Hydraulic) Rotary**

Borehole Completion: **Filter Packed; Straight Wall**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
440	**573**	**Gravel**	**16/30**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**100**	**19 c w/6% gel**
390	**440**	**7 c w/6% gel**

Seal Method: **Pumped with Tremmie Pipe**

Sealed By: **Driller**

Distance to Property Line (ft.): **50 +**

Distance to Septic Field or other concentrated contamination (ft.): **50 +**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **Owner**

Surface Completion: **Surface Sleeve Installed**

Water Level: **215 ft.** below land surface on **2008-01-22** Measurement Method: **Unknown**

Packers: **None**

Type of Pump: **Submersible** Pump Depth (ft.): **340**

Well Tests: **Jetted** **Yield: 60 GPM with 140 ft. drawdown after 1 hours**

Plug Information:

Description (number of sacks & material)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
N/A		

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled 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 report(s) being returned for completion and resubmittal.

Company Information: **C Miller Drilling**

7355 E State Hwy 154
Winnsboro, TX 75494

Driller Name: **Cory L Miller** License Number: **2464**

Comments: **No Data**

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**22**	**Clay and Rock**
22	**42**	**Shale and Sand Light Gray**
42	**82**	**Shale**
82	**102**	**Shale and Sand**
102	**202**	**Shale**
202	**340**	**Shale with Lignite Streaks**
340	**362**	**Sand with Shale Streaks**
362	**506**	**Shale with Lignite Streaks**
506	**562**	**Sand**
562	**573**	**Shale**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia. (in.) New/Used Type Setting From/To (ft.)
4 1/2" New SDR 17 0 - 480 Casing
4" New SCH 40 PVC 480 - 508 Casing
4" New SCH 40 PVC 508 - 558 .016 Screen
4" New SCH 40 PVC 558 - 564 Casing

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Waste Utilization and Nutrient Management Plan

Bouma Dairy
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

TCEQ Permit Number:

Owner
Maiko Bouma
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

Type of Waste Plan:
Other AFO-CAFO Waste Plan
located in Hopkins County

Prepared By:

_____

(Signature)
Jim C. Wyrick
Nutrient Management Specialist
Certificate Number = TX20049
Expiration Date = December 31, 2024
East Texas Environmental Services
317 Highland Dr.
Sulphur Springs, TX 75482
903-243-0400

This plan is based on:
590 -633 Plan V 4.0_5

2/4/25 2:27 PM

Waste Utilization and Nutrient Management Plan

EXECUTIVE SUMMARY: Permit #:

This Nutrient Management Plan has fields that meet NMP and/or NUP requirements.

LOCATION AND PURPOSE OF THE PLAN

This animal operation is located in **Hopkins** 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 Solids** . Approximately **999** head will be confined with the average weight of **1400** pounds. The animals will be confined **24** hours per day for **365** days per year.

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.

SOLIDS APPLICATION: (cont) Permit #:

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.

EFFLUENT APPLICATION: (cont) Permit #:

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.

EFFLUENT APPLICATION: (cont) Permit #:

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.

MORTALITY MANAGEMENT: (cont) Permit #:

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 #:

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 #:

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 #:

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:	**Jim C. Wyrick**	Date:	**2/4/2025**
Plan Approved by:		Date:	
Producer Signature:		Date:	

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 #:

Avg. Number of Animals	Type of Waste
999	Dairy Solids
	Dairy 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* **518**

Estimated Tons Solids to be Land Applied Annually (on or off site)* **14,492.8**

*From engineering design.

Estimated Nutrient Availabilty Effluent

	pounds/yr	Pounds / 1000 gal	Pounds / Acre Inch	
N	65	0.00	0.1	**
P2O5	418	0.03	0.8	
K2O	2,092	0.15	4.0	

** Effluent Values Based on Analysis dated: December 18, 2023

Estimated Nutrient Availabilty Solids

	pounds / yr	pounds / ton	
N	67	0.0	**
P2O5	431	0.0	
K2O	2,155	0.1	

** Solids Values Based on Analysis dated: December 18, 2023

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	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	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	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 or soil test P [1/] => 500 ppm in nutrient impaired TMDL areas.[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/ TMDL watersheds are designated by Texas Commission on Environmental Quality (TCEQ).

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 #:

LMU / Field #	AWC (inches)	Restrictive Texture
1	3.52	Sandy Clay loam
2	1.71	Loamy Fine Sand
3	3.52	Sandy Clay loam
4	3.52	Sandy Clay loam
5	1.71	Loamy Fine Sand
6	1.71	Loamy Fine Sand
7		Loamy Fine Sand
8		
9		

LMU / Field #	AWC (inches)	Restrictive Texture

Waste Utilization and Nutrient Management Plan

Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #:

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
1	0	1	7	320	0	85	0
2	1	3	18	365	0	145	0
3	0	2	8	535	0	375	0
4	1	3	18	400	0	150	0
5	1	3	18	345	0	85	0
6	1	3	18	385	0	145	0
7							
8							
9							

Waste Utilization and Nutrient Management Plan

Table 3 - Crop Removal Rates (For Information Only) Permit #:

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
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
3	39.0	Coastal Hay 4 cut, RG mod Graze M	NUP	Default	350	105	311
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
7	38.0	Common graze 1 AU/1 ac, SG mod graze M	NUP	Default	262	85	233
8	31.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
9	101.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233

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 3 - Crop Removal Rates (For Information Only) Permit #:

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
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
3	39.0	Coastal Hay 4 cut, RG mod Graze M	NUP	Default	350	105	311
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
7	38.0	Common graze 1 AU/1 ac, SG mod graze M	NUP	Default	262	85	233
8	31.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
9	101.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233

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 5 - Nutrients Applied/Needs at Maximum Solids Rates Permit #:

	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
1							
2							
3							
4							
5							
6							
7	20	128	641	285	0	0	0
8	55	350	1752	345	0	0	0
9	55	350	1752	315	0	0	0

Waste Utilization and Nutrient Management Plan

Table 6 - Planned Solids Application Rates Permit #:

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)
1									
2									
3									
4									
5									
6									
7		38.0	Common graze 1 AU/1 ac, SG mod graze M	302	A	4308.5	100	4308.5	163723.4
8		31.0	Common graze 1 AU/1 ac, SG mod graze M	163	A	######	100	11782.2	365247.6
9		101.0	Common graze 1 AU/1 ac, SG mod graze M	92	A	######	100	11782.2	1190000.1
Acres		170.0							1718971.1
14493			Tons of wet solids produced Annually					Will the planned per acre application rates use all of the Solids?	YES
0			Tons to be used off-site at Max. rates					Tons to be used off-site at planned rates	0

Waste Utilization and Nutrient Management Plan

Table 7 - Nutrients Applied/Needed at Planned Solids Rates Permit #:

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
1							
2							
3							
4							
5							
6							
7	20	128	641	285	0	0	0
8	55	350	1752	345	0	0	0
9	55	350	1752	315	0	0	0

Waste Utilization and Nutrient Management Plan

Table 8 - Maximum Effluent Application Per Field Permit #:

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)
518	1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	266	136	A	168.2	12615
Source:	2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	149	350	A	433.9	19092
	3	39.0		Coastal Hay 4 cut, RG mod Graze M	280	158	A	195.9	7640
	4	64.0		Common graze 1 AU/1 ac, SG mod graze M	188	350	A	433.9	27770
Dairy Solids	5	30.0		Common graze 1 AU/1 ac, SG mod graze M	108	350	A	433.9	13017
	6	41.0		Common graze 1 AU/1 ac, SG mod graze M	145	350	A	433.9	17790
	7								
	8								
	9								

Total Effluent Application Acres

293

Maximum Effluent Application Allowable On-Site (ac in)

97923

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 #:

	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
1	21	136	679	300	0	0	0
2	55	350	1752	310	0	0	0
3	25	158	791	510	0	0	0
4	55	350	1752	345	0	0	0
5	55	350	1752	295	0	0	0
6	55	350	1752	335	0	0	0
7							
8							
9							

Waste Utilization and Nutrient Management Plan

Table 10 - Planned Effluent Application Rates Permit #:

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)
1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	266	A	168.2	**1.0**	1.7	128
2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	149	A	433.9	**1.0**	4.3	189
3	39.0		Coastal Hay 4 cut, RG mod Graze M	280	A	195.9	**1.0**	2	78
4	64.0		Common graze 1 AU/1 ac, SG mod graze M	188	A	433.9	**1.0**	4.3	275
5	30.0		Common graze 1 AU/1 ac, SG mod graze M	108	A	433.9	**1.0**	4.3	129
6	41.0		Common graze 1 AU/1 ac, SG mod graze M	145	A	433.9	**1.0**	4.3	176
7									
8									
9									
Acres	**293.0**								**975**

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 #:

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
1	0	1	7	320	0	85	0
2	1	3	18	365	0	145	0
3	0	2	8	535	0	375	0
4	1	3	18	400	0	150	0
5	1	3	18	345	0	85	0
6	1	3	18	385	0	145	0
7							
8							
9							

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 #:

LMU / Field #	AWC (inches)	Restrictive Texture
1	3.52	Sandy Clay loam
2	1.71	Loamy Fine Sand
3	3.52	Sandy Clay loam
4	3.52	Sandy Clay loam
5	1.71	Loamy Fine Sand
6	1.71	Loamy Fine Sand
7		Loamy Fine Sand
8		
9		

LMU / Field #	AWC (inches)	Restrictive Texture

Waste Utilization and Nutrient Management Plan

Table 13 - Non Application Areas by Field Permit #:

FS = 393-Filter Strip; **FB** = 386-Field Border, **RFB** = 391-Riparian Forest Buffer; **OLEA** = Other Land Excluded Area

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
1	15.0	0.0	0.0		15.0
2	0.0	0.0	0.0		
3	0.0	0.0	0.0		
4	5.0	0.0	0.0		5.0
5	10.0	0.0	0.0		10.0
6	0.0	0.0	0.0		
7	7.0	0.0	0.0		7.0
8	2.0	0.0	0.0		2.0
9	6.0	0.0	0.0		6.0
Totals	45.0	0.0	0.0	0.0	45.0

See Application Map for location of buffers

Total 590-633 application acres: 463.0

Total 590-633 Field Acres: 508.0

Waste Utilization and Nutrient Management Data Entries

General Data

Date :	3/7/2024
Farmer Name :	Bouma Dairy
County in which the Land is located :	Hopkins
Type of Waste Plan :	Other AFO-CAFO Waste Plan
Is this plan in a TMDL watershed for nutrients? Yes or No :	No
Is any field PERMITTED by TCEQ? Yes or No :	Yes
Permit # :	

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 :	999
Approximate Weight :	1400
Days per year in confinement :	365
Hours per day confined :	24
***ACRE FEET* of effluent to be irrigated* :**	43.17
Estimated annual gallons of effluent to be irrigated/applied annually :	14066858.16
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)* :	2000
Is this the first Year of the AFO-CAFO Operation? :	No

Analysis Information

Effluent Information

Date of Analysis:	12/18/2023
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	0.0021
Phosphorus % From Analysis:	0.0047
Potassium % From Analysis:	0.0449
Moisture % From Analysis:	86.2

Manure / Solids Information

Date of Analysis:	12/18/2023
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	0.0021
Phosphorus % From Analysis:	0.0047
Potassium % From Analysis:	0.0449
Moisture % From Analysis:	86.2
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: 590 -633 Plan V 4.0

Printed on: 2/4/25 2:27 PM

Field and Buffer Entries

Permit #:

Printed on: 2/4/25 2:27 PM

Plan is based on: 590 -633 Plan V 4.0_5

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	
1	90	15			0	15.0	75.0	
2	44	0				0.0	44.0	
3	39	0				0.0	39.0	
4	69	5				5.0	64.0	
5	40	10				10.0	30.0	
6	41	0				0.0	41.0	
7	45	7				7.0	38.0	
8	33	2				2.0	31.0	
9	107	6				6.0	101.0	

Soil Test, Crop Information and Plant Analysis Data Entries

Printed on: 2/4/25 2:27 PM Plan is based on: 590 -633 Plan V 4.0_5 Permit #:

Soil Test Analysis				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)	Plant Analysis & Yield (optional) Use Only When Crop Removal is Required			
N (ppm)	P (ppm)	K (ppm)	Lime (enter amt or leave blank)							% N	% P	% K	Yield Air Dry Production (lbs/ac/yr)
39	266	154			1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
17	149	82			2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
2	280	52			3	39.0	Coastal Hay 4 cut, RG mod Graze M	E	N				
10	188	38			4	64.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
36	108	124			5	30.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
16	145	48			6	41.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
58	302	175			7	38.0	Common graze 1 AU/1 ac, SG mod graze M	S	N				
11	163	38			8	31.0	Common graze 1 AU/1 ac, SG mod graze M	S	N				
26	92	31			9	101.0	Common graze 1 AU/1 ac, SG mod graze M	S	N				

Solids Application Rate Entries

Solids - Set the Planned Application Rates

Permit #:

14493	"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
1							
2							
3							
4							
5							
6							
7	38.0	Common graze 1 AU/1 ac, SG mod graze M	302	175	Annual	4308.5	100.0
8	31.0	Common graze 1 AU/1 ac, SG mod graze M	163	175	Annual	11782.2	100.0
9	101.0	Common graze 1 AU/1 ac, SG mod graze M	92	175	Annual	11782.2	100.0

Effluent Application Rate Entries

Effluent - Set the Planned Application Rates

Permit #:

14066858	Gallons of Effluent to be used annually				Will the planned rates use all of the effluent?			Yes
518	Acre inches of Effluent to be used annually							

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)
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	266	175	Annual	168.2	1.0	1.7	128
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	149	175	Annual	433.9	1.0	4.3	189
3	39.0	Coastal Hay 4 cut, RG mod Graze M	280	225	Annual	195.9	1.0	2	78
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	188	175	Annual	433.9	1.0	4.3	275
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	108	175	Annual	433.9	1.0	4.3	129
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	145	175	Annual	433.9	1.0	4.3	176
7									
8									
9									

Total Effluent This Page: 975

Printed on: 2/4/25 2:28 PM

Plan is based on: 590 -633 Plan V 4.0_5

Available Water Capacity Entries

Printed on: 2/4/25 2:28 PM Plan is based on: 590 -633 Plan V 4.0_5 Permit #:

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																
1	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
2	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
3	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
4	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
5	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
6	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				

PI Index by Field

Printed on: 2/4/25 2:26 PM | This plan is based on: 590 -633 Plan V 4.0_2 | Permit #:

Client Name: Bouma Dairy | **Date:** 2/4/2025

Planner: Jim C. Wyrick | **Location:** Hopkins

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	2.0%	61	8	0	1.5	0	4	0	1	0	14.5	Medium	11/14/23
2	Coastal graze 1 AU/1 ac, SG mod graze	2.0%	61	8	4	0.75	4	4	2.5	1	0	24.25	Medium	11/14/23
3	Coastal Hay 4 cut, RG mod Graze	2.0%	58	8	0	1.5	0	4	0	0	0	13.5	Medium	11/14/23
4	Common graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	1.25	1	0	15.75	Medium	11/14/23
5	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	0.75	0	4	5	0	0	17.75	Medium	11/14/23
6	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	0.75	0	4	5	0	0	17.75	Medium	11/14/23
7	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	3	0	4	5	0	0	20	Medium	11/14/23
8	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	Medium	11/14/23
9	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	Medium	11/14/23

TEXAS A&M AGRILIFE EXTENSION

Bouma
LMU 1

Soil Analysis Report

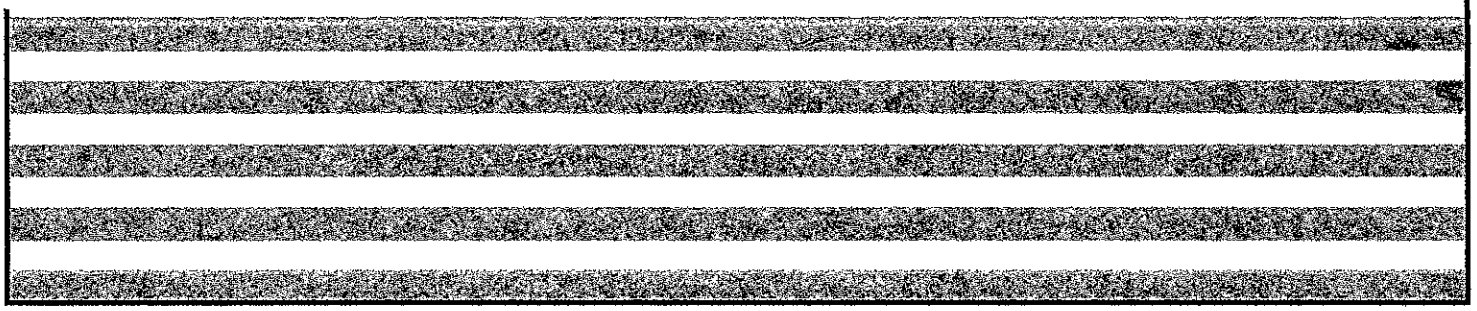
Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
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979-845-5958 (FAX)
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643758
Customer Sample ID: 158
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	5.2	(5.8)	-	Strongly Acid	
Conductivity	97	(-)	umho/cm	None	
Nitrate-N	39	(-)	ppm**		20 lbs N/acre
Phosphorus	266	(50)	ppm		0 lbs P2O5/acre
Potassium	154	(150)	ppm		0 lbs K20/acre
Calcium	609	(180)	ppm		0 lbs Ca/acre
Magnesium	148	(50)	ppm		0 lbs Mg/acre
Sulfur	17	(13)	ppm		0 lbs S/acre
Sodium	43	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.25 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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College Station, TX 77843-2478
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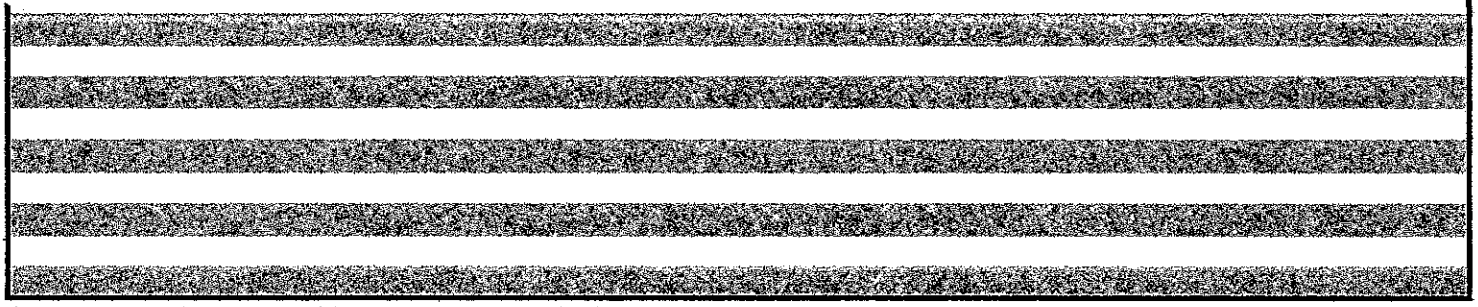
Bouma
LMU 2

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643759
Customer Sample ID: 159
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	5.0	(5.8)	-	Strongly Acid	
Conductivity	53	(-)	umho/cm	None	
Nitrate-N	17	(-)	ppm**		65 lbs N/acre
Phosphorus	149	(50)	ppm		0 lbs P2O5/acre
Potassium	82	(150)	ppm		110 lbs K20/acre
Calcium	532	(180)	ppm		0 lbs Ca/acre
Magnesium	110	(50)	ppm		0 lbs Mg/acre
Sulfur	16	(13)	ppm		0 lbs S/acre
Sodium	24	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.30 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
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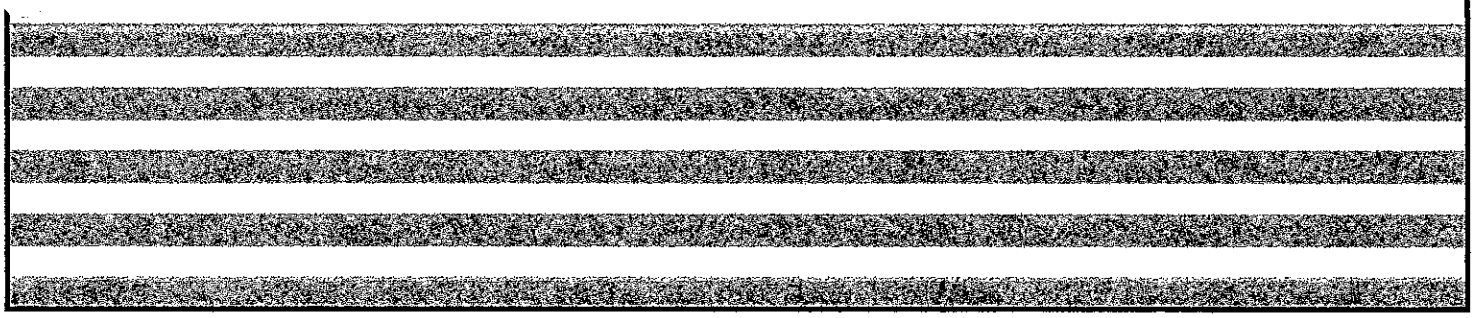
Bouma
LMU 3

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643761
Customer Sample ID: 160
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.7	(5.8)		Strongly Acid	
Conductivity	36	(-)	umho/cm	None	
Nitrate-N	2	(-)	ppm**		95 lbs N/acre
Phosphorus	280	(50)	ppm		0 lbs P2O5/acre
Potassium	52	(150)	ppm		160 lbs K20/acre
Calcium	832	(180)	ppm		0 lbs Ca/acre
Magnesium	115	(50)	ppm		0 lbs Mg/acre
Sulfur	17	(13)	ppm		0 lbs S/acre
Sodium	26	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.70 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
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TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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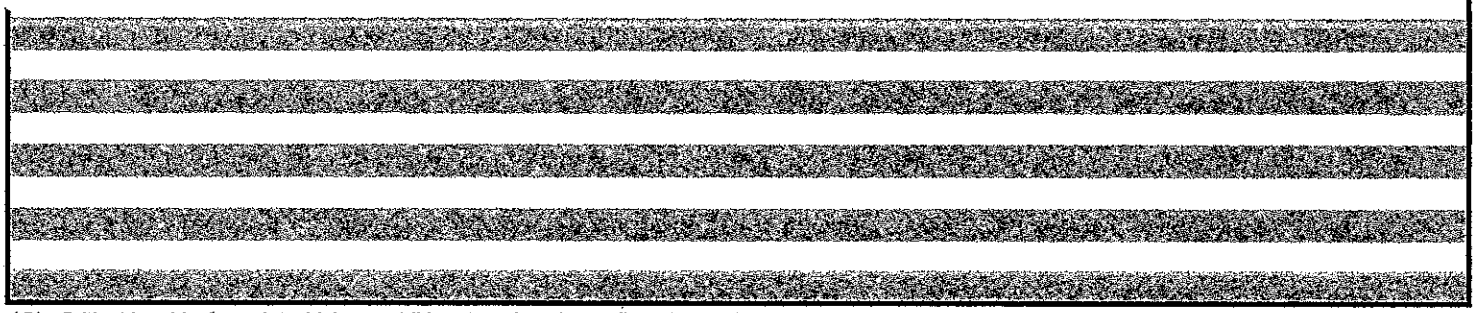
Boyma
LMU 4

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643762
Customer Sample ID: 161
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.0	(5.8)		Strongly Acid	
Conductivity	30	(-)	umho/cm	None	
Nitrate-N	10	(-)	ppm**		80 lbs N/acre
Phosphorus	188	(50)	ppm		0 lbs P2O5/acre
Potassium	38	(150)	ppm		185 lbs K20/acre
Calcium	373	(180)	ppm		0 lbs Ca/acre
Magnesium	68	(50)	ppm		0 lbs Mg/acre
Sulfur	14	(13)	ppm		0 lbs S/acre
Sodium	21	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.95 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
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TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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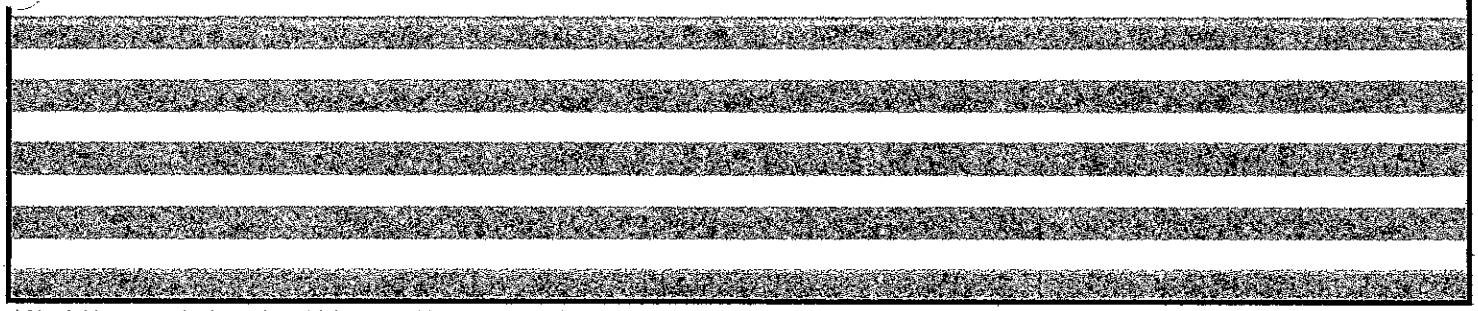
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LMU 5

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643763
Customer Sample ID: 162
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.8	(5.8)	-	Strongly Acid	
Conductivity	108	(-)	umho/cm	None	
Nitrate-N	36	(-)	ppm**		25 lbs N/acre
Phosphorus	108	(50)	ppm		0 lbs P2O5/acre
Potassium	124	(150)	ppm		40 lbs K20/acre
Calcium	1,037	(180)	ppm		0 lbs Ca/acre
Magnesium	162	(50)	ppm		0 lbs Mg/acre
Sulfur	26	(13)	ppm		0 lbs S/acre
Sodium	78	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.80 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

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Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

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TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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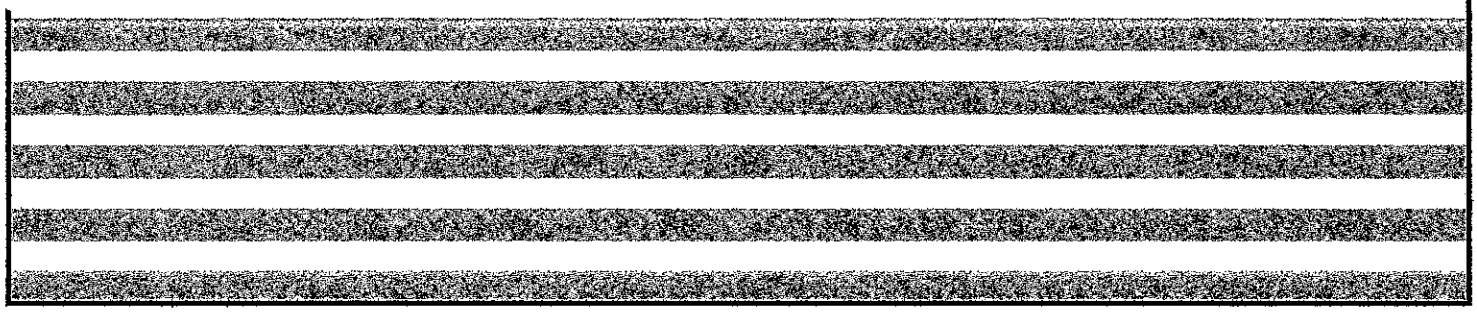
Boyma
LMU 6

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643764
Customer Sample ID: 163
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.5	(5.8)		Strongly Acid	
Conductivity	82	(-)	umho/cm	None	
Nitrate-N	16	(-)	ppm**		65 lbs N/acre
Phosphorus	149	(50)	ppm		0 lbs P2O5/acre
Potassium	48	(150)	ppm		170 lbs K2O/acre
Calcium	560	(180)	ppm		0 lbs Ca/acre
Magnesium	102	(50)	ppm		0 lbs Mg/acre
Sulfur	20	(13)	ppm		0 lbs S/acre
Sodium	68	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.70 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

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TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

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Boyma
LMU 7

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643765
Customer Sample ID: 164
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	5.2	(5.8)		Strongly Acid	
Conductivity	106	(-)	umho/cm	None CL*	
Nitrate-N	58	(-)	ppm**		0 lbs N/acre
Phosphorus	302	(50)	ppm		0 lbs P2O5/acre
Potassium	175	(150)	ppm		0 lbs K20/acre
Calcium	709	(180)	ppm		0 lbs Ca/acre
Magnesium	135	(50)	ppm		0 lbs Mg/acre
Sulfur	22	(13)	ppm		0 lbs S/acre
Sodium	35	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.25 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

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TEXAS A&M AGRILIFE EXTENSION

Bauma

LMU 8

Soil Analysis Report

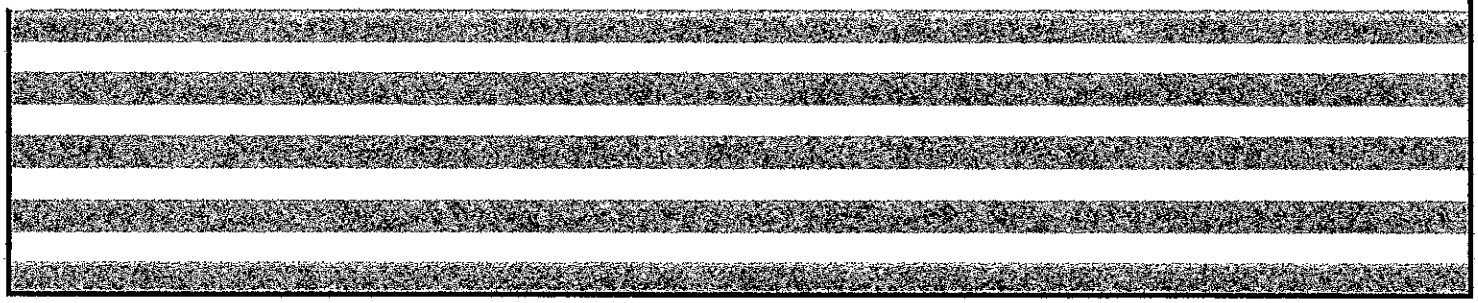
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Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643766
Customer Sample ID: 165
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.4	(5.8)		Strongly Acid	
Conductivity	35	(-)	umho/cm	None	
Nitrate-N	11	(-)	ppm**		75 lbs N/acre
Phosphorus	163	(50)	ppm		0 lbs P2O5/acre
Potassium	38	(150)	ppm		185 lbs K20/acre
Calcium	558	(180)	ppm		0 lbs Ca/acre
Magnesium	39	(50)	ppm		5 lbs Mg/acre
Sulfur	14	(13)	ppm		0 lbs S/acre
Sodium	15	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.70 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Bouma
LMU 9

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979-845-4816 (phone)
979-845-5958 (FAX)
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/14/2023
Printed on: 11/20/2023
Area Represented: 40 acres

Hopkins County
Laboratory Number: 643767
Customer Sample ID: 166
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	5.0	(5.8)	-	Strongly Acid	
Conductivity	50	(-)	umho/cm	None	
Nitrate-N	26	(-)	ppm**	CL*	45 lbs N/acre
Phosphorus	92	(50)	ppm		0 lbs P2O5/acre
Potassium	31	(150)	ppm		195 lbs K20/acre
Calcium	748	(180)	ppm		0 lbs Ca/acre
Magnesium	74	(50)	ppm		0 lbs Mg/acre
Sulfur	19	(13)	ppm		0 lbs S/acre
Sodium	27	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.40 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

New online fertilizer calculators have been placed on the laboratory's website to determine appropriate fertilizers to purchase and determine their application rates.
http://soiltesting.tamu.edu/webpages/calculator.html

TEXAS A&M AGRILIFE EXTENSION

Bio-Liquid Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

Visit our website:
http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services

Bouma
100

317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Date Printed: 12/18/2023

Sample(s) from Hopkins County

Section 1: **Bio-liquids are analyzed on an as received basis**

Laboratory #	Customer Sample Identification	Total Nitrogen %	Total Phosphorus %	Total Potassium %	Total Calcium %	Total Magnesium %	Total Sodium %	Total Zinc ppm	Total Iron ppm
45021454	100	0.0003	0.0039	0.0367	0.0055	0.0032	0.0350	2.22	1.56
45021455	101	0.0010	0.0039	0.0749	0.0063	0.0040	0.0221	2.32	1.33
45021456	102	0.0031	0.0043	0.0260	0.0258	0.0029	0.0255	3.00	1.21
45021457	103	0.0094	0.0104	0.1243	0.0280	0.0182	0.0874	5.01	1.87
45021458	104	0.0060	0.0100	0.0734	0.0245	0.0077	0.0408	3.94	3.56

Laboratory #	Total Copper ppm	Total Manganese ppm
45021454	0.06	0.00
45021455	0.06	0.10
45021456	0.24	1.11
45021457	0.75	2.40
45021458	4.16	2.33

Section 2: **Interpretation of Bio-Liquid Analysis—pounds of nutrients per acre inch of effluent.**

Laboratory #	Customer Sample Identification	Nitrogen lbs/acre inch	P_2O_5 lbs/acre inch	K_2O lbs/acre inch	Calcium lbs/acre inch	Magnesium lbs/acre inch	Sodium lbs/acre inch	Zinc lbs/acre inch	Iron lbs/acre inch
45021454	100	1	20	100	13	7	79	0.50	0.35
45021455	101	2	20	203	14	9	50	0.53	0.30
45021456	102	7	22	71	58	6	58	0.68	0.27
45021457	103	21	54	338	63	41	198	1.13	0.42
45021458	104	14	52	199	56	18	92	0.89	0.81

Laboratory #	Copper lbs/acre inch	Manganese lbs/acre inch
45021454	0.01	0.00
45021455	0.01	0.02
45021456	0.06	0.25
45021457	0.17	0.54
45021458	0.94	0.53

* one acre inch equals 27150 gallons

TEXAS A&M AGRILIFE EXTENSION

Bouma

118

Bio-Solid Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

Visit our website:
http://soiltesting.tamu.edu

...ated for:
...st ... Environmental Services

7 Highland Dr.
...LPHUR SPRINGS, TX 75482

...te Processed: 12/18/2023

...mple(s) from Hopkins County

...ction 1: Based on analysis of oven dried sample(s)

Laboratory #	Customer Sample Identification	Total Nitrogen %	Total Phosphorus %	Total Potassium %	Total Calcium %	Total Magnesium %	Total Sodium %	Total Zinc ppm	Total Iron ppm
[illegible]	117	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45021472	118	0.55	0.07	6.02	0.53	0.04	0.04	37.02	2244.64
[illegible]	119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Laboratory #	Total Copper ppm	Total Manganese ppm	Total Sulfur ppm	Total Boron ppm	% Dry Matter
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	7.68	37.78	926.62	2.26	47.8
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	20.7

...ection 2: Pounds of nutrient per ton on an as received basis

Laboratory #	Customer Sample Identification	Nitrogen lbs/wet ton	P_2O_5 lbs/wet ton	K_2O lbs/wet ton	Calcium lbs/wet ton	Magnesium lbs/wet ton	Sodium lbs/wet ton	Zinc lbs/wet ton	Iron lbs/wet ton
[illegible]	117	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45021472	118	5.29	1.52	69.18	5.08	0.43	0.42	0.035	2.148
[illegible]	119	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Laboratory #	Copper lbs/wet ton	Manganese lbs/wet ton	Sulfur lbs/wet ton	Boron lbs/wet ton
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
45021472	0.007	0.036	0.887	0.002
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Odor Control Plan
for
Bouma Dairy

Odors from the facility are mainly associated with agricultural operations, including other CAFOs. Odors from CAFO's are not consistently predictable, and may have a periodic impact on nearby residents depending on sources and weather conditions. Odors may be less noticeable during calm days and tend to be strongest during the cleaning of animal buildings and during withdrawal of water from the lagoons and land application. It is the intention of the faculty to limit odors to an absolute minimum.

The following are practices to be used for an Odor Control Plan:

- Pens will be scraped off on as needed basis. Solid waste will be removed as needed to best reduce nuisance odors.

- All dead animals should be removed within 24 hours or will be buried at a minimum depth of three feet in designated area.

- Cleaning of the barns will be done at times consistent with the least nuisance problems.

- Irrigation will be done during daylight hours when wind velocity and humidity are lower. Irrigation will be monitored by an employee or management trained in waste disposal. This training will be accomplished by attending waste management training provided by the Agriculture Extension Service and TCEQ

- All lounging areas around the barn will be maintained so that there is no ponding of liquids.

- Pump retention ponds before the liquid level reaches the 24 hr-25 yr marker.

- The RCS is properly sized using USDA-Natural Resource Conservation Service Waternuterr spreadsheet.

- In an effort to reduce air-bound particulate the dairy will add moisture to feed when mixing under windy conditions. Controlling the speed of farm vehicles will reduce dust generated at the facility

- The dairy would urge anyone who lives in the vicinity of the dairy, to notify the management when a perceived problem develops so that the source can be identified immediately.

- Dust when necessary will be controlled by water the area until the dust is controlled.

Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Tuesday, August 19, 2025 10:11 AM
To: Kayla Robichaux
Subject: Re: WQ0005477000 - Bouma Dairy Farm
Attachments: Sent to TCEQ.pdf

Morning Kayla:

See attachmnet.

Jim

Kayla Robichaux

From: Kayla Robichaux
Sent: Thursday, August 14, 2025 2:49 PM
To: Jim Wyrick
Cc: Kayla Robichaux
Subject: WQ0005477000 - Bouma Dairy Farm

Good afternoon, Jim.

Please see the comments below for the cleanup items on this application.

1. Please revise page 6 of the application to fill in Section 9.D for the public viewing location.
2. Please revise Table 5: soil limiting characteristics and BMPs to show the limiting characteristic of "filtering capacity" instead of somewhat limited for soil type WoC.
3. Apologies, I made a typo when I sent this comment previously and forgot to add the word all for this sentence. Please revise the second sentence of the recharge feature certification to read, "The herd size is 999 head dairy cattle, all of which are milking cows". And please reseal the recharge feature certification for the edits.

Please let me know if you have any questions. The response due date is August 28, 2025.

Thank you,
Kayla Robichaux
Land Applications Team, Water Quality Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. F
MC-150
Austin, TX 78753
Office: 512.239.4742
kayla.robichaux@tceq.texas.gov

Please see the comments below for the cleanup items on this application. Bouma Dairy Farm

1. Please revise page 6 of the application to fill in Section 9.D for the public viewing location.

   See revised page 6

2. Please revise Table 5: soil limiting characteristics and BMPs to show the limiting characteristic of “filtering capacity” instead of somewhat limited for soil type WoC.

   See revised Table 5

3. Apologies, I made a typo when I sent this comment previously and forgot to add the word all for this sentence. Please revise the second sentence of the recharge feature certification to read, “The herd size is 999 head dairy cattle, all of which are milking cows”. And please reseal the recharge feature certification for the edits.

   See revised RFC

RECEIVED
AUGUST 19 2025
CAFO PERMITS TEAM
TCEQ

Landowner Name: MAIKO HESSEL BOUMA

B. Landowner of the land management units (LMUs)

Landowner Name: MAIKO HESSEL BOUMA

SECTION 9. PUBLIC NOTICE INFORMATION

A. Individual responsible for publishing the notices in the newspaper

Prefix (Mr., Ms., Miss): Mr. First and Last Name: JIM WYRICK

Title: Consultant Credentials: PG

Company Name: EAST TEXAS ENVIRONMENTAL SERVICES

Mailing Address: 317 HIGHLAND DR.

City, State and Zip Code: SULPHUR SPRINGS, TX 75482

Phone Number: 903-243-0400 Fax Number: Click here to enter text. E-mail Address: wyrick@suddenlink.net

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

☐ E-mail: Click here to enter text.

☐ Fax Number: Click here to enter text.

☒ Regular Mail:

Mailing Address: 317 Highland Dr.

City, State and Zip Code: Sulphur Springs, TX 75482

RECEIVED
AUGUST 19 2025
CAFO PERMITS TEAM
TCEQ

C. Contact person to be listed in the notice

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

First and Last Name: MAIKO BOUMA

Title: OWNER Credentials: Click here to enter text.

Company Name: BOUMA DAIRY FARM

Phone Number: 903 855 2748

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: Texas A&M AgriLife Extension Service

Physical Address of Building: 1200 West Houston St.

City: Sulphur Springs, TX 75482 County: Hopkins

Phone Number: 903-885-3443

E. Bilingual Notice Requirement

For new, major amendment, and renewal applications. This information can be obtained by

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes	Too acid, slow water movement	Permanent Vegetation: High residue crop
FrB—Freestone fine sandy loam, 1 to 3 percent slopes	Depth to saturated zone, slow water movement	Permanent Vegetation: High residue crop
KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	Not limited	Permanent Vegetation: High residue crop
KvD—Kirvin soils, 3 to 8 percent slopes	Slow water movement, Too steep for surface application, too acid	Permanent Vegetation: High residue crop
Na—Nahatche soils, frequently flooded	Flooding, depth to saturated zone	Permanent Vegetation: High residue crop
PkC—Pickton loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop
WoC-Wolfpen loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop

RECEIVED
AUGUST 19 2025
CAFO PERMITS TEAM
TCEQ

RECEIVED
AUGUST 19 2025
CAFO PERMITS TEAM
TCEQ

RECHARGE FEATURE CERTIFICATION FOR BOUMA DAIRY

GENERAL REMARKS:

Mr. Bouma is applying for a TCEQ Individual Permit for a concentrated animal feeding operation. The herd size is 999 head dairy cattle, all of which are milking cows. This recharge feature evaluation and associated certification was conducted at the request of Miako Bouma of Bouma Dairy. Jim C. Wyrick, Professional Geoscientist, compiled the findings and recommendations, contained herein.

PURPOSE OF REPORT:

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 wastewater from the retention control structure or land application site into the underlying aquifer as according to 30 TAC §321.32(50) requirements. The following records and/or maps from the following entities/agencies were reviewed to locate any recharge features: (a) Texas Railroad Commission, (b) well driller, (c) TCEQ, (d) Natural Resource Conservation Service, (e) owner of site, and (f) an on-site inspection. There are no previous landowners available to contact.

AREA OF EVALUATION

The site under evaluation consists of a retention control structure (RCS#1) and (RCS#2) to be constructed. The wastewater application area LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. The property is located on the side of CR 2408, .29 miles W of intersection Hwy 11 and CR 2408 in Hopkins County. Latitude: 32.980666 ° N and Longitude: 95.328666º W. This property consists of approximately 538 acres located on Abstract 307, Tract 5-01, and Thomas B. Smith Survey in Hopkins, Texas. The facility is a dairy operation using a freestall system. The facility is located on a topographic ridge with uncontaminated surface runoff generally draining via overland flow and shallow concentrated flows west into unnamed drain and then into Big sandy Creek. The elevation of the dairy property ranges from approximately 460 to 520 feet above mean sea level (AMSL). The current land use of the property is agricultural (pasture and forage crops). All waste application areas are located on the property, and off-site manure application areas will be used by this facility.

SITE DESCRIPTIONS

The existing RCS is located west and down slope of the dairy barn. The RCS was constructed in 1999. Inland Engineering and Surveying certified the size of RCS#1 as having a capacity of 5.56 acre-feet. RCS#2 will be constructed north of the existing RCS will be built to a capacity of 6.92 ac ft. The RCSs will catch and contain all wastewater and manure generated from the dairy barn and 2 free stallbarns. Wastewater flows from the dairy barn and freestall barns into a concrete settling basin then though a six-inch PVC pipe into RCS#1 and then into RCS#2. The RCSs will be dewatered using a drag hose system attached to the back of a tractor. The wastewater application area is on 484 acres, LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 LMU#6 and LMU#7 The fields generally drain via overland flow and shallow concentrated flows south into unnamed creek then into Big Sandy Creek.

DEFINITION OF RECHARGE ZONE FEATURE

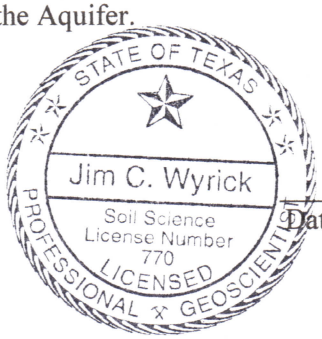
For the purpose of this report, the definition of "recharge feature" shall be the same as the definition presented in 30 TAC §321.32(50). Recharge feature is defined as those natural or artificial features either on or beneath the ground surface at the site under evaluation that provide or create significant hydrologic connections 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 connection includes, but are not limited to: faults; fractures; sinkholes

CERTIFICATION

The undersigned hereby certifies that natural recharge features and three potential artificial recharge features exist as defined in 30 TAC subchapter B: §§321.31-321.47 Part I on tracts operated or controlled by Bouma Dairy and utilized under this application. See Aquifer Protection Plan for the natural and artificial recharge features impact on the Aquifer.

Jim C. Wyrick

Jim C. Wyrick
Professional Geoscientist, License Number 770



8/19/2025
Date

RECEIVED
AUGUST 19 2025
CAFO PERMITS TEAM
TCEQ

Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Wednesday, August 13, 2025 9:59 AM
To: Kayla Robichaux
Subject: Re: WQ0005477000 - Bouma Dairy Farm
Attachments: Reply to comments.pdf

Kayla:

See the attachment.

Have a good day.

Jim

Kayla Robichaux

From: Kayla Robichaux
Sent: Monday, August 11, 2025 11:39 AM
To: Jim Wyrick
Subject: WQ0005477000 - Bouma Dairy Farm

Good afternoon, Jim.

Please see the comments below for what needs to be revised on the application for WQ0005477000.

1. Please revise section 6.B (page 5) and 9.C (page 6) of the application to show “Bouma Dairy Farm” instead of “Bouma Dairy”.
2. Please add soil type WoC back to the soil limiting characteristic and BMP table.
3. Please revise the second sentence of the recharge feature certification to read, “The herd size is 999 head dairy cattle, of which are milking cows”. And please reseal the recharge feature certification since page 1 was updated with this revision and the revision received on August 5, 2025.

Please let me know if you have any questions. The response due date is August 25, 2025.

Thank you,
Kayla Robichaux
Land Applications Team, Water Quality Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. F
MC-150
Austin, TX 78753
Office: 512.239.4742
kayla.robichaux@tceq.texas.gov

Please see the comments below for WQ0005477000.

1. Please revise section 6.B (page 5) and 9.C (page 6) of the application to show “Bouma Dairy Farm” instead of “Bouma Dairy”.

   See attachment

2. Please add soil type WoC back to the soil limiting characteristic and BMP table.

   See attachment

3. Please revise the second sentence of the recharge feature certification to read, “The herd size is 999 head dairy cattle, of which are milking cows”. And please reseal the recharge feature certification since page 1 was updated with this revision and the revision received on August 5, 2025.

   See attachment

RECEIVED
AUGUST 13 2025
CAFO PERMITS TEAM
TCEQ

Permit Contact First and Last Name: Jim Wyrick

Title: Consultant Credentials: PG

Company Name: East Texas Environmental Services

Mailing Address: 317 Highland Dr.

City, State and Zip Code: Sulphur Springs, TX 75482

Phone Number: 903-243-0400 Fax Number: na E-mail Address: wyrick@suddenlink.net

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

Permit Contact First and Last Name: MAIKO BOUMA

Title: Owner Credentials: Click here to enter text.

Company Name: BOUMA DAIRY FARM

Mailing Address: 4252 COUNTY ROAD 2408

City, State and Zip Code: WINNSBORO, TX 75494 4100

Phone Number: 903 855 2748 Fax Number: Click here to enter text. E-mail Address: boumadairy@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)

MAIKO HESSEL BOUMA

☐ No, complete this section

RECEIVED
AUGUST 13 2025
CAFO PERMITS TEAM
TCEQ

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: MAIKO HESSEL BOUMA

B. Landowner of the land management units (LMUs)

Landowner Name: MAIKO HESSEL BOUMA

RECEIVED
AUGUST 13 2025
CAFO PERMITS TEAM
TCEQ

SECTION 9. PUBLIC NOTICE INFORMATION

A. Individual responsible for publishing the notices in the newspaper

Prefix (Mr., Ms., Miss): Mr. First and Last Name: JIM WYRICK

Title: Consultant Credentials: PG

Company Name: EAST TEXAS ENVIRONMENTAL SERVICES

Mailing Address: 317 HIGHLAND DR.

City, State and Zip Code: SULPHUR SPRINGS, TX 75482

Phone Number: 903-243-0400 Fax Number: Click here to enter text. E-mail Address: wyrick@suddenlink.net

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

☐ E-mail: Click here to enter text.

☐ Fax Number: Click here to enter text.

☒ Regular Mail:

Mailing Address: 317 Highland Dr.

City, State and Zip Code: Sulphur Springs, TX 75482

C. Contact person to be listed in the notice

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

First and Last Name: MAIKO BOUMA

Title: OWNER Credentials: Click here to enter text.

Company Name: BOUMA DAIRY FARM

Phone Number: 903 855 2748

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: Click here to enter text.

Physical Address of Building: Click here to enter text.

City: Click here to enter text. County: Click here to enter text.

Phone Number: Click here to enter text.

E. Bilingual Notice Requirement

For new, major amendment, and renewal applications. This information can be obtained by

Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes	Too acid, slow water movement	Permanent Vegetation: High residue crop
FrB—Freestone fine sandy loam, 1 to 3 percent slopes	Depth to saturated zone, slow water movement	Permanent Vegetation: High residue crop
KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	Not limited	Permanent Vegetation: High residue crop
KvD—Kirvin soils, 3 to 8 percent slopes	Slow water movement, Too steep for surface application, too acid	Permanent Vegetation: High residue crop
Na—Nahatche soils, frequently flooded	Flooding, depth to saturated zone	Permanent Vegetation: High residue crop
PkC—Pickton loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop
WoC-Wolfpen loamy fine sand, 2 to 5 percent slopes	Somewhat limited	Permanent Vegetation: High residue crop

RECEIVED
AUGUST 13 2025
CAFO PERMITS TEAM
TCEQ

RECEIVED
AUGUST 13 2025
CAFO PERMITS TEAM
TCEQ

RECHARGE FEATURE CERTIFICATION FOR BOUMA DAIRY

GENERAL REMARKS:

Mr. Bouma is applying for a TCEQ Individual Permit for a concentrated animal feeding operation. The herd size is 999 head dairy cattle, of which are milking cows. This recharge feature evaluation and associated certification was conducted at the request of Miako Bouma of Bouma Dairy. Jim C. Wyrick, Professional Geoscientist, compiled the findings and recommendations, contained herein.

PURPOSE OF REPORT:

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 wastewater from the retention control structure or land application site into the underlying aquifer as according to 30 TAC §321.32(50) requirements. The following records and/or maps from the following entities/agencies were reviewed to locate any recharge features: (a) Texas Railroad Commission, (b) well driller, (c) TCEQ, (d) Natural Resource Conservation Service, (e) owner of site, and (f) an on-site inspection. There are no previous landowners available to contact.

AREA OF EVALUATION

The site under evaluation consists of a retention control structure (RCS#1) and (RCS#2) to be constructed. The wastewater application area LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. The property is located on the side of CR 2408, .29 miles W of intersection Hwy 11 and CR 2408 in Hopkins County. Latitude: 32.980666 ° N and Longitude: 95.328666º W. This property consists of approximately 538 acres located on Abstract 307, Tract 5-01, and Thomas B. Smith Survey in Hopkins, Texas. The facility is a dairy operation using a freestall system. The facility is located on a topographic ridge with uncontaminated surface runoff generally draining via overland flow and shallow concentrated flows west into unnamed drain and then into Big sandy Creek. The elevation of the dairy property ranges from approximately 460 to 520 feet above mean sea level (AMSL). The current land use of the property is agricultural (pasture and forage crops). All waste application areas are located on the property, and off-site manure application areas will be used by this facility.

SITE DESCRIPTIONS

The existing RCS is located west and down slope of the dairy barn. The RCS was constructed in 1999. Inland Engineering and Surveying certified the size of RCS#1 as having a capacity of 5.56 acre-feet. RCS#2 will be constructed north of the existing RCS will be built to a capacity of 6.92 ac ft. The RCSs will catch and contain all wastewater and manure generated from the dairy barn and 2 free stallbarns. Wastewater flows from the dairy barn and freestall barns into a concrete settling basin then though a six-inch PVC pipe into RCS#1 and then into RCS#2. The RCSs will be dewatered using a drag hose system attached to the back of a tractor. The wastewater application area is on 484 acres, LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 LMU#6 and LMU#7 The fields generally drain via overland flow and shallow concentrated flows south into unnamed creek then into Big Sandy Creek.

DEFINITION OF RECHARGE ZONE FEATURE

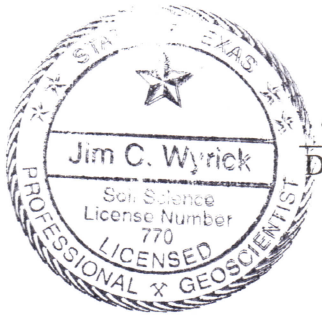
For the purpose of this report, the definition of "recharge feature" shall be the same as the definition presented in 30 TAC §321.32(50). Recharge feature is defined as those natural or artificial features either on or beneath the ground surface at the site under evaluation that provide or create significant hydrologic connections 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 connection includes, but are not limited to: faults; fractures; sinkholes

CERTIFICATION

The undersigned hereby certifies that natural recharge features and three potential artificial recharge features exist as defined in 30 TAC subchapter B: §§321.31-321.47 Part I on tracts operated or controlled by Bouma Dairy and utilized under this application. See Aquifer Protection Plan for the natural and artificial recharge features impact on the Aquifer.

Jim C. Wyrick

Professional Geoscientist, License Number 770



8/11/2025

Date

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Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Tuesday, August 5, 2025 10:49 AM
To: Kayla Robichaux
Subject: Re: WQ0005477000 - Bouma Dairy Farm
Attachments: Comments to TCEQ.pdf

Morning Kayla,

See attachmnet

Thanks

Jim

Kayla Robichaux

From: Kayla Robichaux
Sent: Friday, August 1, 2025 3:36 PM
To: Jim Wyrick
Cc: Kayla Robichaux
Subject: WQ0005477000 - Bouma Dairy Farm

Good afternoon, Jim.

Please see the comments below for what needs to be addressed on the application for WQ0005477000.

1. Please submit the list of alternative crops and yield goals.
2. Please submit the flood plain map.
3. Please revise the following on the attachment for Table 5: soil limiting characteristics & BMPS:
    a. FrB – Please add the limiting characteristic of slow water movement.
    b. Na – please add limiting characteristic of depth to saturated zone.
    c. Please remove soil types Lr and WtC from the table (they do not appear on the soil map).
4. The location shown on the LMU map for dead animal disposal is within soil type BeB which shows as being very limited for wetness for animal carcass disposal on web soil survey reports (see screenshot below). The location needs to be moved.

Large Animal Carcass Disposal–Hopkins and Rains Counties, Texas					
Map symbol and soil name	Pct. of map unit	Large Animal Carcass Disposal, Pit		Large Animal Carcass Disposal, Trench	
		Rating class and limiting features	Value	Rating class and limiting features	Value
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes					
Bernaldo	90	Very limited		Very limited	
		Wetness	1.00	Wetness	1.00

5. Please revise the following sections of the application to update the site name to “Bouma Dairy Farm”: Sections 6.B, 9.C of the application Form 00728, and Item #3 of the plain language summaries.
6. Revise the acreage of LMU 7 to show the 113 acres in Item #6 of the plain language summaries.
7. Item 11 of the core data form – select “individual” for the customer type.
8. Item #7 of the Supplemental Permit Information Form (SPIF), add the segment number for the receiving water bodies: Big Sandy Creek in Segment No. 0514 and Lake Cypress Springs in Segment No. 0405.
9. On sheet 8 of 11, LMUs 1, 2, 3 are listed for Bermuda/SmGr Pastureland. However, the total acreage for these LMUs is 158 acres (75 + 44 + 39). Please clarify the other LMUs that are included in the 381 acres of the water budget analysis on Sheet 7 of 11.
10. On Page 1 of the RFC, in the Section for the definition of recharge feature, instead of referencing the TXG920000 Part 1, please use 30 TAC §321.32(50).

Please let me know if you have any questions. The response due date is August 15, 2025.

Thank you,
Kayla Robichaux
Land Applications Team, Water Quality Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. F
MC-150
Austin, TX 78753
Office: 512.239.4742
kayla.robichaux@tceq.texas.gov

Please see the comments below for what needs to be addressed on the application for WQ0005477000.

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1. Please submit the list of alternative crops and yield goals.

   See alternate crops list

2. Please submit the flood plain map.

   See attachment

3. Please revise the following on the attachment for Table 5: soil limiting characteristics & BMPS:
   1. FrB – Please add the limiting characteristic of slow water movement.
   2. Na – please add limiting characteristic of depth to saturated zone.
   3. Please remove soil types Lr and WtC from the table (they do not appear on the soil map).

   See revised Table 5

4. The location shown on the LMU map for dead animal disposal is within soil type BeB which shows as being very limited for wetness for animal carcass disposal on web soil survey reports (see screenshot below). The location needs to be moved.

   The burial site has been moved, see LMU Map for new location and soil map for limitation for KnD soil.

5. Please revise the following sections of the application to update the site name to “Bouma Dairy Farm”: Sections 6.B, 9.C of the application Form 00728, and Item #3 of the plain language summaries.

   See attachment

6. Revise the acreage of LMU 7 to show the 113 acres in Item #6 of the plain language summaries.

   See attachment

7. Item 11 of the core data form – select “individual” for the customer type.

   See attachment

8. Item #7 of the Supplemental Permit Information Form (SPIF), add the segment number for the receiving water bodies: Big Sandy Creek in Segment No. 0514 and Lake Cypress Springs in Segment No. 0405.

9. On sheet 8 of 11, LMUs 1, 2, 3 are listed for Bermuda/SmGr Pastureland. However, the total acreage for these LMUs is 158 acres (75 + 44 + 39). Please clarify the other LMUs that are included in the 381 acres of the water budget analysis on Sheet 7 of 11.

Also included in the total acreage is LMU4-64ac, LMU5-30ac, LMU6-41ac and 88 ac on LMU7.

10. On Page 1 of the RFC, in the Section for the definition of recharge feature, instead of referencing the TXG920000 Part 1, please use 30 TAC §321.32(50).

    See attachment

Please let me know if you have any questions.

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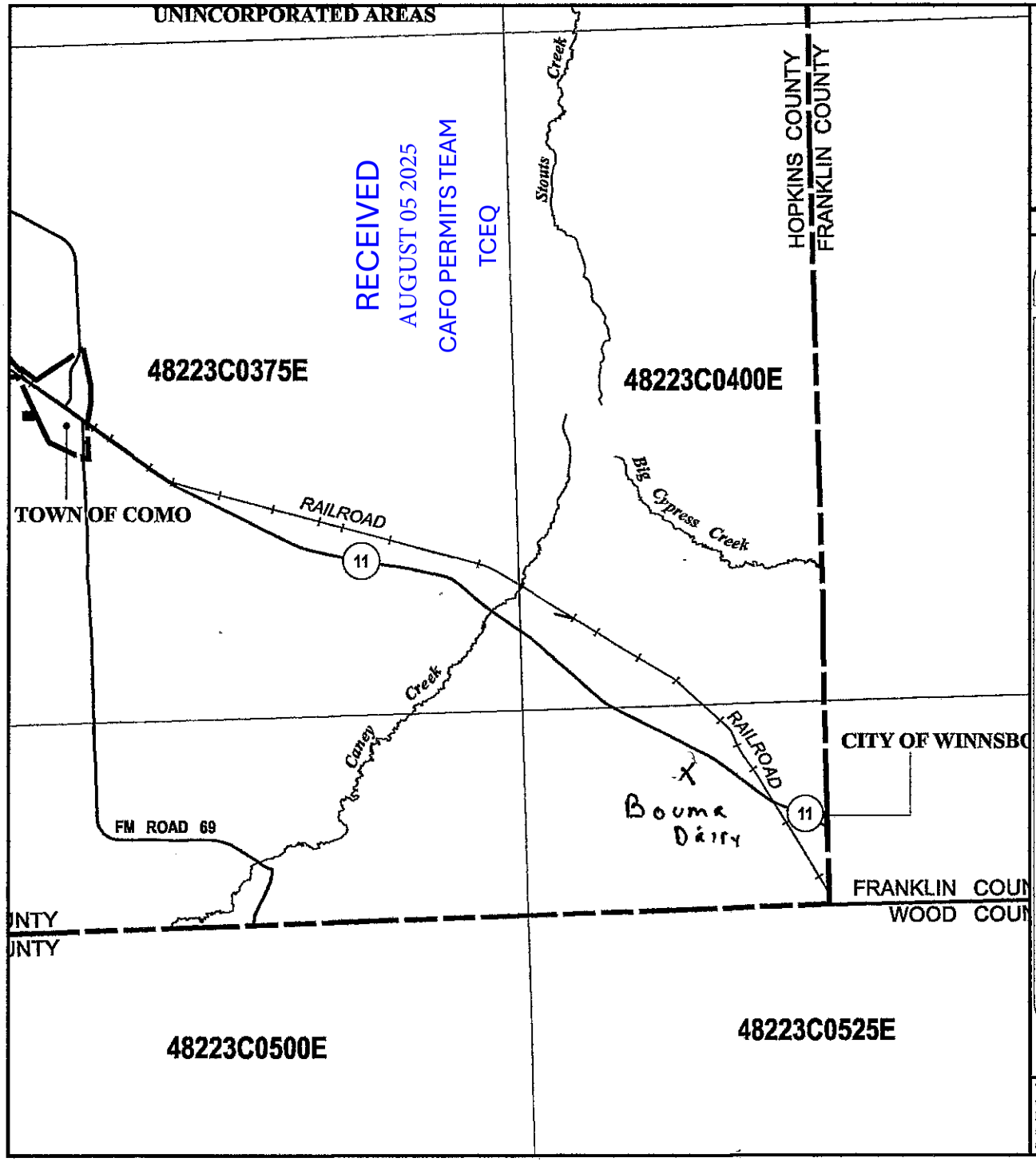
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Bouma Dairy Farm
Proposed Alternative Crops

Crop	
Coastal 3 Cut + Graze H	Coastal GC (30%DM) 18-20 Ton VH
Coastal 3 Cut + Graze M	Coastal GC (30%DM) 18-20 Ton VL - L
Coastal 3 Cut + Graze VH	Coastal GC (30%DM) 21-23T; SG GC 6-7T H
Coastal 3 Cut + Graze VL - L	Coastal GC (30%DM) 21-23T; SG GC 6-7T M
Coastal 3 Cut Hay H	Coastal GC (30%DM) 21-23T; SG GC 6-7T VH
Coastal 3 Cut Hay M	Coastal GC (30%DM) 21-23T; SG GC 6-7T VL - L
Coastal 3 Cut Hay VH	Coastal Hay 3 cut, RG mod graze H
Coastal 3 Cut Hay VL - L	Coastal Hay 3 cut, RG mod graze M
Coastal 4 Cut Hay H	Coastal Hay 3 cut, RG mod graze VH
Coastal 4 Cut Hay M	Coastal Hay 3 cut, RG mod graze VL - L
Coastal 4 Cut Hay VH	Coastal Hay 3 cut, SG mod graze H
Coastal 4 Cut Hay VL - L	Coastal Hay 3 cut, SG mod graze M
Coastal graze 1 AU/1 ac, RG mod graze H	Coastal Hay 3 cut, SG mod graze VH
Coastal graze 1 AU/1 ac, RG mod graze M	Coastal Hay 3 cut, SG mod graze VL - L
Coastal graze 1 AU/1 ac, RG mod graze VH	Coastal Hay 4 cut, RG mod graze H
Coastal graze 1 AU/1 ac, RG mod graze VL - L	Coastal Hay 4 cut, RG mod graze M
Coastal graze 1 AU/1 ac, SG mod graze H	Coastal Hay 4 cut, RG mod graze VH
Coastal graze 1 AU/1 ac, SG mod graze M	Coastal Hay 4 cut, RG mod graze VL - L
Coastal graze 1 AU/1 ac, SG mod graze VH	Coastal Hay 4 cut, SG mod graze H
Coastal graze 1 AU/1 ac, SG mod graze VL - L	Coastal Hay 4 cut, SG mod graze M
Coastal Grazing + 1 Hay H	Coastal Hay 4 cut, SG mod graze VH
Coastal Grazing + 1 Hay M	Coastal Hay 4 cut, SG mod graze VL - L
Coastal Grazing + 1 Hay VH	Common graze 1 AU/1 ac, RG mod graze H
Coastal Grazing + 1 Hay VL - L	Common graze 1 AU/1 ac, RG mod graze M
Coastal Grazing 1 AU/1 ac H	Common graze 1 AU/1 ac, RG mod graze VH
Coastal Grazing 1 AU/1 ac M	Common graze 1 AU/1 ac, RG mod graze VL - L
Coastal Grazing 1 AU/1 ac VH	Common graze 1 AU/1 ac, SG mod graze H
Coastal Grazing 1 AU/1 ac VL - L	Common graze 1 AU/1 ac, SG mod graze M
Coastal Grazing 1 AU/2 ac H	Common graze 1 AU/1 ac, SG mod graze VH
Coastal Grazing 1 AU/2 ac M	Common graze 1 AU/1 ac, SG mod graze VL - L
Coastal Grazing 1 AU/2 ac VH	Common Grazing + 2 Hay H
Coastal Grazing 1 AU/2 ac VL - L	Common Grazing + 2 Hay M
Coastal Grazing 1 AU/3 ac H	Common Grazing + 2 Hay VH
Coastal Grazing 1 AU/3 ac M	Common Grazing + 2 Hay VL - L
Coastal Grazing 1 AU/3 ac VH	Common Hay 3 cut, RG mod graze H
Coastal Grazing 1 AU/3 ac VL - L	Common Hay 3 cut, RG mod graze M
Coastal GC (30%DM) 21-23 Ton H	Common Hay 3 cut, RG mod graze VH
Coastal GC (30%DM) 21-23 Ton M	Common Hay 3 cut, RG mod graze VL - L
Coastal GC (30%DM) 21-23 Ton VH	Common Hay 3 cut, SG mod graze H
Coastal GC (30%DM) 21-23 Ton VL - L	Common Hay 3 cut, SG mod graze M
Coastal GC (30%DM) 18-20 Ton H	Common Hay 3 cut, SG mod graze VH
Coastal GC (30%DM) 18-20 Ton M	Common Hay 3 cut, SG mod graze VL - L

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SG Green Chop(25% DM) 6 to 7 tons H	Silage - Sorg21-25T;SG GreenChop-6-7T H
SG Green Chop(25% DM) 6 to 7 tons M	Silage - Sorg21-25T;SG GreenChop-6-7T M
SG Green Chop(25% DM) 6 to 7 tons VH	Silage - Sorg21-25T;SG GreenChop-6-7T VH
SG Green Chop(25% DM) 6 to 7 tons VL - L	Silage - Sorg21-25T;SG GreenChop-6-7T VL - L
SG Silage(35% DM) 12 to 14 tons H	Silage - Sorg26-30T;SG GreenChop-6-7T H
SG Silage(35% DM) 12 to 14 tons M	Silage - Sorg26-30T;SG GreenChop-6-7T M
SG Silage(35% DM) 12 to 14 tons VH	Silage - Sorg26-30T;SG GreenChop-6-7T VH
SG Silage(35% DM) 12 to 14 tons VL - L	Silage - Sorg26-30T;SG GreenChop-6-7T VL - L
Silage - Corn(35% DM) 11 - 15 Ton H	Silage - Sorg31-40T;SG GreenChop-6-7T H
Silage - Corn(35% DM) 11 - 15 Ton M	Silage - Sorg31-40T;SG GreenChop-6-7T M
Silage - Corn(35% DM) 11 - 15 Ton VH	Silage - Sorg31-40T;SG GreenChop-6-7T VH
Silage - Corn(35% DM) 11 - 15 Ton VL - L	Silage - Sorg31-40T;SG GreenChop-6-7T VL - L
Silage - Corn(35% DM) 21 - 25 Ton H	Silage - Sorg26-30T;SG GreenChop-4-5T H
Silage - Corn(35% DM) 21 - 25 Ton M	Silage - Sorg26-30T;SG GreenChop-4-5T M
Silage - Corn(35% DM) 21 - 25 Ton VH	Silage - Sorg26-30T;SG GreenChop-4-5T VH
Silage - Corn(35% DM) 21 - 25 Ton VL - L	Silage - Sorg26-30T;SG GreenChop-4-5T VL - L
Silage - Corn16-20T;SG GreenChop-6-7T H	Silage - Sorg31-40T;SG GreenChop-4-5T H
Silage - Corn16-20T;SG GreenChop-6-7T M	Silage - Sorg31-40T;SG GreenChop-4-5T M
Silage - Corn16-20T;SG GreenChop-6-7T VH	Silage - Sorg31-40T;SG GreenChop-4-5T VH
Silage - Corn16-20T;SG GreenChop-6-7T VL - L	Silage - Sorg31-40T;SG GreenChop-4-5T VL - L
Silage - Corn16-20T;SG GreenChop-8-9T H	Silage - Sorg41-50T;SG GreenChop-4-5T H
Silage - Corn16-20T;SG GreenChop-8-9T M	Silage - Sorg26-30T;SG Silage-12-14T H
Silage - Corn16-20T;SG GreenChop-8-9T VH	Silage - Sorg26-30T;SG Silage-12-14T M
Silage - Corn16-20T;SG GreenChop-8-9T VL - L	Silage - Sorg26-30T;SG Silage-12-14T VH
Silage - Corn21-25T;SG GreenChop-8-9T M	Silage - Sorg26-30T;SG Silage-12-14T VL - L
Silage - Corn21-25T;SG GreenChop-8-9T VH	Silage - Sorg31-40T;SG Silage-12-14T H
Silage - Corn21-25T;SG GreenChop-8-9T VL - L	Silage - Sorg31-40T;SG Silage-12-14T M
Silage - Corn21-25T;SG Silage-8-9T H	Silage - Sorg31-40T;SG Silage-12-14T VH
Silage - Corn21-25T;SG Silage-8-9T M	Silage - Sorg31-40T;SG Silage-12-14T VL - L
Silage - Corn21-25T;SG Silage-8-9T VH	Silage - Sorg26-30T;SG Silage-10-11T H
Silage - Corn21-25T;SG Silage-8-9T VL - L	Silage - Sorg26-30T;SG Silage-10-11T M
Silage - Sorg(35% DM) 21 - 25 Ton H	Silage - Sorg26-30T;SG Silage-10-11T VH
Silage - Sorg(35% DM) 21 - 25 Ton M	Silage - Sorg26-30T;SG Silage-10-11T VL - L
Silage - Sorg(35% DM) 21 - 25 Ton VH	Silage - Sorg31-40T;SG Silage-10-11T H
Silage - Sorg(35% DM) 21 - 25 Ton VL - L	Silage - Sorg31-40T;SG Silage-10-11T M
Silage - Sorg(35% DM) 26 - 30 Ton H	Silage - Sorg31-40T;SG Silage-10-11T VH
Silage - Sorg(35% DM) 26 - 30 Ton M	Silage - Sorg31-40T;SG Silage-10-11T VL - L
Silage - Sorg(35% DM) 26 - 30 Ton VH	Silage - Sorg41-50T;SG Silage-10-11T H
Silage - Sorg(35% DM) 26 - 30 Ton VL - L	Silage - Sorg41-50T;SG Silage-10-11T M
Silage - Sorg26-30T;SG GreenChop-8-9T H	Silage - Sorg41-50T;SG Silage-10-11T VH
Silage - Sorg26-30T;SG GreenChop-8-9T M	Silage - Sorg41-50T;SG Silage-10-11T VL - L
Silage - Sorg26-30T;SG GreenChop-8-9T VH	Sorg Forage Hay/Graze 7500 #, SG mod graze H
Silage - Sorg26-30T;SG GreenChop-8-9T VL - L	Sorg Forage Hay/Graze 7500 #, SG mod graze M
Silage - Sorg31-40T;SG GreenChop-8-9T H	Sorg Forage Hay/Graze 7500 #, SG mod graze VH
Silage - Sorg31-40T;SG GreenChop-8-9T M	Sorg Forage Hay/Graze 7500 #, SG mod graze VL - L
Silage - Sorg31-40T;SG GreenChop-8-9T VH	
Silage - Sorg31-40T;SG GreenChop-8-9T VL - L	



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

HOPKINS COUNTY, TEXAS AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

PANELS PRINTED: 50, 75, 100, 125, 150, 175, 200, 215, 225, 250, 275, 300, 325, 330, 350, 375, 400, 425, 450, 475, 500, 525

MAP NUMBER
48223CIND0A

EFFECTIVE DATE
MARCH 17, 2011

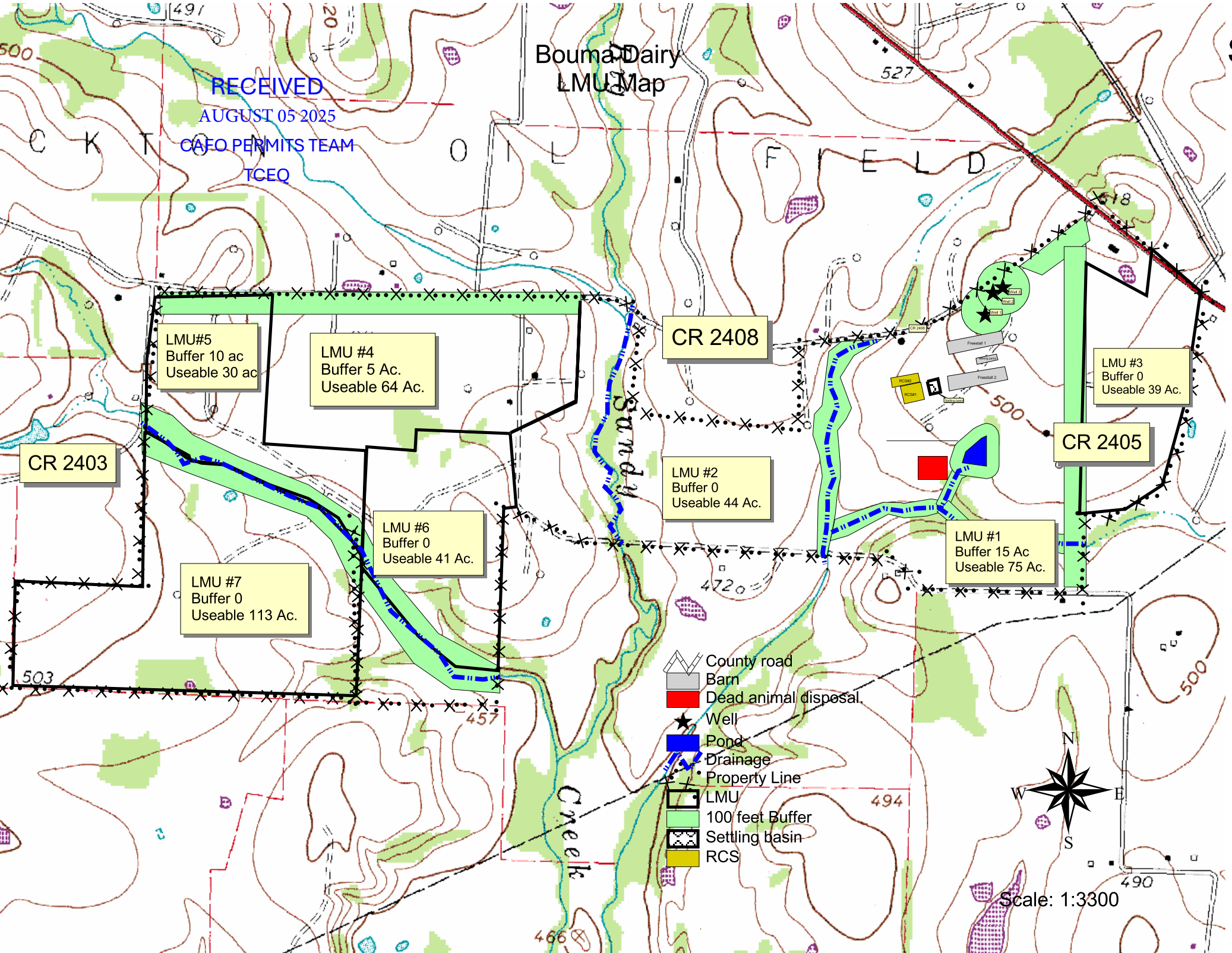
Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

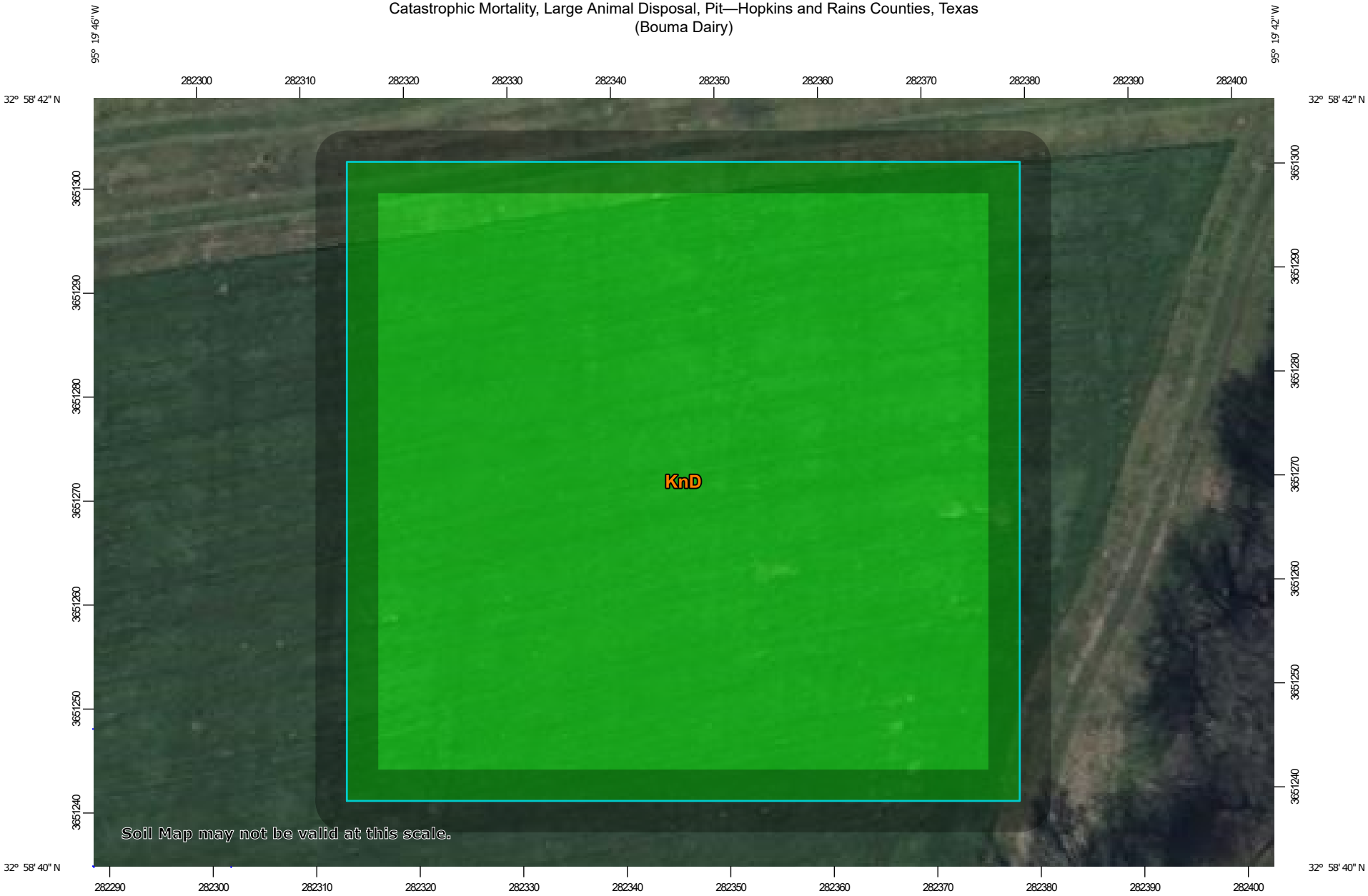
Table 5: Soil Limiting Characteristics and Best Management Practices

Soil Types	Limiting Characteristics	Best Management Practices
BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes	Too acid, slow water movement	Permanent Vegetation: High residue crop
FrB—Freestone fine sandy loam, 1 to 3 percent slopes	Depth to saturated zone, slow water movement	Permanent Vegetation: High residue crop
KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	Not limited	Permanent Vegetation: High residue crop
KvD—Kirvin soils, 3 to 8 percent slopes	Slow water movement, Too steep for surface application, too acid	Permanent Vegetation: High residue crop
Na—Nahatche soils, frequently flooded	Flooding, depth to saturated zone	Permanent Vegetation: High residue crop
PkC—Pickton loamy fine sand, 2 to 5 percent slopes	Filtering capacity	Permanent Vegetation: High residue crop

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Bouma Dairy
LMU Map
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CR 2408
CR 2403
CR 2405
LMU#5
Buffer 10 ac
Useable 30 ac
LMU #4
Buffer 5 Ac.
Useable 64 Ac.
LMU #6
Buffer 0
Useable 41 Ac.
LMU #7
Buffer 0
Useable 113 Ac.
LMU #2
Buffer 0
Useable 44 Ac.
LMU #3
Buffer 0
Useable 39 Ac.
LMU #1
Buffer 15 Ac
Useable 75 Ac.
Sandy Creek
County road
Barn
Dead animal disposal.
Well
Pond
Drainage
Property Line
LMU
100 feet Buffer
Settling basin
RCS
N
S
E
W
Scale: 1:3300

Catastrophic Mortality, Large Animal Disposal, Pit—Hopkins and Rains Counties, Texas
(Bouma Dairy)



Map Scale: 1:521 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 25 50 100 150

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

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MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

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MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hopkins and Rains Counties, Texas
Survey Area Data: Version 20, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 19, 2023—Mar 5, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Catastrophic Mortality, Large Animal Disposal, Pit

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
KnD	Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	Not limited	Kirvin (90%)		1.0	100.0%
Totals for Area of Interest					**1.0**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Not limited	1.0	100.0%
Totals for Area of Interest	**1.0**	**100.0%**

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Description

DHS - Department of Homeland Security

"Catastrophic mortality, large animal disposal, pit," is a method of disposing of animals that died from disease by placing the carcasses in successive layers in an excavated trench. The carcasses are spread, compacted, and covered daily with a thin layer of soil that is excavated from the pit. When the pit is full, a final cover of soil material at least 2 feet thick is placed over the filled pit area. This interpretation is meant for instances where environmental isolation of pathogens is a primary concern. The criteria are specifically developed to prevent groundwater contamination.

The interpretation is applicable to both heavily populated and sparsely populated areas. While some general observations may be made, onsite evaluation is required before the final site is selected. Improper site selection, design, or installation may cause contamination of ground water, seepage, and contamination of stream systems from surface drainage or floodwater. The risk of contamination can be reduced or eliminated by installing systems designed to eliminate or reduce the adverse effects of limiting soil properties. Ratings are for soils in their present condition. The present land use is not considered in the ratings.

Ratings are based on properties and qualities to the depth normally observed during soil mapping (approximately 6 or 7 feet). However, because pits may be as deep as 15 feet or more, geologic investigations are needed to determine the potential for pollution of ground water and to determine the design needed. These investigations, which are generally arranged by the pit developer, include examination of stratification, rock formations, and geologic conditions that might lead to the conducting of leachates to aquifers, wells, watercourses, and other water sources. The presence of hard, nonrippable bedrock, bedrock crevices, or highly permeable strata at or directly below the proposed pit bottom is undesirable because of the difficulty in excavation and the potential pollution of underground water.

Properties that influence the risk of pollution, ease of excavation, trafficability, and revegetation are major considerations. Soils that are flooded or have a water table within the depth of excavation present a potential pollution hazard and are difficult to excavate. Slope is an important consideration because it affects the work involved in road construction, the performance of the roads, and the control of surface water around the pit. It may also cause difficulty in constructing pits in which the pit bottom must be kept level and oriented to follow the contour of the land.

The ease with which the pit is dug and with which a soil can be used as daily and final cover is based largely on soil texture and consistence, which determine workability when the soil is dry and when it is wet. Soils that are plastic and sticky when wet are difficult to excavate, grade, or compact and difficult to place as a uniformly thick cover over a layer of carcasses. The uppermost part of the final cover should be soil material that favors the growth of plants. It should not contain excess sodium or salts and should not be too acid. In comparison with

other horizons, the surface layer in most soils has the best workability and the highest content of organic matter. Thus, it may be desirable to stockpile the surface layer for use in the final blanketing of the filled pit area.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected of a properly designed and installed system. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of the individual limitations. The ratings are shown in decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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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.

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1. Applicant's Name: - BOUMA, MAIKO HESSEL
2. Enter Customer Number: CN601231814
3. Name of facility: BOUMA DAIRY FARM
4. Enter Regulated Entity Number: RN102334539
5. Provide your permit Number: WQ0005477000
6. Facility Business: DAIRY MILK PRODUCTION. THIS FACILITY CONFINES 999 HEAD DAIRY CATTLE, OF WHICH 999 HEAD ARE MILKING COWS. THE FACILITY PRODUCTION AREA IS LOCATED 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. THE DAIRY FACILITY HAS 9 LAND MANAGEMENT UNITS (LMUS) WITH THE FOLLOWING ACREAGE: LMU #1 - 75, LMU # LMU #2 - 44, LMU #3 - 39, LMU #4 – 64, LMU #5 – 30, LMU #5 – 30, LMU #6 – 41, LMU #7 – 113, LMU #8 - 31 and LMU #9 – 101., AND 2 RETENTION CONTROL STRUCTURES (RCSS), AND A CONCRETE SETTLING BASINS. THE RCSS TOTAL REQUIRED CAPACITIES WITHOUT FREEBOARD (ACRE-FEET) ARE RCS #1 – 5.56 AND RCS #2 – 6.92. THERE ARE ONSITE 3 WATER WELLS (WELLS #1- #3). THE FACILITY IS LOCATED IN THE DRAINAGE AREA OF SEGMENT NO. 0514 OF BIG SANDY CREEK
7. Facility Location: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100
8. Application Type: NEW
9. Description of your request: APPLYING FOR A NEW IP
10. Potential pollutant sources at the facility include (list the pollutant sources): Manure, Wastewater, Dust, lubricants, Feed, Fuel Storage, Medicines, Cleaning Chemicals
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): MANURE WILL BE STORED WITHIN THE DRAINAGE AREA OF RCS #1. WASTEWATER WILL BE STORED IN RCS #1, AND RCS #2. UNTIL PROPERLY IRRIGATED THROUGH A DRAGHOSE SYSTEM IRRIGATION SYSTEMS. MANURE WILL BE HAULED TO THE APPROPRIATE LMUS, OFFSITE, IN ACCORDANCE WITH THE NUTRIENT MANAGEMENT PLAN. RCS #1, AND RCS #2 ARE DESIGNED TO STORE AND MAINTAIN THE SLUDGE AND 25YR-24HR RAINFALL. ALL OTHER CLEANERS, LUBRICANTS, FUELS AND MEDICINES WILL BE MAINTAINED AND ALL MANUFACTURERS' DIRECTIONS FOLLOWED. DEAD COWS WILL BE BURIED WITHIN 72 HOURS

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;

PLANTILLA DE IDIOMA ESPAÑOL PARA SOLICITUDES DE PERMISO CAFO

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

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1. Nombre del Solicitante: BOUMA, MAIKO HESSEL
2. Introduzca el Número de Cliente: CN601231814
3. Nombre de la Instalación: BOUMA DAIRY FARM
4. Introduzca el Número de Entidad Regulada: RN102334539.
5. Proporcione su Número de Permiso: WQ0005477000
6. Negocio de Instalación: PRODUCCIÓN DE LECHE. ESTA INSTALACIÓN CONFINA 999 CABEZAS DE GANADO LECHERO, DE LAS CUALES 999 CABEZAS SON VACAS DE ORDEÑO. EL ÁREA DE PRODUCCIÓN DE LA INSTALACIÓN ESTÁ UBICADA EN 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. LA INSTALACIÓN LÁCTEA TIENE 9 UNIDADES DE GESTIÓN DE TIERRAS (LMUS) CON LA SIGUIENTE SUPERFICIE: LMU N.º 1 - 75, LMU N.º 2 - 44, LMU N.º 3 - 39, LMU N.º 4 - 64, LMU N.º 5 - 30, LMU N.º 5 - 30, LMU N.º 6 - 41, LMU N.º 7 - 113, LMU N.º 8 – 31, LMU N.º 9 – 101 , Y 2 ESTRUCTURAS DE CONTROL DE RETENCIÓN (RCSS) Y CUENCAS DE SEDIMENTACIÓN DE CONCRETO. LAS CAPACIDADES TOTALES REQUERIDAS POR RCSS SIN FRANCOBORDO (ACRE-PIES) SON RCS N.˚ 1: 5,56 Y RCS N.˚ 2: 6,92. HAY 3 POZOS DE AGUA EN EL LUGAR (POZOS N.˚ 1 A N.˚ 3). LA INSTALACIÓN ESTÁ UBICADA EN EL ÁREA DE DRENAJE DEL SEGMENTO N.˚ 0514 DE BIG SANDY CREEK
7. Ubicación de la Instalación: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100.
8. Tipo de Solicitud: NUEVO
9. Descripción de su solicitud: SOLICITUD DE NUEVA IP
10. Las fuentes potenciales de contaminantes en la instalación incluyen (liste las fuentes contaminantes): ESTIÉRCOL, AGUAS RESIDUALES, POLVO, LUBRICANTES, PIENSOS, ALMACENAMIENTO DE COMBUSTIBLE, MEDICAMENTOS, PRODUCTOS QUÍMICOS DE LIMPIEZA
11. Las siguientes mejores prácticas de gestión se implementarán en el sitio para gestionar los contaminantes de las fuentes contaminantes listadas (describa las mejores prácticas de gestión que se utilizan): EL ESTIÉRCOL SE ALMACENARÁ DENTRO DEL ÁREA DE DRENAJE DE RCS #1, Y RCS #2. LAS AGUAS RESIDUALES SE ALMACENARAN EN RCS #1 Y RCS #2 HASTA QUE SE RIGUEN CORRECTAMENTE A TRAVÉS DE UN SISTEMA DE RIEGO DE PIVOTE CENTRAL Y DE ARRASTRE. EL ESTÉRICO SERÁ TRANSPORTADO A LOS LMUS APROPIADOS, FUERA DEL SITIO, DE ACUERDO CON EL PLAN DE MANEJO DE NUTRIENTES. Los RCS #1 y RCS #2 ESTARÁN DISEÑADOS PARA ALMACENAR Y MANTENER LOS LODOS Y LAS LLUVIAS DE 25 A 24 HORAS. TODOS LOS DEMÁS LIMPIADORES, LUBRICANTES, COMBUSTIBLES Y

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 601231814		RN 102334539

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	9/3/2024

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Maiko Hessel Bouma	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer: ☐ Corporation ☒ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees ☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated? ☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:	4252 COUNTY ROAD 2408						
	City: WINNSBORO	State: TX	ZIP: 75494	ZIP + 4: 4100			

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(903) 855-2748		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information (*If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name (*Enter name of the site where the regulated action is taking place.)*

BOUMA DAIRY FARM

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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: BOUMA, MAIKO HESSEL
2. Permit Number: WQ0005477000 EPA ID Number: Click here to enter text
3. Address of the project (location description that includes street/highway, city/vicinity, and county). 4252 COUNTY ROAD 2408, WINNSBORO, TX 75494 4100
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: Jim Wyrick

   Company Name: East Texas Environmental Services

   Mailing Address: 317 Highland Dr.

   City, State, and Zip Code: 75482

   Phone Number: 903-243-0400 Fax Number: Click here to enter text

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5. County where the facility is located: Hopkins
6. If the property is publicly owned and the owner is different than the permittee/applicant, please identify the owner. no
7. Identify the name of the water body (receiving waters) and TCEQ segment number that will receive the discharge. Big Sandy Creek in Segment No. 0514 and Lake Cypress Springs in Segment No. 0405.
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): none

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RECHARGE FEATURE CERTIFICATION FOR BOUMA DAIRY

GENERAL REMARKS:

Mr. Bouma is applying for a TCEQ Individual Permit for a concentrated animal feeding operation. He will be reducing the herd size to 999 animals of which 999 are milking cows and will be kept in confinement. This recharge feature evaluation and associated certification was conducted at the request of Miako Bouma of Bouma Dairy. Jim C. Wyrick, Professional Geoscientist, compiled the findings and recommendations, contained herein.

PURPOSE OF REPORT:

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 wastewater from the retention control structure or land application site into the underlying aquifer as according to 30 TAC §321.32(50) requirements. The following records and/or maps from the following entities/agencies were reviewed to locate any recharge features: (a) Texas Railroad Commission, (b) well driller, (c) TCEQ, (d) Natural Resource Conservation Service, (e) owner of site, and (f) an on-site inspection. There are no previous landowners available to contact.

AREA OF EVALUATION

The site under evaluation consists of a retention control structure (RCS#1) and (RCS#2) to be constructed. The wastewater application area LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. The property is located on the side of CR 2408, .29 miles W of intersection Hwy 11 and CR 2408 in Hopkins County. Latitude: 32.980666 ° N and Longitude: 95.328666º W. This property consists of approximately 538 acres located on Abstract 307, Tract 5-01, and Thomas B. Smith Survey in Hopkins, Texas. The facility is a dairy operation using a freestall system. The facility is located on a topographic ridge with uncontaminated surface runoff generally draining via overland flow and shallow concentrated flows west into unnamed drain and then into Big sandy Creek. The elevation of the dairy property ranges from approximately 460 to 520 feet above mean sea level (AMSL). The current land use of the property is agricultural (pasture and forage crops). All waste application areas are located on the property, and off-site manure application areas will be used by this facility.

SITE DESCRIPTIONS

The existing RCS is located west and down slope of the dairy barn. The RCS was constructed in 1999. Inland Engineering and Surveying certified the size of RCS#1 as having a capacity of 5.56 acre-feet. RCS#2 will be constructed north of the existing RCS will be built to a capacity of 6.92 ac ft. The RCSs will catch and contain all wastewater and manure generated from the dairy barn and 2 free stallbarns. Wastewater flows from the dairy barn and freestall barns into a concrete settling basin then though a six-inch PVC pipe into RCS#1 and then into RCS#2. The RCSs will be dewatered using a drag hose system attached to the back of a tractor. The wastewater application area is on 484 acres, LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 LMU#6 and LMU#7 The fields generally drain via overland flow and shallow concentrated flows south into unnamed creek then into Big Sandy Creek.

DEFINITION OF RECHARGE ZONE FEATURE

For the purpose of this report, the definition of "recharge feature" shall be the same as the definition presented in 30 TAC §321.32(50). Recharge feature is defined as those natural or artificial features either on or beneath the ground surface at the site under evaluation that provide or create significant hydrologic connections 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.

Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Monday, July 28, 2025 10:41 AM
To: Kayla Robichaux
Subject: Re: RE: WQ0005477000 - Bouma Dairy Farm

Morning Kayla

You are correct. The engineering section for Hilltop was accidently attached, it should not have been sent. Please disregard the waternuter section..

Thanks

Jim

Kayla Robichaux

From: Kayla Robichaux
Sent: Thursday, July 24, 2025 1:43 PM
To: wyrick@suddenlink.net
Subject: RE: WQ0005477000 - Bouma Dairy Farm

Good afternoon, Jim.

I am going through the response you sent yesterday and noticed there are some revised calculations labeled as Hilltop Jersey Farm included in the attachment. Can you please clarify if these are for the Bouma Dairy Farm Facility? I'm thinking maybe they were added in there by accident?

Thanks!
Kayla

From: wyrick@suddenlink.net <wyrick@suddenlink.net>
Sent: Wednesday, July 23, 2025 10:16 AM
To: Kayla Robichaux <Kayla.Robichaux@tceq.texas.gov>
Subject: Re: WQ0005477000 - Bouma Dairy Farm

Morning Kayla

See attachmnet

Jim

Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Wednesday, July 23, 2025 10:16 AM
To: Kayla Robichaux
Subject: Re: WQ0005477000 - Bouma Dairy Farm
Attachments: Reply to NOD Bouma.pdf

Morning Kayla

See attachmnet

Jim

Please see the reply to comments for Bouma Dairy Farm.

1. Please provide site-specific information to support using 85% honey vacuum efficiency.

   A Honey Vacuum is considered a dry scrape method as well as a waste transporter. See attached separator documents

2. Please revise RCS Table 2 (pg 4 of the TIP) to reflect the revised sludge accumulation and water balance values

   See revised Table 2 on TIP

3. Please revise Section D. 1) and 2) on pg 6 of the TIP to show the revised wastewater production.

   See revised Section D. 1) and 2 on TIP

4. Please revise the NMP to show 43.24 ac-ft for the effluent to be irrigated.

   See revised NMP

Please let me know if you have any questions.

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Jim

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

WASTE SEPARATION FACILITY

(No.)

CODE 632

DEFINITION

A filtration or screening device, settling tank, settling basin, or settling channel used to partition solids and/or nutrients from a waste stream.

PURPOSE

To partition solids, liquids and/or their associated nutrients to:

- improve or protect air quality
- improve or protect water quality
- improve manure handling methods or serve as a pre- or post-treatment for other processes

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where the waste separation facility will:

- remove solids from a liquid waste stream as a primary treatment process and facilitate further treatment processes.
- reduce solids accumulation in liquid waste storage facilities.
- reduce solids content in waste stream so liquids can be recycled for other uses.
- reduce solids content in a waste stream, to better facilitate land application of liquids using irrigation techniques.
- assist with partitioning nutrients in the waste stream to improve handling and application of nutrient management.

CRITERIA

General Criteria Applicable to All Purposes

Laws and Regulations. Plan, design and construct waste treatment facilities to meet all Federal, state, local and tribal regulations.

Location. Locate waste separation facilities so that the waste stream can be safely routed to and from the facility.

Waste Separator Selection. Capture efficiency varies widely for each type of separator depending on the type and consistency of the waste to be treated. Design the waste separation facility based on site specific data for the waste streams and management objectives. A combination of separation unit processes may be necessary to achieve the desired or required results.

Separation Efficiency. Table 1 provides estimated capture efficiencies for different types of separator systems. Base the volume of solids separated on estimates of daily waste water (if applicable) and the total solids capture efficiency for the type of separation device selected. Where manufacturer information or local data concerning total solids capture efficiencies are not available for the type of waste separation device selected, the efficiencies in Table 1 can be used to estimate the amount of separated material generated.

Chemical Amendments. To enhance the separation process, chemical amendments, such as metal salts and polymers, can be used to flocculate manure solids to enhance the separation process. Addition of chemicals to the liquid waste stream for improving total solids capture efficiencies must be done according to the criteria in Conservation Practice Standard 591, Amendments for Treatment of Agricultural Waste.

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Table 1

Solid/Liquid Separators	Total Solids Capture Efficiency
Static Inclined Screen	10-20%
Inclined Screen with Drag Chain	10-30%
Vibratory Screen	15-30%
Rotating Screen	20-40%
Centrifuge	20-45%
Screw or Roller Press	30-50%
Settling Basin	40-65%
Weeping Wall	50-85%
Dry Scrape	50-90%
Geotextile Container	50-98%
Membranes	60-99%
Sand Settling Lanes	50-70%
Mechanical Sand Separator	50-95%

Storage of Separated Solids. Provide adequate storage areas for separated solids.

Design storage facilities for separated solids in accordance with requirements of applicable Conservation Practice Standards.

Discharges. Capture any seepage or discharge from solid storage, waste separation facility, or associated appurtenances in a waste storage or treatment structure unless it meets local, state and federal regulations regarding discharge to surface and ground water.

Conveyance System. Design waste transfer components for separated solids in accordance with requirements of applicable Conservation Practice Standards.

Outlets. Provide adequate outlet capacity to safely convey the waste to a storage or utilization location.

Use emergency overflow appurtenances such as notched weirs, or pipe bypasses to control flows exceeding design capacity. For separation facilities exposed to precipitation, design emergency overflow appurtenances to pass the peak runoff from the drainage area of the facility for a 25 year-24 hour storm frequency plus the normal waste stream discharge.

Additional Criteria for Mechanical Separators

Performance. The performance of mechanical separators is generally reported for a given throughput or flow rate. If different flow rates are required, obtain separator efficiencies from the manufacturer.

Flow Rate and Velocity. Follow manufacturer's recommendations for the design flow rate and liquid waste stream velocity for filtration and screening devices.

Structural Design. Design structural supports for filtration and screening devices in accordance with the requirements of Conservation Practice Standard 313, Waste Storage Facility.

For proper functioning of mechanical separation equipment, environmental conditions may require roofing and or building enclosure. Design roofs and enclosures in accordance with the requirements of applicable Conservation Practices.

General Criteria Applicable to Settling Basins

Velocity. Do not exceed 1.5 feet per second liquid waste stream flow velocity through settling basins.

Depth. Provide sufficient depth for solids and liquids storage and for the depth of influent flow as needed. Include a minimum of one foot freeboard for earthen settling basins.

Base the minimum liquid depth of settling basins on a minimum hydraulic retention time of 30 minutes.

Bottom Width. Establish the minimum bottom width for settling basins on the removal equipment used, but not less than 4 feet.

Construct settling basins of concrete and/or lined with a geosynthetic, compacted soil, or geomembrane liner. Design a settling basin not utilizing a concrete slab for the basin floor to provide adequate support for clean out equipment. Ensure that settling basins

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constructed according to these criteria also meet appropriate criteria in Conservation Practice Standard 313, Waste Storage Facility.

Access. Establish the minimum top width of earthen embankments for settling basins at 15 feet when equipment access is needed for clean out. Where no access is required to the settling basin for clean out, base the minimum top width on the equipment used to construct the embankment or berm, but not less than 4 feet.

Construct the side slopes of earthen embankments no steeper than 2 horizontal to 1 vertical (2:1). For earthen embankments greater than 3 feet in height, construct the side slopes no steeper than 3:1 on the outside and 2:1 on the inside of the embankment.

Design access ramps to allow entry into the basin for clean out by normal front end loading equipment at no steeper than 10:1. Allow steeper sloped access ramps where special surfacing of the ramp is done for traction purposes and the equipment used can accommodate the increased slope but in no case steeper than 4:1.

Safety. Include in the design appropriate safety features to minimize the hazards of the facility. Provide warning signs, fences, ladders, ropes, bars, rails, and other devices, as appropriate, to ensure the safety of humans and livestock. Ensure that proper ventilation and adequate warning signage is provided for waste separation equipment in an enclosed facility or confined area, as necessary, to prevent explosion, poisoning, or asphyxiation.

Outlet. Provide at least 10% open area for screening used to separate solids at the outlet of settling basins.

Additional Criteria for Settling Basins Receiving Lot Runoff

Settling basins used in conjunction with or without screening to remove waste solids from process generated liquid waste streams (i.e. flush water from covered freestall barns, or milking parlor waste water) that include significant external drainage fall into this category.

Flow Rate. Design the flow rate for a settling basin that receives lot runoff on the normal liquid waste stream discharge from the operation plus the peak runoff from the drainage area of the basin computed using a 10 year-1 hour storm frequency.

Volume. Base the design for settling basins receiving lot runoff on the total volume needed for liquid and solids storage.

For solid accumulation rates from lot surfaces, use 2,180 cubic feet per acre of unpaved lot and 440 cubic feet per acre of paved lot per month. Increase these values by 50% if lots are steep or poorly maintained. The minimum solid accumulation period is one month but shall not be less than the anticipated time between cleaning.

For liquid volumes the settling basin shall contain the total runoff volume for a 25-year, 24-hour storm event, from the entire contributing drainage area, or safely pass the excess runoff from this storm event to a secondary containment facility, such that there shall be no potential for agricultural waste to enter the waters of the state.

The minimum release time for a sediment basin shall be 6 hours and the maximum shall be 72 hours.

Additional Criteria for Settling Basins that Exclude Lot Runoff

Settling basins used in conjunction with or without screening to remove waste solids from process generated liquid waste streams (i.e. flush water from covered freestall barns, or milking parlor waste water) and do not receive significant external drainage fall into this category.

Flow Rate. Design the capacity for a settling basin that excludes lot runoff on the normal liquid waste stream discharge from the operation.

Volume. Base the design volume for settling basins that exclude lot runoff on the volume needed to provide solids storage for a specified treatment period plus temporary liquid storage necessary during dewatering. Use a minimum temporary liquid storage based on the volume of the liquid waste stream for one-day.

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General Criteria for Sand Separation and Reuse

Separation processes that remove sand from water and organic material fall into this category.

Dilution. Provide adequate dilution water for sand laden manure to keep organic solids in suspension for proper sand separation. Use a minimum water to sand laden manure dilution ratio of 2:1 (volume basis).

Capacity. Provide adequate capacity for the system design to handle the required manure and sand loadings.

Sand Storage. Provide adequate storage of separated sand to allow for additional liquid drainage from the sand.

Additional Criteria for Non-Mechanical Sand Separation and Reuse

Velocity. Design the waste stream velocity between 1 and 2 feet per second. Adjust flow velocity according to sand size and distribution.

Volume. Provide a minimum settling area storage volume to correspond to the maximum cleanout period. Design the bottom width to be compatible with the removal equipment, but not be less than 8 feet.

Hydraulic Retention Time. Design the hydraulic retention time to be between 3 and 5 minutes. Make adjustments according to sand size and distribution.

CONSIDERATIONS

Location. When locating waste separation facilities, consider elevation and distance from the source of material to be separated and the location of long-term liquid and solid waste storage facilities. Take advantage of gravity flow wherever possible for locating waste separation facilities.

Other considerations for locating waste separation facilities include vehicle access, wind direction, neighboring dwellings, proximity of streams and floodplains, and visibility.

Weeping Walls. To maximize drainage and solid/liquid separation, install weeping walls around the entire perimeter of the waste to be treated and maintain drainage paths to and through the walls. Consider waste particle size, particle size distribution and length of flow paths when selecting screen opening size and spacing. Ensure drainage is transferred to a liquid storage facility.

Solid/Solid Separation. When separating poultry litter into fine and coarse fractions, a higher percentage of the nutrients is partitioned with the fine fraction. The coarse material, consisting mostly of shavings and feathers, has a lower nutrient content and could be reused as bedding or as an energy source.

Visual Screening. Consider using vegetative screens or other methods to shield waste separation facilities from public view and for more aesthetic conditions.

Rainfall. Rainfall falling on the solids storage areas associated with waste separation facilities can result in increased waste water discharge into the long term storage facility. Consider covering of solids storage facilities in locations where high rainfall amounts occur.

Sand System Abrasion Resistance. Where sand is a major component of the liquid waste stream, encourage the use of abrasion resistant waste transfer piping and pumps to reduce frequency of repairs.

PLANS AND SPECIFICATIONS

Prepare plans and specifications in accordance with the criteria of this standard and good engineering practice. Include all details necessary for construction and completion of the waste separation facilities in the plans and specifications.

As a minimum, provide the following in the plans and specifications:

1. Layout of waste production facilities, waste collection points, waste transfer pipelines, waste treatment and storage facilities.
2. Location of all inflow and discharge pipelines and a description of pipeline materials, diameter and slope.
3. Details of support systems for waste separation devices.
4. Fencing and signage as appropriate for safety purposes.

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5. Operating characteristics.

Warranties. If a manufactured waste separation device is installed, the manufacturer shall provide a warranty that describes the design life of the device and what the warranty covers.

OPERATION AND MAINTENANCE

Develop and review an operation and maintenance (O&M) plan with the owner and operator prior to constructing the waste separation facility. Ensure that the O&M plan is consistent with the purposes of the waste separation device chosen, its intended life, safety requirements, and the criteria for its design. As a minimum, include the following elements in the operation and maintenance plan:

1. Documentation of design factors related to operation and maintenance.
2. Design capacity for the facility.
3. A description of normal operation of the facility, safety issues, and normal maintenance items.
4. Alternative operation procedures in the event of equipment failure.
5. Daily and/or periodic (as described in the plan) inspection of the following:
   - Separation device and support structure.
   - Screens and outlets.
   - Remaining capacity in storage facilities.

Ensure that the owner and operator understand the level of operation and maintenance (O&M) required for the type of separator selected to operate as intended.

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Mukhtar, Saqib and et. al.. 1999. Solid-Liquid Separation of Animal Manure and Wastewater. Texas Agricultural Extension Service.

Solid-Liquid Manure Separation. 2009. Livestock and Poultry Environmental Learning Center.

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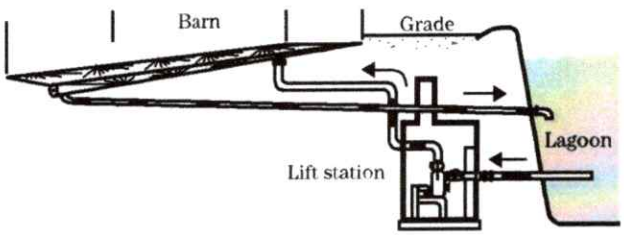
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operation) is critical to control building humidity and temper the cold drafts from freshly-pumped, cold flush water. This is especially important for new born and young livestock operations.

A cross gutter or drain that has adequate flow capacity is needed to smoothly carry away a large volume of flush water from an alley or gutter (fig. 12–31; also see ch. 9 of this handbook). The flow into the gutter or drain should be unrestricted. If flow is slowed, flush water backs up and solids separate and block the subsequent flush water.

Figure 12–30 Large-volume, low-pressure flush pump used in a recycle system (*Drawing courtesy of Gorman Rupp Co.*)



(l) Multiple function equipment

Some pieces of equipment serve multiple functions. They are used for collection of manure at the source and transfer to a storage facility or for transfer from the collection point or storage facility to the utilization area. For example, while they will be covered in a subsequent section, manure spreaders are considered as a utilization component of a waste management system, but they are also used to transfer manure from a collection point or storage area to the application/utilization area.

A piece of equipment that is used for both collection and transfer of manure to a storage facility is a manure vacuum (fig. 12–32).

The basic components of a manure vacuum are a hydraulically controlled variable width scraper, a large diameter hose connected to a vacuum blower, and a storage tank. It can be used to clean barn alleys or paved outdoor feed lots and holding areas and is best suited to handle semisolid or slurry manure containing a minimum amount of long straw bedding. Most models will handle sand laden manure typically found in

Figure 12–31 Cross gutter for alley flush water collection



Figure 12–32 Manure vacuum (*Photo courtesy of Mensch Mfg.*)



freestall dairy operations. Some of the advantages of using a manure vacuum are:

- adaptable to barns with differing alley widths
- can be used in multiple locations on an operation eliminating the need for separate handling systems in each barn on the facility
- can transfer manure to a storage or treatment facility no matter where it is located on the operation
- expansion of facilities is not limited by the need to consider manure storage/treatment location
- a barn alley can be cleaned in a single pass as opposed to the required forward and reverse maneuvering of a bucket loader

The primary disadvantage of a manure vacuum as compared to a cable or chain alley scraper or flush system is the time needed for an operator whenever manure is being collected.

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651.1204 Waste transfer equipment

The movement or transfer of agricultural wastes is described in chapter 9 of this handbook. As further explained in chapter 10, transfer equipment can be an extension of the waste collection equipment. The equipment that has common use either for collection or for transfer of waste is explained in section 651.1203. It includes:

- tractor front-end loader
- skid steer and articulated steer loaders
- all-wheel drive front-end loader
- ramps and bumper walls
- earth mover scrapers
- manure vacuum

Solid waste is commonly transferred a batch or more at a time (i.e., scoopful, wagon load) and at a relatively low rate. It is relatively dense and not easily moved. While batch movement is intermittent, a relatively larger quantity of semisolid, slurry, and liquid waste generally is transferred at one setting with continuous flow-type equipment than with other equipment. Depending on what is calculated and how (e.g., labor, investment, odor, appearance, nutrient), the cost of actual dry matter transferred is probably similar. The liquid portion facilitates waste transfer, but, unless needed for irrigation itself has little value and adds to transfer quantity.

(a) Augers and conveyors

A standard pitch auger that is 0.3 to 1.5 feet in diameter can be used to transfer solid, semisolid, and liquid wastes. A clean auger intake and relatively tight auger fit within its housing assist throughput. A short pitch, sometimes called *double flight* auger (twice the flighting per foot) aids slurry or liquid waste transfer if operating at relatively steep inclines. Table 12–3 shows how water throughput changes with auger size, speed, power, and elevating angle. With slurry and semisolid wastes, less throughput can be expected than that for liquid waste (MWPS 1975).

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(iii) Tank-type spreaders

Manure that is approximately 4 percent solids or less is liquid and is best handled with a tank-type spreader if it is going to be hauled. Tank spreaders are also frequently used to handle slurry manure. A tank spreader is basically a steel tank that is mounted on running gear (frame and wheels) to be towed by a tractor or mounted on a truck. While there are other features that set tank spreaders apart, there are primarily two types based on the method by which they are loaded.

The first type requires a separate pump for loading and is frequently referred to as a spreader tanker (fig. 12–102). Spreader tankers are available in sizes from 1,000 to 12,000 gallons for single tank spreaders. One manufacturer makes a unit that allows coupling two smaller tanks together for a total capacity of 15,000 gallons (fig 12–103). The guide for uniform tanker capacity rating (in gallons) among manufacturers is the ASAE Standard S326.1 Volumetric Capacity of Closed Tank Type Manure Spreaders (ASAE [h] 1989 (R2009)).

Options, such as tanker agitation, inside tank access, wheel arrangement and size, injector spreader distributor, and other accessories, can increase the investment cost for this equipment. A sight-glass or other type of level indicator on the tanker, for example, permits ready observation of the tanker content during filling and emptying. A PTO or hydraulic motor-powered recirculating pump or floor auger may be used to continually agitate the contents, which would aid in more uniform spreading, especially with injector spreading. Some models use a spreader discharge located at the top-rear of the tanker. This discharge is supplied by the tanker agitation pump to assist with a wider broadcast spread. This arrangement also minimizes dripping and accidental tank unload. In spite of these benefits, odor concerns have caused most manufacturers to return to unloading at the bottom of the tank if the manure is going to be surface applied. Interior tank access for loading, cleaning, and repair through a top hatch door is simplest; however an end door has minimum hazard for inside air and gas ventilation and is more convenient for repairs.

The second type of tanker used to haul and spread slurry and liquid wastes includes an integral PTO or hydraulic motor-powered air-vacuum pump for loading and unloading (fig. 12–104). For more information on this type pump, see sections 651.1204(b)(2). The addition of this pump makes an "all-in-one" unit. To load the tanker, the vacuum pump empties air down to a pre-set level out of the airtight tank. A transfer hose is then inserted in the stored waste, the load valve is opened, and the waste is drawn up into the tank. The hose is 4 to 6 inches in diameter and 25 feet long. It is made of hard rubber and is relatively stiff. A loading rate at about 200 to 300 gallons per minute is limited to a vertical lift of no more than 12 feet.

Figure 12–102 Spreader tanker (*Photo by Bill Boyd, NRCS*)



Figure 12–103 Spreader tankers in tandem (*Photo by Bill Boyd, NRCS*)



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Although a separate agitation pump is more effective, the vacuum tanker can be used to agitate stored liquid waste by first loading the tanker, then switching the vacuum pump to pressure mode, pressurizing, and then unloading the full tanker load back into the storage. Tanker capacity and size, running gear options, and spreading aids are similar to those of the pump load spreader tanker.

Both types of towed spreaders are now being constructed with tandem wheels mounted with flotation tires to reduce soil compaction and axle load. Some of the larger models have three and even four wheels in tandem on each side of the spreader. Load per axle is usually kept below 12 tons. In comparison, a 600 bushel grain cart may have axle loads as high as 20 tons. Tandem wheels are not, however, without problems. Sharp turns cause extreme axle stress. To address this issue, some manufacturers have developed spreader wheels that turn when the tractor turns (fig. 12–105).

It is not efficient or cost effective to use a towed tanker-type spreader to haul manure very far on the road to get to the application area. To speed up hauling and spreading liquid or slurry waste to distant fields, a semitrailer nurse tanker is used to haul waste from the storage to the towed tank spreader in the field (fig. 12–106). This not only shortens the time it takes to get the manure to the application area, it allows the tractor towed tank spreader to continue working while the semitrailer returns for another load.

Safety precautions need to be taken in the operation of tractor towed tanker spreaders. Safety hazards are related to limited operator view, relatively slow speed, heavy braking needs, and potential for overturning and spillage. Tank-type spreaders continue to get larger challenging the capacity and weight of the tractor required to tow them. Mechanical or hydraulic brakes have become standard on larger models. Still, a high degree of experience and expertise is needed to operate and control the equipment. A moderate sized tank spreader that hauls approximately 5,000 gallons of manure weighs about 26 tons and a minimum 150 horsepower tractor weighing about 17 tons to oper-

Figure 12–105 Tank spreaders with directional wheels (*Photo courtesy of GEA Houle, Inc.*)



Figure 12–104 Vacuum tank spreader (*Photo courtesy of Calumet*)



Figure 12–106 Towed tank spreader being filled from semitrailer nurse tanker truck (*Photo courtesy of Jim Hodel, Inc.*)



ate safely if the spreader does not have brakes. Table 12–10 provides recommendations for spreader capacity and power need. ASAE Standard S318.17 provides guidelines for operation of towed equipment without brakes. A surge trailer brake is designed for forward motion and may not function if the tractor power fails going uphill (ASAE [e] 2009).

Self-propelled tanker spreaders that have large flotation tires are designed to haul large loads for several miles or to use on soft soil (fig. 12–107). Most of these tankers have self-contained, high-capacity vacuum pumps and extra options that are not available with towed tanker models. Sizes range from a 2,000- to more than a 5,000-gallon capacity with advertised spreading rates of about 15,000 gallons per hour with reasonable loading and haul conditions. Operator comfort, control, safety, and day or night operation are favorable features. Year-around use, such as that done by custom operators, can justify the needed investment.

Broadcast spreading waste from either tanker spreader can use a gravity baffle or splash plate or a powered rotating distributor (fig. 12–108). Models that use tanker pump agitation pump contents up and spread them from the top rear of the tanker, which allows more uniform spreading. The agitation pump is generally located under the tanker rear outlet. A hand or hydraulic-operated gate valve is adjusted open to empty the tank. Soil injection spreading is done with either tanker as explained in section 651.1207(2).

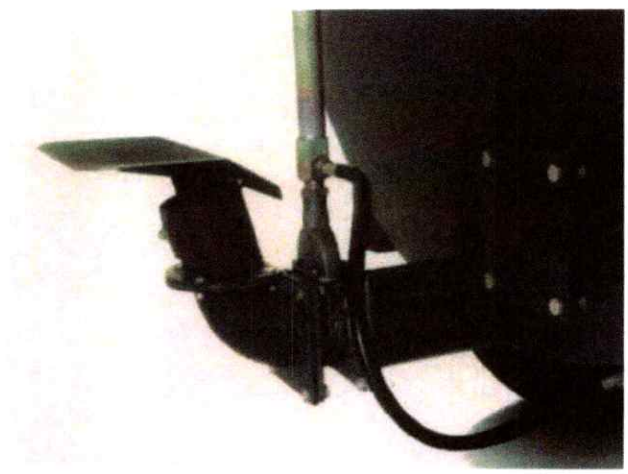
Table 12–10 Approximate waste spreader and tractor sizes (NE Dairy 1977)

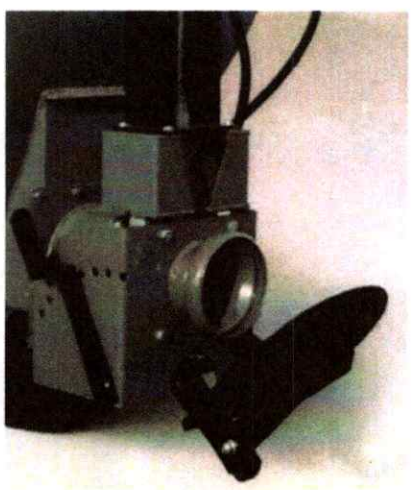
Box spreader heaped capacity (ft^3)	Minimum tractor horsepower	Tanker capacity (gal)	Minimum tractor horsepower
150	40	800	60
200	60	1,000	75
250	75	1,500	80
310	85	2,250	90
390	100	3,250	100
470	130	4,000	—

Figure 12–107 Self-propelled tanker spreader (*Photo Bill Boyd, NRCS*)



Figure 12–108 Baffle plate distributor on tanker spreaders (*Photos courtesy of J-Star and Badger Northland, Inc.*)





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Uniform spreading by gravity flow out of a tanker is difficult. The solids can partly block the tank discharge or less waste will flow as the waste depth in the tank decreases. Also, as the load lessens, travel speed changes. Equipment manufacturers have addressed by including computers in the tractor cab that monitor and adjust ground speed and discharge rates using electronic and hydraulic controls on the spreader discharge. Some are also using global positioning systems (GPS) to automatically adjust application rates based on soil productivity classes in the application area. Generally this more sophisticated technology is used when manure is being injected rather than surface spread.

Overall construction strength is critical for a tanker spreader, especially where it has attached soil injector spreading. Generally, 1/4-inch-thick corrosion resistant plate steel (painted) is used to construct the tank. Some manufacturers have started using galvanized steel tanks. As vacuum tanker spreaders age and corrode, too high of an evacuation of the tank can cause an end or side to collapse inward if the evacuation overload control device malfunctions. Regular maintenance, cleanup after use, and covered storage extends tanker life and increases trade-in-value.

Vacuum pumps, moisture traps, pipe couplers, tires, and power shafts need regular attention. Shops that specialize in tanker repair report that a vacuum tanker regularly used for swine waste typically has about a 10-year life. The pump and running gear frequently outlast the tank, although adjustable wheel types (for different row crop spacings) and broken wheel spindles have been problems. Pump seals, vanes, and valves may need replacement depending on the level of regular maintenance provided.

Handling liquid and slurry manure with low solids content can be a high cost option if application areas are located many miles from the production area. Dairy and swine operations that use flushing-type systems produce large volumes of waste with low nutrient concentrations. Capital investment in spreading equipment is high as are power requirements to handle the equipment. Labor and time inputs are also high due to the slow travel speeds in getting to the application areas. In spite of continuing development of equipment to address these issues such as use of "nurse tanks," application costs may greatly exceed value of manure. Producers who find themselves in this situation should probably consider other options such as liquid-solid separation prior to application with recycling of liquids or employment of custom applicators to reduce labor inputs, capital investment, and operation and maintenance costs of equipment. Producers with application areas closer to the production facility might want to consider the drag hose technology covered in the next section.

(2) Soil injection equipment

Injecting (also called knifing or chiseling) liquid and slurry waste 3 inches or more into the soil minimizes odor and nutrient losses (Goodrich 1993). Nitrogen loss is significant within 4 to 6 hours after broadcast surface spreading. Chapter 11 of this handbook gives more detailed information on this loss. Injection is necessary, for example, when a nitrification inhibitor is added for N loss reduction of waste or when anhydrous ammonia is added to waste to enhance the N content and better suit crop needs (Sutton, Nelson, and Jones 1983).

Traditional injector spreader equipment can be used on a tanker spreader (figs. 12–103 and 12–107) or directly injected with tractor-mounted toolbar equipment when waste is pumped to the field. A tanker needs the framework constructed for the twisting, bending loads from the attached injectors. Typically, two to six or more injectors are mounted at the rear of a tanker about 2 feet apart. In the past, injectors were sometimes mounted at the front of the tanker or on a toolbar attached on the tractor pulling the tanker to improve depth control, traction, and the operator's view. However, this arrangement interferes with hitching and maneuvering. Also, the pressure of the tractor wheels on the injected soil forces out some of the injected waste, which defeats the purpose of injection. Staggered injector shanks reduce trash plugging, and injector shanks that swivel can make short turns. Some models use adjustable injector depth gage wheels. Most use hydraulic lift to raise or lower the injectors.

The soil surface moisture, field topography, and travel speed affect the power needed to pull a loaded tanker. Injector load is also a consideration and is affected by injector design and operating depth. Figure 12–109 can help to estimate power needs. For example, to pull a loaded 3,000 gallon tanker with four injectors running 4 inches deep in plowed soil at 3 miles per hour would require 80 horsepower [42 + 10 + (7 × 4)]. A Purdue

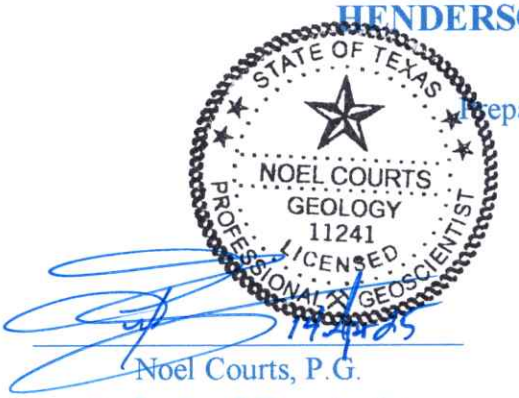
HILLTOP JERSEY FARM - Dairy Barn & FreeStalls (Total Cows)

Revised 4-14-2025

AGRICULTURAL WASTE MANAGEMENT PLAN

HENDERSON COUNTY

Prepared by:



Noel Courts, P.G.
Professional Geoscientist
East Texas Environmental Services

Jim C Wyrick, P.G.
Professional Geoscientist
East Texas Environmental Services

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M. Berry, P.E.
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Seal No. 44452

Modified for Wood/Hopkins/Rains/Franklin Counties(I.D. #6b) on January 22, 2008. Modifications made in monthly rainfall, monthly evaporation, and monthly consumptive use values for bermudagrass pastureland, bermuda/small grain pastureland, small grain cropland, grain sorghum cropland, and sorghum/small grain cropland. Modifications (values) were taken from following reference: Borrelli, J., C.B. Felder, and J.M. Gregory. 1998 *Mean Crop Consumptive Use and Free-Water Evaporation for Texas.* TWDB Grant No. 95-483-137. Dept. of Civil Engineering. Texas Tech University. Lubbock, Texas.

WATRNTR Version 1, Modified by Eugene Lindeman, P.E.

IN COOPERATION WITH:

NATURAL RESOURCES CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

MANURE PRODUCTION DATA
FOR CONFINED ANIMAL FEEDING OPERATIONS

TYPE OF ANIMAL (Dairy=0, Swine=1, Laying Hens=2, Beef Feedlot=3, Sheep Feedlot=4, Horses=5, Turkeys=6, Broilers=7) => 0

Feeding Facilities For: Dairy

	Dairy Barn & FreeStall	Open Lots	Total
Number of Animals	999	0	
Average Liveweight per Head, lbs/hd	975	0	
Total Liveweight,lbs	974,025	0	
Confinement Period, hours/hd/day	24.0	0.0	24.0
Adjusted Total Liveweight, lbs	974,025	0	974,025
Wet Manure Production, lbs/day	99,351	0	99,351
Dry Manure Production, lbs/day	14,318	0	14,318
Dry Manure Production, tons/year	2,613	0	2,613
Volatile Solids (VS) Production, lbs/day	10,510	0	10,510
Total Nitrogen Production, lbs/day	533	0	533
Total Phosphorus (P2O5), lbs/day	263	0	263
Total Potassium (K2O), lbs/day	451	0	451
Sodium Production, lbs/day	76	0	76
COD Production, lbs/day	13,052	0	13,052
BOD5 Production, lbs/day	2,026	0	2,026

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Engineering Job Approval Authority Job Class for Ag. Waste Management System: _____
This practice, Ag. Waste Management System, meets specifications, signed by:

_____ Date: _____

Remarks

VOLUME OF MANURE & WASTEWATER FROM CONFINEMENT BUILDINGS

Wet Manure Production	=	11913	gal/day
Water Used for Manure Removal			
a. Dry Manure Production	=	14318	lbs/day
b. Water Volume Required for Manure Removal			
1. Flush Systems:			
(Enter gallons water per pound of dry manure production, range 8-12 gal/lb)	=>	8	
Total flush water	=	114545	gal/day
2. Manual Scrape/Wash System (Enter gallons of water per pound of dry manure production, Range: 3 - 6 gal/lb)	=>	0	
Total manual wash water	=	0	gal/day
Cleanup and Washwater (Default=10 gal/hd/day)	=>	3	gal/hd/day
	=	2997	gal/day
Other Water That Enters Wastewater System	=>	4	gal/hd/day
[e.g. drinking water, etc.(12 gal/hd/day)]	=	3996	gal/day
Total Process Generated Wastewater Volume			
Daily Volume	=	133451	gal/day
Less Volume of Recycled Wastewater Used for Manure Removal	=>	113433	gal/day
Design Wastewater Storage Volume, Minimum Allowable			
Minimum Storage Days (Use Exhibit 2)*	=>	21	days
Minimum Design Storage Volume	=	1.29	ac-ft
Net Manure and Wastewater Volume for Land Application			
Monthly Volume	=	1.87	ac-ft/month
Annual Sludge Accumulation Rate, ac-ft	=	0.37	
Desired Sludge Storage Volume in Pond	=>	1.85	ac-ft
Sludge Cleanout Interval	=	5.0	years
Design Sludge Accumulation Storage Volume (Not to be less than 1 Year accumulation)	=	1.85	ac-ft

* Use Exhibit 2 of Texas Water Commission regulations for your particular location.

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ESTIMATED VOLUME OF RUNOFF FROM OPEN LOTS

Total area draining into Runoff Control Structure (RCS)				
a. Area of open lot surface		=>	0.00	acres
b. Area between open lot surface and RCS		=>	0.79	acres
c. Surface area of RCS		=>	1.55	acres
d. Total area (#1.a + #1.b + #1.c)		=	2.34	acres
Design rainfall (25-year frequency, 24-hour duration storm), inches (Use Exhibit 1)	1)	=>	8.10	inches
Design runoff depth, inches (Use exhibit 3)				
a. For Open Lot Surface * CN		=>	0	
			0.00	inches
b. For Area Between Lots and RCS ** CN		=>	93	
			7.26	inches
c. For Surface Area of RCS		=	8.10	inches
Design runoff volume from 25-year, 24-hour storm				
a. For Open Lot Surface		=	0.0	ac-ft
b. For Area Between Lots and RCS		=	0.5	ac-ft
c. For Surface Area of RCS		=	1.0	ac-ft
d. Total Design Runoff Volume		=	1.5	ac-ft

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NOTE: Runoff Control Structures must be capable of storing Design Runoff Volume plus Design Storage Volume, if runoff and process generated wastewater streams are combined.

* Use NRCS soil cover complex curve No. 90 for unpaved (soil) lots and curve No. 95 for concrete surfaces.

** Use appropriate NRCS soil cover complex curve number for particular type of cover. Contact local Natural Resources Conservation Service field office for assistance.

SUMMARY OF REQUIRED AND DESIGNED STORAGE PONDS

Minimum Design Wastewater Storage Volume	1.29	ac-ft
Minimum Design Runoff Storage Volume	1.52	ac-ft
Sludge Accumulation Storage Volume	1.85	ac-ft
Additional Capacity Allowance	5.19	ac-ft
Total Capacity Designed	9.85	ac-ft

Primary Anaerobic Manure Treatment Lagoons, Sheet 5 of 10., Use Where Applicable.

DESIGN BASIS FOR PRIMARY ANAEROBIC MANURE TREATMENT LAGOONS

(WHERE APPLICABLE)

Design Factor		Dairy	
Adjusted Total Liveweight Contributing Manure to Lagoon	=	64286	lbs
Recommended Unit Treatment Volume (see footnote)	=>	0.00	
(RUTV), cubic feet/pound liveweight	=	3.00	
Total Treatment Volume	=	4.4	
Design checks (see footnotes):			
a. Volatile Solids (VS) Loading Rate	=	0.0545	
b. Hydraulic Retention Time (HRT),	=	11	days
c. Estimated Sludge Cleanout Interval,			
1. Sludge Accumulation Rate, cu ft/year/lb liveweight	=	0.250	
2. Sludge Cleanout Interval	=	6.0	years
Additional Capacity Allowance for:			
a. Design Runoff Volume, (one stage logoons	=>	0.0	ac-ft
b. Sludge storage	=>	0.0	ac-ft
c. Additional Storage	=>	0.0	ac-ft
Total Primary Lagoon Capacity	=	4.4	ac-ft

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Notes: 2. If user entry area equals 0, then default values are used (dairy=3, swine=1.75, poultry,laying hens=2.5, beef=2, sheep=2, horses=2). User may specify alternate value which will override template default.

4.a. VS Loading Rate--Volatile Solids Production (Worksheet I, #10) / Total Treatment Volume. Desired range is 0.0025-0.0040 lbs VS/day/cu ft for odor control.

4.b. Hydraulic Retention Time--Total Treatment Volume / Total Manure and Wastewater Volume. Desired range is 160-400 days for good treatment.

4.c. Sludge Cleanout Interval (when half full)

$$\text{Interval} = \frac{\text{Total Treatment Volume (cuft)} \times 0.5}{\text{Adj. Total Live Wt.} \times \text{Sludge Accum. Rate}}$$

LAND AREA FOR DISPOSAL OF MANURE OR EFFLUENT FROM TREATMENT LAGOONS,

BASED ON PLANT-AVAILABLE NITROGEN (PAN)

		Buildings		Open Lots	
Total Daily Nitrogen Production	=	533	more->	0	lbs/day
Total Annual Nitrogen Production	=	194469	more->	0	lbs/yr
Percent Nitrogen Loss from manure storage or treatment system*	=>	20	more->	50	percent
Annual Nitrogen Loss from manure storage or treatment system	=	38894	more->	0	lbs/yr
Total Annual Nitrogen Remaining	=	155575	more->	0	lbs/yr
Availability of Nitrogen in Manure or Effluent,% (Normal range is 80-95% in lagoon effluent; 50-80% in fresh or pit-stored manure; or 40-50% in feed lot manure)	=>	80	more->	50	percent
Annual Plant-Available Nitrogen (PAN) Applied to Soil		124460	more->	0	lbs/yr
PAN Losses from Soil Surface Application**	** =>	20	more->	20	percent
PAN Losses from Soil Surface Application	=	24892	more->	0	lbs/yr
PAN Entering Soil	=	99568	more->	0	lbs N/yr

Land Required for Various PAN Application Rates:

Assumed PAN Application Rate, lbs/ac/yr	Buildings Acres		Open Lots Acres		Total Acres
100	996	+	0	=	996
150	664	+	0	=	664
200	498	+	0	=	498
300	332	+	0	=	332
400	249	+	0	=	249

* Nitrogen Loss from Lagoon Surface--Normal loss is 40-65% for primary treatment lagoons with 200 days or more storage; 10-20% from liquid manure settling basins or storage pits; and 40-50% from open feedlot surface.

** Normal range of nitrogen loss from soil surface is 15-35% for surface application or, 5% for soil injection. Losses are highest in warm weather and on high pH soils.

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WATER BUDGET ANALYSIS

DRAINAGE AREA	2.34	ACRES	**RUNOFF CONTROL STRUCTURE DATA**						
MANURE PROD. RCS AREA	1.55	ACRES	LOCATION NO.	13		FIELD OFFICE	RUSK WEA. STA.		
*						COUNTY	CHEROKEE		
SLUDGE ACCUMULATION	1.85	AC-FT	30-DAY CURVE NUMBERS			CROPS FOR WATER DEMAND			
MIN. WASTEWATER STORE	1.29	AC-FT	POND	74.0		Bermudagrass	0.00	AC	
ADDITIONAL STORAGE	5.19	AC-FT	FIELD	48.0		Bermuda/SmGr	433.00	AC	
SUBTOTAL	8.33	AC-FT	IRRIG. EFFICIENCY, %	75.00		Sorghum/SmGr	204.00	AC	
25YR-24HR RUNOFF	1.52	AC-FT	IRRIGATION DEPTH, IN/YR	0.34		Small Grain	0.00	AC	
TOTAL POND CAPACITY	9.85	AC-FT	EVAPORATION. COEFF.	71.80		Assumed Seepage	0.0	ACFT	

MONTH	RAINFALL (1) IN.	RUNOFF (2) IN.	INFLOW TO POND (3) AC-FT	OTHER INFLOW (3a) AC-FT	EFFECTIVE RAINFALL (4) IN.	GROSS EVAP (5) IN.	NET POND EVAP. (8) AC-FT	CROP DEMAND (10) AC-FT	ACTUAL WITHDRAWL (10b) AC-FT	STORAGE at E.O.M. (11) AC-FT	SURF AREA at E.O.M. (12) AC	SPILL (13) AC-FT
										6.12	1.29	0.00
JAN	3.80	0.21	0.28	1.87	3.59	1.90	-0.06	0.00	0.00	8.33	1.41	0.00
FEB	3.44	0.13	0.23	1.87	3.31	2.00	-0.05	21.07	8.63	1.85	1.04	0.00
MAR	3.63	0.17	0.26	1.87	3.46	2.80	0.02	190.04	2.10	1.85	1.04	0.00
APR	4.90	0.55	0.45	1.87	4.35	3.30	0.04	286.84	2.28	1.85	1.04	0.00
MAY	4.77	0.50	0.43	1.87	4.27	4.10	0.10	332.58	2.19	1.85	1.04	0.00
JUN	3.57	0.16	0.25	1.87	3.41	5.00	0.20	286.63	1.92	1.85	1.04	0.00
JUL	2.77	0.03	0.15	1.87	2.74	6.30	0.33	245.95	1.69	1.85	1.04	0.00
AUG	2.40	0.00	0.11	1.87	2.40	6.70	0.37	158.94	1.60	1.85	1.04	0.00
SEP	4.41	0.38	0.37	1.87	4.03	5.70	0.24	44.20	2.00	1.85	1.04	0.00
OCT	3.38	0.12	0.23	1.87	3.26	4.60	0.17	35.08	1.92	1.85	1.04	0.00
NOV	3.50	0.15	0.24	1.87	3.35	3.20	0.06	0.00	0.00	3.90	1.16	0.00
DEC	4.04	0.28	0.32	1.87	3.76	2.30	-0.03	0.00	0.00	6.12	1.29	0.00
TOTALS	44.61	2.70	3.31	22.42	41.91	47.90	1.40	1601.31	24.34		Reset:	0
	44.61					47.90			24.34	Checks		

*

STORAGE-AREA TABLE FOR RUNOFF CONTROL STRUCTURE

STORAGE DATA TYPE R (C - CIRCULAR, R - RECTANGULAR, or S - STAGE DATA)

CIRCULAR		**RECTANGULAR**	
DEPTH, FT	0.0	DEPTH, FT	9.00
SIDE SLOPE, RATIO	0.00	SIDE SLOPE, RATIO	3.000
TOP DIAMETER, FT	0.00	END SLOPE, RATIO	3.000
FREE BOARD, FT	0.00	TOP WIDTH, FT	175.0
BOTTOM DIAMETER, FT	0.00	TOP LENGTH, FT	385.0
SURFACE AREA, AC	0.00	FREE BOARD, FT	2.000
VOLUME, ACFT	0.00	BOTTOM WIDTH, FT	121.00
		BOTTOM LENGTH, FT	331.00
		SURFACE AREA, AC	1.55
		VOLUME, ACFT	11.00

THIS WATER BUDGET VERIFIES THAT 25YR - 24 HR STORM RUNOFF STORAGE ALLOCATION IS MAINTAINED THROUGHOUT THIS CLIMATIC CYCLE.

* *

*

NOTE: USER INPUT VALUES FOR NUTRIENTS USED IN NUTRIENT BALANCE WORKSHEET!

DEPTH, FT 0.0 **STAGE**

FREE BOARD, FT 0.00

Leave Extra Rows at Bottom with Blanks or Zeros.

ROW #	DEPTH FT	AREA AC
BOTTOM	0.00	0.00
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

STAGE STORAGE DATA SUMMARY

METHOD: RECTANGULAR

ROW #	DEPTH FT	AREA AC	STORE ACFT	WIDTH FT	LENGTH FT
0	0.00	0.92	0.00	121.00	331.00
1	0.90	0.98	0.85	126.40	336.40
2	1.80	1.03	1.76	131.80	341.80
3	2.70	1.09	2.71	137.20	347.20
4	3.60	1.15	3.73	142.60	352.60
5	4.50	1.22	4.79	148.00	358.00
6	5.40	1.28	5.92	153.40	363.40
7	6.30	1.34	7.10	158.80	368.80
8	7.20	1.41	8.34	164.20	374.20
9	8.10	1.48	9.64	169.60	379.60
10	9.00	1.55	11.00	175.00	385.00
11	10.00	1.62	12.58	181.00	391.00
12	11.00	1.70	14.25	187.00	397.00
BOT. 25YR-24HR	7.20	1.41	8.33	169.60	379.60
SPILLWAY	9.00	1.55	11.00	175.00	385.00
FREE BOARD	11.00	1.70	14.25	187.00	397.00

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WATER BUDGET ANALYSIS

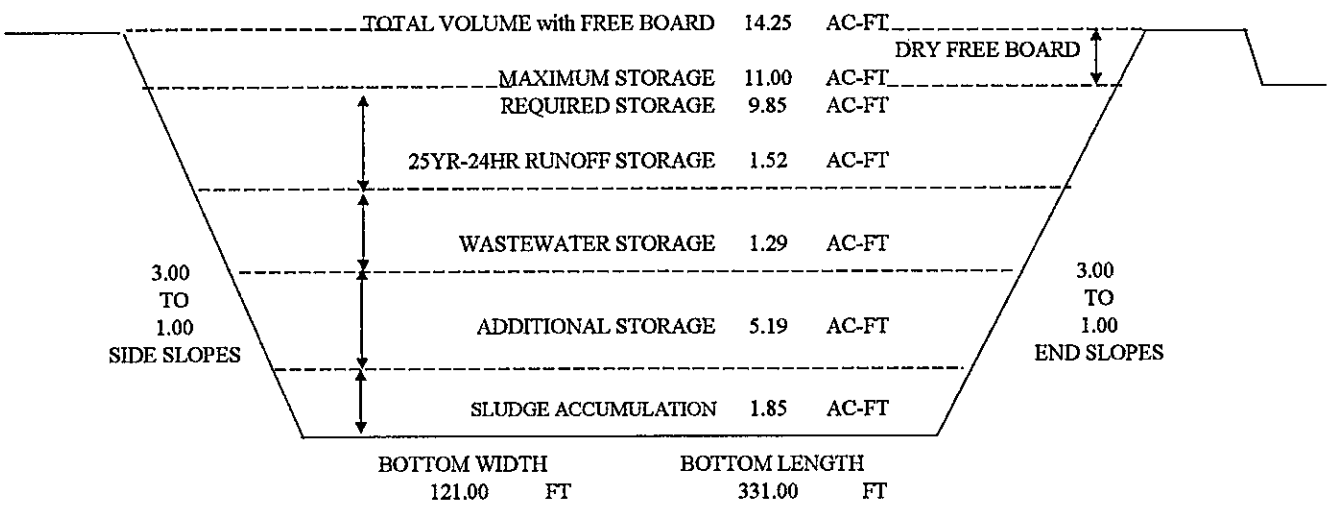


DIAGRAM OF RUNOFF CONTROL STRUCTURE

CONSUMPTIVE USE FOR SPECIFIC CROP AREAS (IN/MONTH)

FIELD	0	1,3,7,8,9	2,4,5,6	4	5	6
VEGETATION	Bermudagrass Pastureland	Bermuda/SmGr Pastureland	Sorghum/SmGr Cropland	Small Grain Cropland	Grain Sorghum Cropland	Alfalfa Pastureland
JAN	1.92	3.27	2.44	2.44	0.00	0.90
FEB	2.31	3.89	2.87	2.87	0.00	1.20
MAR	3.76	8.24	4.48	4.48	0.00	3.00
APR	4.81	10.23	8.74	5.42	3.32	3.70
MAY	5.50	10.55	10.49	5.05	5.44	6.60
JUN	6.27	8.53	9.40	2.26	7.14	6.90
JUL	7.16	7.16	7.82	0.00	7.82	7.60
AUG	6.80	6.80	1.75	0.00	1.75	5.30
SEP	5.25	5.25	0.00	0.00	0.00	5.50
OCT	4.47	4.23	1.16	1.16	0.00	3.80
NOV	2.54	3.27	1.82	1.82	0.00	1.70
DEC	1.98	2.93	1.93	1.93	0.00	1.00

NET CROP DEMAND (C.U.-EFF.RAINFALL) (IN/MONTH)

FIELD	0	1,3,7,8,9	2,4,5,6	4	5	6
VEGETATION	Bermudagrass Pastureland	Bermuda/SmGr Pastureland	Sorghum/SmGr Cropland	Small Grain Cropland	Grain Sorghum Cropland	Alfalfa Pastureland
JAN	0.00	0.00	0.00	0.00	0.00	0.00
FEB	0.00	0.58	0.00	0.00	0.00	0.00
MAR	0.30	4.78	1.02	1.02	0.00	0.00
APR	0.46	5.88	4.39	1.07	0.00	0.00
MAY	1.23	6.28	6.22	0.78	1.17	2.33
JUN	2.86	5.12	5.99	0.00	3.73	3.49
JUL	4.42	4.42	5.08	0.00	5.08	4.86
AUG	4.40	4.40	0.00	0.00	0.00	2.90
SEP	1.22	1.22	0.00	0.00	0.00	1.47
OCT	1.21	0.97	0.00	0.00	0.00	0.54
NOV	0.00	0.00	0.00	0.00	0.00	0.00
DEC	0.00	0.00	0.00	0.00	0.00	0.00

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2) Total Number of Animals:
In Open Lots: 999 In Buildings: 999

3) Animal Housing Location, hours/day:
Open Lots: 7 Buildings: 17

4) Average Liveweight, pounds per head: 1400

5) Volatile Solids Removed by Separator System: NA

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

7) Spilled Drinking Water, gallons/day: 4995

8) Water for Cleanup, gallons/day: 4995

9) Water for Manure Removal, gallons/day: 14563

10) Recycled Wastewater, gallons/day: 58252

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B. Wastewater Runoff

1) Design Rainfall Amount, inches: 8.00

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
RCS#1	.85	2.36	0	1.96	.39	5.56	5.56
RCS#2	.86	0	0	.72	5.34	6.92	6.92

Indicate which RCSs are in-series: RCS#1 and RCS#2 are in series

C. Wastewater:

1) Use or Disposal Method:

☒ Land Application to LMUs

☐ Total Evaporation

☐ Third Party Fields

☐ Other; specify: Click here to enter text.

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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)
LMU#1	75	Coastal graze 1 AU/1 ac, SG mod graze	.18 Ac-ft/Ac/Year
LMU#2	44	Coastal graze 1 AU/1 ac, SG mod graze	.25 Ac-ft/Ac/Year
LMU#3	39	Coastal Hay 4 cut, RG mod Graze	.34 Ac-ft/Ac/Year
LMU#4	64	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#5	30	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#6	41	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#7	113	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#8	31	Common graze 1 AU/1 ac, SG mod graze	98.5 Tons/Ac/Year
LMU #9	101	Common graze 1 AU/1 ac, SG mod graze	98.5 Tons/Ac/Year

1) Wastewater production, ac-in/year: 43.23
2) Estimated Wastewater application, ac-in/year: 43.23
3) Manure production, tons/year: 3752
4) Estimated manure application, tons/year: 0 as dry manure. 3752 in draghose irrigation
5) Estimated manure transferred to other persons, tons/year: 0

Waste Utilization and Nutrient Management Plan

Bouma Dairy
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

TCEQ Permit Number:
WQ0005477000

Owner
Maiko Bouma
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

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Type of Waste Plan:
Other AFO-CAFO Waste Plan
located in Hopkins County

Prepared By:

(Signature)
Jim C. Wyrick
Nutrient Management Specialist
Certificate Number = TX20049
Expiration Date = December 31, 2025
East Texas Environmental Services
317 Highland Dr.
Sulphur Springs, TX 75482
903-243-0400

This plan is based on:
590 -633 Plan V 4.0_5

7/21/25 3:14 PM

Waste Utilization and Nutrient Management Plan

EXECUTIVE SUMMARY: Permit #: WQ0005477000

This Nutrient Management Plan has fields that meet NMP and/or NUP requirements.

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LOCATION AND PURPOSE OF THE PLAN

This animal operation is located in **Hopkins** 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 **2025** 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 Storage Pond (Not Agitated)** . Approximately **999** head will be confined with the average weight of **1400** pounds. The animals will be confined **24** hours per day for **365** days per year.

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.

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SOLIDS APPLICATION: (cont) Permit #: WQ0005477000

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.

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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.

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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.

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MORTALITY MANAGEMENT: (cont) Permit #: WQ0005477000

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.

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EFFLUENT AND SOLIDS STORAGE & TESTING: Permit #: WQ0005477000

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.

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Waste Utilization and Nutrient Management Plan

RECORD KEEPING: Permit #: WQ0005477000

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

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Excess Remaining May be continued on additional sheets

OPERATION AND MAINTENANCE:

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.

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Plan Prepared by: **Jim C. Wyrick** Date: **7/21/2025**

Plan Approved by: J C Wyrick Date: 8/1/2025

Producer Signature: _____ Date: _____

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.

Will be reviewed with Producer when approved by TCEQ

Waste Utilization and Nutrient Management Plan

Table 1 - Estimated Effluent and Solids Quantities Produced Permit #: WQ0005477000

Avg. Number of Animals	Type of Waste
999	**Dairy Storage Pond (Not Agitated)**
	Dairy 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* **519**

Estimated Tons Solids to be Land Applied Annually (on or off site)* **10,810.8**

*From engineering design.

Estimated Nutrient Availabilty Effluent

	pounds/yr	Pounds / 1000 gal	Pounds / Acre Inch	
N	69,146	4.91	133.3	**
P2O5	31,777	2.26	61.2	
K2O	119,948	8.51	231.2	

** Effluent Values Based on Analysis dated: December 4, 2024

Estimated Nutrient Availabilty Solids

	pounds / yr	pounds / ton	
N	46,080	4.3	**
P2O5	23,816	2.2	
K2O	36,960	3.4	

** Solids Values Based on Analysis dated: December 4, 2024

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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	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	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	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 or soil test P [1/] => 500 ppm in nutrient impaired TMDL areas.[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/ TMDL watersheds are designated by Texas Commission on Environmental Quality (TCEQ).

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Waste Utilization and Nutrient Management Plan

Table 3 - Crop Removal Rates (For Information Only) Permit #: WQ0005477000

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
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
3	39.0	Coastal Hay 4 cut, RG mod Graze M	NMP	Default	350	105	311
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
7	113.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233
8	31.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233
9	101.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233

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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 #: WQ0005477000

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)
10,811	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8	31.0	Common graze 1 AU/1 ac, SG mod graze H	113	217	A	98.5	3055
	9	101.0	Common graze 1 AU/1 ac, SG mod graze H	90	217	A	98.5	9952
Total Solids Application Acres								
132								
Max. Solids Application Allowable on-site (tons)								
13006.8								
Adequate								
Solids to be used off-site (tons)								
0.0								

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End of Table 4

Waste Utilization and Nutrient Management Plan

Table 5 - Nutrients Applied/Needs at Maximum Solids Rates Permit #: WQ0005477000

	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
1							
2							
3							
4							
5							
6							
7							
8	420	217	337	0	0	0	0
9	420	217	337	0	0	0	0

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Waste Utilization and Nutrient Management Plan

Table 6 - Planned Solids Application Rates Permit #: WQ0005477000

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)
1									
2									
3									
4									
5									
6									
7									
8		31.0	Common graze 1 AU/1 ac, SG mod graze H	113	A	98.5	84	82.8	2565.9
9		101.0	Common graze 1 AU/1 ac, SG mod graze H	90	A	98.5	84	82.8	8359.8
Acres		132.0							10925.7
10811			Tons of wet solids produced Annually					Will the planned per acre application rates use all of the Solids?	YES
0			Tons to be used off-site at Max. rates					Tons to be used off-site at planned rates	0

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Waste Utilization and Nutrient Management Plan

Table 7 - Nutrients Applied/Needed at Planned Solids Rates Permit #: WQ0005477000

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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
1							
2							
3							
4							
5							
6							
7							
8	353	182	283	45	0	0	0
9	353	182	283	25	0	0	0

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Waste Utilization and Nutrient Management Plan

Table 8 - Maximum Effluent Application Per Field Permit #: WQ0005477000

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)
519	1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	216	136	A	2.2	165
Source:	2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	117	184	A	3	132
	3	39.0		Coastal Hay 4 cut, RG mod Graze M	141	248	A	4.1	160
Dairy Storage Pond (Not Agitated)	4	64.0		Common graze 1 AU/1 ac, SG mod graze M	112	193	A	3.2	205
	5	30.0		Common graze 1 AU/1 ac, SG mod graze M	77	193	A	3.2	96
	6	41.0		Common graze 1 AU/1 ac, SG mod graze M	91	193	A	3.2	131
	7	113.0		Common graze 1 AU/1 ac, SG mod graze H	145	193	A	3.2	362
	8								
	9								

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Total Effluent Application Acres
406
Maximum Effluent Application Allowable On-Site (ac in)
1251
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 #: WQ0005477000

	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
1	293	135	509	85	0	0	0
2	400	184	694	0	0	0	0
3	546	251	948	0	0	0	0
4	426	196	740	0	0	0	0
5	426	196	740	0	0	0	0
6	426	196	740	0	0	0	0
7	426	196	740	0	0	0	0
8							
9							

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Table 10 - Planned Effluent Application Rates Permit #: WQ0005477000

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)
1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	216	A	2.2	**30.0**	0.7	53
2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	117	A	3	**45.0**	1.4	62
3	39.0		Coastal Hay 4 cut, RG mod Graze M	141	A	4.1	**35.0**	1.4	55
4	64.0		Common graze 1 AU/1 ac, SG mod graze M	112	A	3.2	**45.0**	1.4	90
5	30.0		Common graze 1 AU/1 ac, SG mod graze M	77	A	3.2	**45.0**	1.4	42
6	41.0		Common graze 1 AU/1 ac, SG mod graze M	91	A	3.2	**45.0**	1.4	57
7	113.0		Common graze 1 AU/1 ac, SG mod graze H	145	A	3.2	**46.0**	1.5	170
8									
9									
Acres	**406.0**					**Will the planned application rates use all of the Effluent?**			**527**
									YES

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Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #: WQ0005477000

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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
1	89	41	154	290	0	50	0
2	180	83	312	200	0	0	0
3	189	87	328	300	0	35	0
4	189	87	328	45	0	0	0
5	189	87	328	205	0	0	0
6	189	87	328	205	0	0	0
7	193	89	335	200	0	0	0
8							
9							

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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 #: WQ0005477000

LMU / Field #	AWC (inches)	Restrictive Texture
1	3.52	Sandy Clay loam
2	1.71	Loamy Fine Sand
3	3.52	Sandy Clay loam
4	3.52	Sandy Clay loam
5	1.71	Loamy Fine Sand
6	1.71	Loamy Fine Sand
7	1.8	Loamy Fine Sand
8		
9		

LMU / Field #	AWC (inches)	Restrictive Texture

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Table 13 - Non Application Areas by Field Permit #: WQ0005477000

FS = 393-Filter Strip; **FB** = 386-Field Border, **RFB** = 391-Riparian Forest Buffer; **OLEA** = Other Land Excluded Area

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
1	15.0	0.0	0.0		15.0
2	0.0	0.0	0.0		
3	0.0	0.0	0.0		
4	5.0	0.0	0.0		5.0
5	10.0	0.0	0.0		10.0
6	0.0	0.0	0.0		
7	0.0	0.0	0.0		
8	2.0	0.0	0.0		2.0
9	6.0	0.0	0.0		6.0

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded

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Totals	38.0	0.0	0.0	0.0	38.0

See Application Map for location of buffers

Total 590-633 application acres: 538.0

Total 590-633 Field Acres: 576.0

Waste Utilization and Nutrient Management Data Entries

General Data

Date :	4/14/2025
Farmer Name :	Bouma Dairy
County in which the Land is located :	Hopkins
Type of Waste Plan :	Other AFO-CAFO Waste Plan
Is this plan in a TMDL watershed for nutrients? Yes or No :	No
Is any field PERMITTED by TCEQ? Yes or No :	Yes
Permit # :	WQ0005477000

All other entries on General Page appear on the Cover Page

Animal Information

Plan Year :	2025
Are you receiving waste from another producer?	No
Number of animals :	999
Approximate Weight :	1400
Days per year in confinement :	365
Hours per day confined :	24
***ACRE FEET* of effluent to be irrigated* :**	43.24
Estimated annual gallons of effluent to be irrigated/applied annually :	14089667.52
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)* :	2000
Is this the first Year of the AFO-CAFO Operation? :	No

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Analysis Information

Effluent Information

Date of Analysis:	12/4/2024
Manure Source:	Dairy Storage Pond (Not Agitated)
Nitrogen % From Analysis:	0.0735
Phosphorus % From Analysis:	0.0118
Potassium % From Analysis:	0.085
Moisture % From Analysis:	97

Manure / Solids Information

Date of Analysis:	12/4/2024
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	1.44
Phosphorus % From Analysis:	0.26
Potassium % From Analysis:	0.77
Moisture % From Analysis:	81.5
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: 590 -633 Plan V 4.0
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Field and Buffer Entries

Permit #: WQ0005477000

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Plan is based on: 590 -633 Plan V 4.0_5

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	
1	90	15				15.0	75.0	
2	44	0				0.0	44.0	
3	39	0				0.0	39.0	
4	69	5				5.0	64.0	
5	40	10				10.0	30.0	
6	41	0				0.0	41.0	
7	113	0				0.0	113.0	
8	33	2				2.0	31.0	
9	107	6				6.0	101.0	

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Soil Test, Crop Information and Plant Analysis Data Entries

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Soil Test Analysis				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)	Plant Analysis & Yield (optional) Use Only When Crop Removal is Required			
N (ppm)	P (ppm)	K (ppm)	Lime (enter amt or leave blank)							% N	% P	% K	Yield Air Dry Production (lbs/ac/yr)
10	216	40			1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
10	117	40			2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
26	141	70			3	39.0	Coastal Hay 4 cut, RG mod Graze M	E	N				
94	112	55			4	64.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
12	77	17			5	30.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
12	91	26			6	41.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
13	145	32			7	113.0	Common graze 1 AU/1 ac, SG mod graze H	E	N				
11	113	25			8	31.0	Common graze 1 AU/1 ac, SG mod graze H	S	N				
20	90	132			9	101.0	Common graze 1 AU/1 ac, SG mod graze H	S	N				
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							TCEQ						

Solids Application Rate Entries

Solids - Set the Planned Application Rates

Permit #: WQ

10811		"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
1							
2							
3							
4							
5							
6							
7							
8	31.0	Common graze 1 AU/1 ac, SG mod graze H	113	175	Annual	98.5	84.0
9	101.0	Common graze 1 AU/1 ac, SG mod graze H	90	175	Annual	98.5	84.0

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Plan is based on: 590 -633 Pl

Effluent Application Rate Entries

Effluent - Set the Planned Application Rates

Permit #: WQ0005477000

14089668	Gallons of Effluent to be used annually				Will the planned rates use all of the effluent?				Yes
519	Acre inches of Effluent to be used annually								

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)
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	216	175	Annual	2.2	30.0	0.7	53
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	117	175	Annual	3	45.0	1.4	62
3	39.0	Coastal Hay 4 cut, RG mod Graze M	141	225	Annual	4.1	35.0	1.4	55
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	112	175	Annual	3.2	45.0	1.4	90
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	77	175	Annual	3.2	45.0	1.4	42
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	91	175	Annual	3.2	45.0	1.4	57
7	113.0	Common graze 1 AU/1 ac, SG mod graze H	145	175	Annual	3.2	46.0	1.5	170
8									
9									

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Total Effluent This Page: 527

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Plan is based on: 590 -633 Plan V 4.0_5

Available Water Capacity Entries

Printed on: 7/21/25 3:15 PM Plan is based on: 590 -633 Plan V 4.0_5 Permit #: WQ0005477000

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																
1	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
2	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
3	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
4	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
5	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
6	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
7	Loamy Fine Sand	0	6	0\.06	0.09	6	24	0.05	0.09	24				0				1.80
		0												0				

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PI Index by Field

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This plan is based on: 590 -633 Plan V 4.0_2

Permit #: WQ0005477000

Client Name: Bouma Dairy

Planner: Jim C. Wyrick

Date: 7/21/2025

Location: Hopkins

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	2.0%	61	8	0	0.75	0	4	0	1	0	13.75	Medium	11/13/24
2	Coastal graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	2.5	1	0	17	Medium	11/13/24
3	Coastal Hay 4 cut, RG mod Graze	2.0%	58	8	0	1.5	0	4	0	0	0	13.5	Medium	11/13/24
4	Common graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	1.25	1	0	15.75	Medium	11/13/24
5	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	4	0	1.5	0	4	5	0	0	14.5	Medium	11/13/24
6	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	1.5	0	4	5	0	0	18.5	Medium	11/13/24
7	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/13/24
8	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/13/24
9	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/13/24

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Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Tuesday, June 24, 2025 9:28 AM
To: Kayla Robichaux
Subject: Re: RE: RE: WQ0005477000 - Maiko Hessel Bouma
Attachments: Bouma WN sealed 6_20_25.pdf; COMMENTS.pdf; RFC.pdf

Morning Kayla:

See the attachmnets.

Jim

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Please see my comments for WQ0005477000 - Maiko Hessel Bouma TCEQ

1. The LMU revision expanded the footprint of the site into a new area not previously included in the RFC. Please revise the RFC to include the new area and re-sign and seal the certification.

   See revised RFC

2. In regards to the previous comment regarding how the value for recycled wastewater was obtained, you responded that 72,815 *20% available was used for recycled wastewater of 58,252 gallons/day. However, 20% of 72,815 is only 14,563 gallons. Please clarify.

   Efficiency 72,818 (total water used) x .20 (% to be used for recycled) = 14,563 (recycled water). 72,818 – 14,563 = 58,252 gallons/day available for used as recycled wastewater.

3. Please submit site specific information to support using 90% honey vacuum efficiency since this is the less conservative value of the range provided by NRCS and this facility has a history of unsatisfactory compliance with the RCSs.

   See the attached revised WATRNTR. This revision is a reduction in slurry collection from 90% to 85% as well as a reduction in sludge cleanout interval from 10 years to 5 years

Thanks

Jim

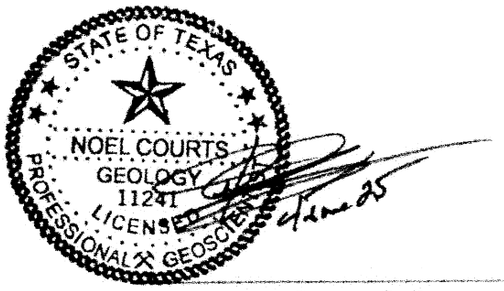
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BOUMA DAIRY- TOTAL

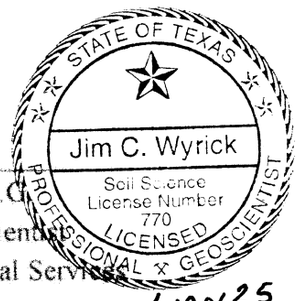
AGRICULTURAL WASTE MANAGEMENT PLAN

HOPKINS COUNTY

Prepared by:



Noel Courts, P.G.
Professional Geoscientist
East Texas Environmental Services



Jim C Wyrick, P.G.
Professional Geoscientist
East Texas Environmental Services

6/20/25



M. Berry, P.E.
Firm No. F-21204
Seal No. 44452

06/16/25

Modified for Wood/Hopkins/Rains/Franklin Counties(I.D. #6b) on January 22, 2008. Modifications made in monthly rainfall, monthly evaporation, and monthly consumptive use values for bermudagrass pastureland, bermuda/small grain pastureland, small grain cropland, grain sorghum cropland, and sorghum/small grain cropland. Modifications (values) were taken from following reference: Borrelli, J., C.B. Felder, and J.M. Gregory. 1998 *Mean Crop Consumptive Use and Free-Water Evaporation for Texas.* TWDB Grant No. 95-483-137. Dept. of Civil Engineering. Texas Tech University. Lubbock, Texas.

WATRNTR Version 1. Modified by Eugene Lindeman, P.E.

IN COOPERATION WITH:

NATURAL RESOURCES CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

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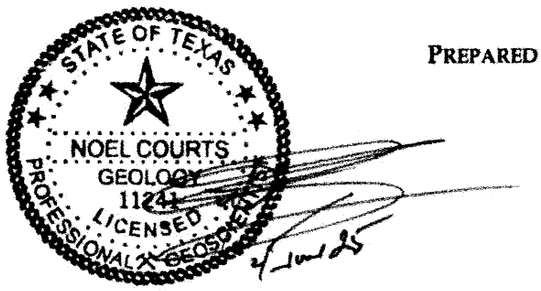
BOUMA DAIRY

CALCULATIONS FOR DAIRY BARN & FREE STALL SLUDGE

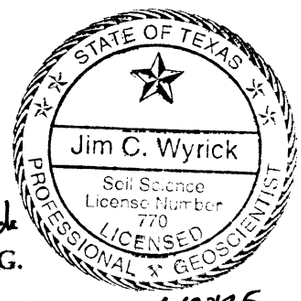
REVISED 6/4/2025

MAIKO BOUMA
4252 COUNTY ROAD 2408
WINNSBORO, TEXAS 75494
HOPKINS COUNTY

PREPARED BY:

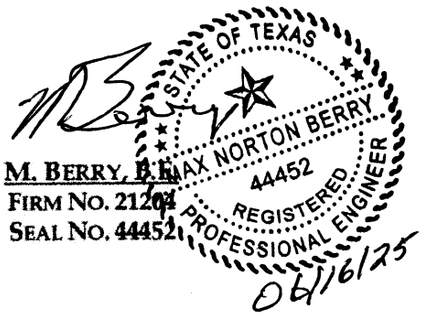


NOEL COURTS, P.G.
LICENSE NO. 11241
EAST TEXAS ENVIRONMENTAL SERVICES



JIM C. WYRICK, P.G.
LICENSE NO. 770
EAST TEXAS ENVIRONMENTAL SERVICES

6/20/25



M. BERRY, P.E.
FIRM NO. 21204
SEAL NO. 44452

06/16/25

BOUMA DAIRY - SLUDGE VOLUME

D.A. #1 - DAIRY BARN & FREESTALL BARN

All of the waste from the dairy barn and free stalls at Bouma Dairy removed by a Honey Vacuum that is proved to be at least 50-90% effective according to the NRCS Practice Standard Code 6632 - "Solid/Liquid Waste Separation Facility". In this case 85% vacuum efficiency was used. The remaining solids go into settling basins that removes 45% of the remaining solids produced. Any manure separating facilities have 40%-65% total solids efficiency according to NRCS Practice Standard Code 632 - "Solid/Liquid Waste Separation Facility". The adjusted total live weight contributing to the waste volume is 990,675 pounds @ 1400lbs/cow. The sludge from the free stall barns is calculated below:

Adjusted Total Live weight Contributing Manure	990,675 lbs
Honey Vacuum Efficiency	85%
Adjusted Live weight	148,601 lbs
Settling Basin Efficiency	45%
Adjusted Live weight	81,730 lbs
Sludge Accumulation Rate cu ft/year/lbs live weight	0.25

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$$\text{Sludge Volume} = \frac{(81{,}730 \text{ lbs})(0.25 \text{ cu ft/year/lbs live weight})}{43{,}560 \text{ cu ft/ac-ft}} = 2.35 \text{ Ac-Ft/ 5years}$$



BOUMA DAIRY

SLUDGE VOLUME FROM OPEN LOTS

OPEN LOT:

Sludge storage for a ten year period may be calculated using the following equation:

Sludge Volume = 25% x (25yr-24hr storm volume runoff from open lots)

For this facility the 25yr-24hr storm volume from open lots = 1.31 ac-ft

Open Lot Volume = .25 x 1.31 = .33 for a ten year period.

The planned sludge cleanout interval for open lots is 1 year; therefore, allotted sludge volume is as follows:

$$\frac{.33 \text{ ac-ft}}{10 \text{ years}} (5 \text{ years}) = .33 \text{ac-ft}$$

CERTIFICATION:

Prepared By: _____
Noel Courts, P.G.
East Texas Env. Services

Prepared By: _____
Jim C. Wyrick, P.G.
East Texas Env. Services

Prepared By: _____
M. Berry, P.E.
Firm No. F-21204
Seal No. 44452

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MANURE PRODUCTION DATA FOR CONFINED ANIMAL FEEDING OPERATIONS

TYPE OF ANIMAL (Dairy=0, Swine=1, Laying Hens=2, Beef Feedlot=3, Sheep Feedlot=4, Horses=5, Turkeys=6, Broilers=7) => 0

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Feeding Facilities For: Dairy

	Dairy Barn & Free Stall Barn	Open Lots	Total
Number of Animals	999	999	
Average Liveweight per Head, lbs/hd	1,400	1,400	
Total Liveweight,lbs	1,398,600	1,398,600	
Confinement Period, hours/hd/day	17.0	7.0	24.0
Adjusted Total Liveweight, lbs	990,675	407,925	1,398,600
Wet Manure Production, lbs/day	101,049	41,608	142,657
Dry Manure Production, lbs/day	14,563	5,996	20,559
Dry Manure Production, tons/year	2,658	1,094	3,752
Volatile Solids (VS) Production, lbs/day	10,689	4,402	15,091
Total Nitrogen Production, lbs/day	542	223	765
Total Phosphorus (P2O5), lbs/day	267	110	378
Total Potassium (K2O), lbs/day	459	189	648
Sodium Production, lbs/day	77	32	109
COD Production, lbs/day	13,275	5,466	18,741
BOD5 Production, lbs/day	2,061	848	2,909



Engineering Job Approval Authority Job Class for Ag. Waste Management System: _____
This practice, Ag. Waste Management System, meets specifications, signed by:

_____ Date: _____

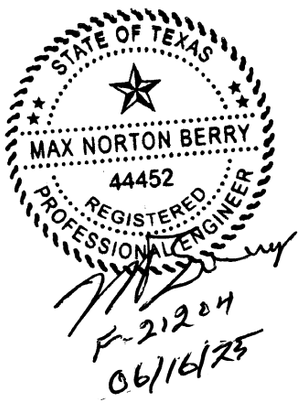
Remarks

VOLUME OF MANURE & WASTEWATER FROM CONFINEMENT BUILDINGS

Wet Manure Production	=	12116	gal/day
Water Used for Manure Removal			
a. Dry Manure Production	=	14563	lbs/day
b. Water Volume Required for Manure Removal			
1. Flush Systems:			
(Enter gallons water per pound of dry manure production, range 8-12 gal/lb)	=>	5	
Total flush water	=	72815	gal/day
2. Manual Scrape/Wash System (Enter gallons of water per pound of dry manure production, Range: 3 - 6 gal/lb)	=>	0	
Total manual wash water	=	0	gal/day
Cleanup and Washwater (Default=10 gal/hd/day)	=>	5	gal/hd/day
	=	4995	gal/day
Other Water That Enters Wastewater System	=>	5	gal/hd/day
[e.g. drinking water, etc.(12 gal/hd/day)]	=	4995	gal/day
Total Process Generated Wastewater Volume			
Daily Volume	=	94921	gal/day
Less Volume of Recycled Wastewater Used for Manure Removal	=>	58252	gal/day
Design Wastewater Storage Volume, Minimum Allowable			
Minimum Storage Days (Use Exhibit 2)*	=>	21	days
Minimum Design Storage Volume	=	2.36	ac-ft
Net Manure and Wastewater Volume for Land Application			
Monthly Volume	=	3.42	ac-ft/month
Annual Sludge Accumulation Rate, ac-ft	=	0.31	
Desired Sludge Storage Volume in Pond	=>	2.68	ac-ft
Sludge Cleanout Interval	=	5.0	years
Design Sludge Accumulation Storage Volume (Not to be less than 1 Year accumulation)	=	2.68	ac-ft

* Use Exhibit 2 of Texas Water Commission regulations for your particular location.

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ESTIMATED VOLUME OF RUNOFF FROM OPEN LOTS

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Total area draining into Runoff Control Structure (RCS)				
a. Area of open lot surface		=>	1.31	acres
b. Area between open lot surface and RCS		=>	0.17	acres
c. Surface area of RCS		=>	1.32	acres
d. Total area (#1.a + #1.b + #1.c)		=	2.80	acres
Design rainfall (25-year frequency, 24-hour duration storm), inches (Use Exhibit 1)	1)	=>	8.00	inches
Design runoff depth, inches (Use exhibit 3)				
a. For Open Lot Surface * CN		=>	90	
			6.81	inches
b. For Area Between Lots and RCS ** CN		=>	85	
			6.21	inches
c. For Surface Area of RCS		=	8.00	inches
Design runoff volume from 25-year, 24-hour storm				
a. For Open Lot Surface		=	0.7	ac-ft
b. For Area Between Lots and RCS		=	0.1	ac-ft
c. For Surface Area of RCS		=	0.9	ac-ft
d. Total Design Runoff Volume		=	1.7	ac-ft

STATE OF TEXAS
MAX NORTON BERRY
44452
REGISTERED
PROFESSIONAL ENGINEER

F-21204
06/16/25

NOTE: Runoff Control Structures must be capable of storing Design Runoff Volume plus Design Storage Volume, if runoff and process generated wastewater streams are combined.

* Use NRCS soil cover complex curve No. 90 for unpaved (soil) lots and curve No. 95 for concrete surfaces.

** Use appropriate NRCS soil cover complex curve number for particular type of cover. Contact local Natural Resources Conservation Service field office for assistance.

SUMMARY OF REQUIRED AND DESIGNED STORAGE PONDS

Minimum Design Wastewater Storage Volume	2.36	ac-ft
Minimum Design Runoff Storage Volume	1.71	ac-ft
Sludge Accumulation Storage Volume	2.68	ac-ft
Additional Capacity Allowance	5.73	ac-ft
Total Capacity Designed	12.48	ac-ft

Primary Anaerobic Manure Treatment Lagoons, Sheet 5 of 10., Use Where Applicable.

DESIGN BASIS FOR
PRIMARY ANAEROBIC MANURE TREATMENT LAGOONS

(WHERE APPLICABLE)

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THIS PAGE IS NOT APPLICABLE TO THIS PLAN

Design Factor		Dairy	
Adjusted Total Liveweight Contributing Manure to Lagoon	=	54487	lbs
Recommended Unit Treatment Volume (see footnote)	=>	0.00	
(RUTV), cubic feet/pound liveweight	=	3.00	
Total Treatment Volume	=	3	
Design checks (see footnotes):			
a. Volatile Solids (VS) Loading Rate		0.0654	
b. Hydraulic P[illegible]	=	13	days
c. Esti[illegible] Sludge Cleanout Interval,			
1. Sludge Accumulation Rate, cu ft/year/lb liveweight	=	0.250	
2. Sludge Cleanout Interval	=	6.0	years
Additional Capacity Allowance for:			
a. Design Runoff Volume, (one stage logoons (	=>	0.0	ac-ft
b. Sludge storage	=>	0.0	ac-ft
c. Additional Storage	=>	0.0	ac-ft
Total Primary Lagoon Capacity	=	3.8	ac-ft

Notes: 2. If user entry area equals 0, then default values are used (dairy=3, swine=1.75, poultry,laying hens=2.5, beef=2, sheep=2, horses=2). User may specify alternate value which will override template default.

4.a. VS Loading Rate--Volatile Solids Production (Worksheet I, #10) / Total Treatment Volume. Desired range is 0.0025-0.0040 lbs VS/day/cu ft for odor control.

4.b. Hydraulic Retention Time--Total Treatment Volume / Total Manure and Wastewater Volume. Desired range is 160-400 days for good treatment.

4.c. Sludge Cleanout Interval (when half full)

$$\text{Interval} = \frac{\text{Total Treatment Volume (cuft) x 0.5}}{\text{Adj. Total Live Wt. x Sludge Accum. Rate}}$$

LAND AREA FOR DISPOSAL OF MANURE OR EFFLUENT FROM TREATMENT LAGOONS,

BASED ON PLANT-AVAILABLE NITROGEN (PAN)

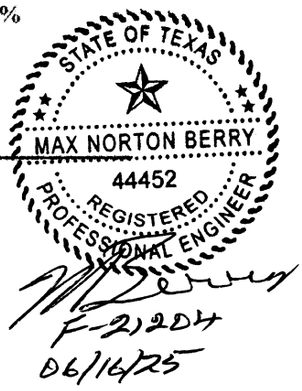
			Buildings		Open Lots	
Total Daily Nitrogen Production		=	542	more->	223	lbs/day
Total Annual Nitrogen Production		=	197793	more->	81444	lbs/yr
Percent Nitrogen Loss from manure storage or treatment system*		=>	20	more->	50	percent
Annual Nitrogen Loss from manure storage or treatment system		=	39559	more->	40722	lbs/yr
Total Annual Nitrogen Remaining		=	158235	more->	40722	lbs/yr
Availability of Nitrogen in Manure or Effluent,% (Normal range is 80-95% in lagoon effluent; 50-80% in fresh or pit-stored manure; or 40-50% in feed lot manure)		=>	80	more->	50	percent
Annual Plant-Available Nitrogen (PAN) Applied to Soil			126588	more->	20361	lbs/yr
PAN Losses from Soil Surface Application**	**	=>	20	more->	20	percent
PAN Losses from Soil Surface Application		=	25318	more->	4072	lbs/yr
PAN Entering Soil		=	101270	more->	16289	lbs N/yr

Land Required for Various PAN Application Rates:

Assumed PAN Application Rate, lbs/ac/yr	Buildings Acres		Open Lots Acres		Total Acres
100	1013	+	163	=	1176
150	675	+	109	=	784
200	506	+	81	=	588
300	338	+	54	=	392
400	253	+	41	=	294

* Nitrogen Loss from Lagoon Surface--Normal loss is 40-65% for primary treatment lagoons with 200 days or more storage; 10-20% from liquid manure settling basins or storage pits; and 40-50% from open feedlot surface.

** Normal range of nitrogen loss from soil surface is 15-35% for surface application or, 5% for soil injection. Losses are highest in warm weather and on high pH soils.



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WATER BUDGET ANALYSIS

DRAINAGE AREA	2.80	ACRES	RUNOFF CONTROL STRUCTURE DATA		
MANURE PROD. RCS AREA	1.32	ACRES	LOCATION NO.	12	FIELD OFFICE SULPHUR SPRGS
					COUNTY HOPKINS
SLUDGE ACCUMULATION	2.68	AC-FT	30-DAY CURVE NUMBERS		CROPS FOR WATER DEMAND
MIN. WASTEWATER STORE	2.36	AC-FT	POND	74.0	Bermudagrass 0.00 AC
ADDITIONAL STORAGE	5.73	AC-FT	FIELD	48.0	Bermuda/SmGr 381.00 AC
SUBTOTAL	10.77	AC-FT	IRRIG. EFFICIENCY, %	75.00	Sorghum/SmGr 0.00 AC
25YR-24HR RUNOFF	1.71	AC-FT	IRRIGATION DEPTH, IN/YR	1.02	Small Grain 0.00 AC
TOTAL POND CAPACITY	12.48	AC-FT	EVAPORATION. COEFF.	71.50	Assumed Seepage 0.0 ACFT

MONTH	RAINFALL (1) IN	RUNOFF (2) IN.	INFLOW TO POND (3) AC-FT	OTHER INFLOW (3a) AC-FT	EFFECTIVE RAINFALL (4) IN.	GROSS EVAP (5) IN.	NET POND EVAP. (8) AC-FT	CROP DEMAND (10) AC-FT	ACTUAL WITHDRAWL (10b) AC-FT	STORAGE at E.O.M. (11) AC-FT	SURF AREA at E.O.M. (12) AC	SPILL (13) AC-FT
										10.00	1.22	0.00
JAN	2.70	0.03	0.17	3.42	2.67	2.20	0.00	18.89	10.90	2.68	0.87	0.00
FEB	3.20	0.09	0.24	3.42	3.11	2.30	0.00	24.76	3.67	2.68	0.87	0.00
MAR	3.90	0.24	0.36	3.42	3.66	3.20	0.04	145.39	3.74	2.68	0.87	0.00
APR	4.80	0.51	0.51	3.42	4.29	3.60	0.05	188.75	3.89	2.68	0.87	0.00
MAY	5.20	0.66	0.59	3.42	4.54	4.50	0.11	190.93	3.91	2.68	0.87	0.00
JUN	3.70	0.19	0.32	3.42	3.51	5.60	0.20	159.39	3.54	2.68	0.87	0.00
JUL	3.10	0.07	0.23	3.42	3.03	7.10	0.32	131.26	3.33	2.68	0.87	0.00
AUG	2.40	0.00	0.13	3.42	2.40	7.60	0.37	139.86	3.18	2.68	0.87	0.00
SEP	3.50	0.15	0.29	3.42	3.35	6.20	0.25	60.20	3.46	2.68	0.87	0.00
OCT	4.00	0.27	0.37	3.42	3.73	5.20	0.17	15.73	3.62	2.68	0.87	0.00
NOV	3.40	0.13	0.27	3.42	3.27	3.80	0.09	0.00	0.00	6.28	1.05	0.00
DEC	3.60	0.17	0.31	3.42	3.43	2.70	0.02	0.00	0.00	10.00	1.22	0.00
TOTALS	43.50	2.51	3.79	41.07	40.99	54.00	1.62	1075.15	43.24		Reset	0
	43.50					54.00			43.24	Checks		

STORAGE-AREA TABLE FOR RUNOFF CONTROL STRUCTURE

STORAGE DATA TYPE R (C - CIRCULAR, R - RECTANGULAR, or S - STAGE DATA)

CIRCULAR		RECTANGULAR	
DEPTH, FT	0.0	DEPTH, FT	12.35
SIDE SLOPE, RATIO	0.00	SIDE SLOPE, RATIO	2.50
TOP DIAMETER, FT	0.00	END SLOPE, RATIO	2.50
FREE BOARD, FT	0.00	TOP WIDTH, FT	240.00
BOTTOM DIAMETER, FT	0.00	TOP LENGTH, FT	240.00
SURFACE AREA, AC	0.00	FREE BOARD, FT	2.00
VOLUME, ACFT	0.00	BOTTOM WIDTH, FT	178.25
		BOTTOM LENGTH, FT	178.25
		SURFACE AREA, AC	1.32
		VOLUME, ACFT	12.49

THIS WATER BUDGET VERIFIES THAT 25YR - 24 HR STORM RUNOFF STORAGE ALLOCATION IS MAINTAINED THROUGHOUT THIS CLIMATIC CYCLE.

* *

*

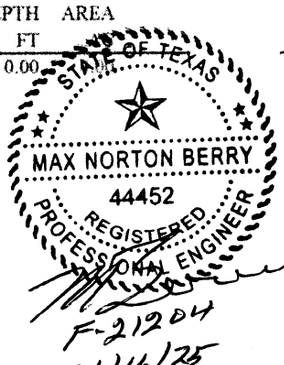
NOTE: USER INPUT VALUES FOR NUTRIENTS USED IN NUTRIENT BALANCE WORKSHEET!

DEPTH, FT 0.0 STAGE

FREE BOARD, FT 0.00

Leave Extra Rows at Bottom with Blanks or Zeros.

ROW #	DEPTH FT	AREA
BOTTOM	0.00	0.73
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		



STAGE STORAGE DATA SUMMARY

METHOD: RECTANGULAR

ROW #	DEPTH FT	AREA AC	STORE ACFT	WIDTH FT	LENGTH FT
0	0.00	0.73	0.00	178.25	178.25
1	1.24	0.78	0.93	184.43	184.43
2	2.47	0.83	1.93	190.60	190.60
3	3.71	0.89	2.99	196.78	196.78
4	4.94	0.95	4.13	202.95	202.95
5	6.18	1.00	5.33	209.13	209.13
6	7.41	1.06	6.61	215.30	215.30
7	8.65	1.13	7.96	221.48	221.48
8	9.88	1.19	9.39	227.65	227.65
9	11.12	1.26	10.90	233.83	233.83
10	12.35	1.32	12.49	240.00	240.00
11	13.35	1.38	13.84	245.00	245.00
12	14.35	1.43	15.25	250.00	250.00
BOT. 25YR-24HR	11.01	1.25	10.77	233.83	233.83
SPILLWAY	12.35	1.32	12.49	240.00	240.00
FREE BOARD	14.35	1.43	15.25	250.00	250.00

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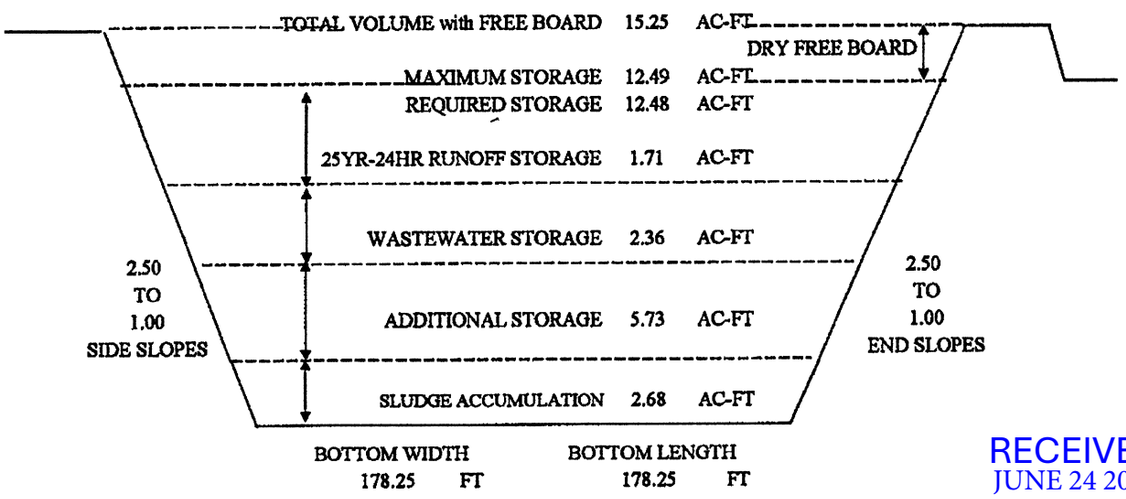
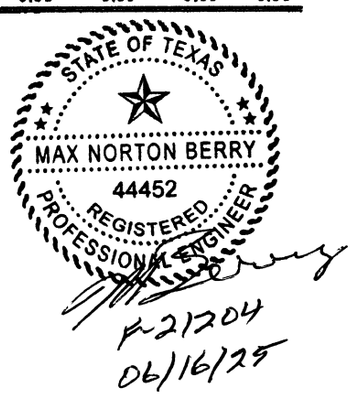


DIAGRAM OF RUNOFF CONTROL STRUCTURE

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	CONSUMPTIVE USE FOR SPECIFIC CROP AREAS (IN/MONTH)						NET CROP DEMAND (C.U.-EFF.RAINFALL) (IN/MONTH)					
FIELD	0	1,2,3	3	4	5	6	0	1,2,3	3	4	5	6
VEGETATION	Bermudagrass Pastureland	Bermuda/SmGr Pastureland	Sorghum/SmGr Cropland	Small Grain Cropland	Grain Sorghum Cropland	Alfalfa Pastureland	Bermudagrass Pastureland	Bermuda/SmGr Pastureland	Sorghum/SmGr Cropland	Small Grain Cropland	Grain Sorghum Cropland	Alfalfa Pastureland
JAN	1.92	3.27	2.44	2.44	0.00	0.90	0.00	0.60	0.00	0.00	0.00	0.00
FEB	2.31	3.89	2.87	2.87	0.00	1.20	0.00	0.78	0.00	0.00	0.00	0.00
MAR	3.76	8.24	4.48	4.48	0.00	3.00	0.10	4.58	0.82	0.82	0.00	0.00
APR	4.81	10.23	8.74	5.42	3.32	3.70	0.52	5.94	4.45	1.13	0.00	0.00
MAY	5.50	10.55	10.49	5.05	5.44	6.60	0.96	6.01	5.95	0.51	0.90	2.06
JUN	6.27	8.53	9.40	2.26	7.14	6.90	2.76	5.02	5.89	0.00	3.63	3.39
JUL	7.16	7.16	7.82	0.00	7.82	7.60	4.13	4.13	4.79	0.00	4.79	4.57
AUG	6.80	6.80	1.75	0.00	1.75	5.30	4.40	4.40	0.00	0.00	0.00	2.90
SEP	5.25	5.25	0.00	0.00	0.00	5.50	1.90	1.90	0.00	0.00	0.00	2.15
OCT	4.47	4.23	1.16	1.16	0.00	3.80	0.74	0.50	0.00	0.00	0.00	0.07
NOV	2.54	3.27	1.82	1.82	0.00	1.70	0.00	0.00	0.00	0.00	0.00	0.00
DEC	1.98	2.93	1.93	1.93	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00



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RECHARGE FEATURE CERTIFICATION FOR BOUMA DAIRY

GENERAL REMARKS:

Mr. Bouma is applying for a TCEQ Individual Permit for a concentrated animal feeding operation. He will be reducing the herd size to 999 animals of which 999 are milking cows and will be kept in confinement. This recharge feature evaluation and associated certification was conducted at the request of Miako Bouma of Bouma Dairy. Jim C. Wyrick, Professional Geoscientist, compiled the findings and recommendations, contained herein.

PURPOSE OF REPORT:

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 wastewater from the retention control structure or land application site into the underlying aquifer as according to GPTXG920000 requirements. The following records and/or maps from the following entities/agencies were reviewed to locate any recharge features: (a) Texas Railroad Commission, (b) well driller, (c) TCEQ, (d) Natural Resource Conservation Service, (e) owner of site, and (f) an on-site inspection. There are no previous landowners available to contact.

AREA OF EVALUATION

The site under evaluation consists of a retention control structure (RCS#1) and (RCS#2) to be constructed. The wastewater application area LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. The property is located on the side of CR 2408, .29 miles W of intersection Hwy 11 and CR 2408 in Hopkins County. Latitude: 32.980666 ° N and Longitude: 95.328666º W. This property consists of approximately 538 acres located on Abstract 307, Tract 5-01, and Thomas B. Smith Survey in Hopkins, Texas. The facility is a dairy operation using a freestall system. The facility is located on a topographic ridge with uncontaminated surface runoff generally draining via overland flow and shallow concentrated flows west into unnamed drain and then into Big sandy Creek. The elevation of the dairy property ranges from approximately 460 to 520 feet above mean sea level (AMSL). The current land use of the property is agricultural (pasture and forage crops). All waste application areas are located on the property, and off-site manure application areas will be used by this facility.

SITE DESCRIPTIONS

The existing RCS is located west and down slope of the dairy barn. The RCS was constructed in 1999. Inland Engineering and Surveying certified the size of RCS#1 as having a capacity of 5.56 acre-feet. RCS#2 will be constructed north of the existing RCS will be built to a capacity of 6.92 ac ft. The RCSs will catch and contain all wastewater and manure generated from the dairy barn and 2 free stallbarns. Wastewater flows from the dairy barn and freestall barns into a concrete settling basin then though a six-inch PVC pipe into RCS#1 and then into RCS#2. The RCSs will be dewatered using a drag hose system attached to the back of a tractor. The wastewater application area is on 484 acres, LMU#1, LMU#2, LMU#3, LMU#4, LMU#5 LMU#6 and LMU#7 The fields generally drain via overland flow and shallow concentrated flows south into unnamed creek then into Big Sandy Creek.

DEFINITION OF RECHARGE ZONE FEATURE

For the purpose of this report, the definition of "recharge feature" shall be the same as the definition presented in TXG920000 Part 1. Recharge feature is defined as those natural or artificial features either on or beneath the ground surface at the site under evaluation that provide or create significant hydrologic connections 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 connection includes, but are not limited to: faults; fractures; sinkholes or other macro pores that allow direct surface infiltration; a permeable or a shallow soil material that overlies an aquifer; exposed geologic formations that are identified as an aquifer; or a water course bisecting an aquifer

LOCAL GEOLOGY

The site is located in the northern part of the East Texas Basin. Geologic units near the site crop out in bands running generally in an east-west direction. The fine sandy loams and loams of the Bernaldo Freestone, Nahatche, Kirvin and Wolfpen soils are immediately underlain by the Relaw Formation (Er) which consists of a layer of dark silty shale typically 30' to 40' thick over a layer of dark gray to green, very fine glauconitic silty sand typically 20' to 30' thick for a total formation thickness of 50' to 70', but is up to 130' thick in certain areas. The shale layer is important in that it provides an impermeable separation between the Queen City Formation and the Carrizo Formation. The Formation is not considered a source of water for water wells. Formations in descending order include The Carrizo Formation (Ec) which consists largely of white to light gray, fine to medium quartz sand. However, small amounts of silt and clay are present in the upper part of the formation. The Carrizo yields small to moderate quantities of water to wells. Typical thickness of the Carrizo is 50' to 100', but is up to 150' thick in some places and in other places is mostly shale so as to not be detectable. Wilcox Group Undivided (Ewi) which consists mostly of silty and sandy clay, very thinly bedded to massive, locally cross-bedded, in part carbonaceous, calcareous siltstone and ironstone concretions common various shades of gray; local beds of clay, lignite, silt, and quartz sand; weathers various shades of gray, brown, yellow, and red; abundant plant fossils; thickness 700 feet. Midway Group which includes the Wills Point Formation (Ewp) and Kincaid Formation (Ek). Wills Point Formation is mostly clay, upper part silty, locally liginitic, some calcareous siltstone concretions, thin bed of rosette limestone near middle, glauconitic near base thin bedded to locally massive, various shades of gray; weathers medium gray to yellowish gray; marine megafossils; thickness ±450 feet. Kincaid Formation is mostly clays calcareous, glauconitic, selenitic, in part silty and sandy locally phosphatic near base, some thin beds of hard gray limestone in upper part, various shades of gray; weathers medium gray: marine megafossils thickness ±150 feet. Navarro Group Undivided (Kna) Upper part mostly clay, salty, in part sandy, sand increases downward, calcareous, glauconitic, calcareous concretions common, some cone-in-cone, medium gray to bluish gray; weather light yellowish gray and medium greenish gray; marine mega fossils scarce. Lower part is mostly sand, fine grained, salty, clayey, weakly coherent, light to medium gray; weathers light yellowish gray; marine mega fossils abundant locally. Indistinctly to thinly bedded. Thickness ranges from 500-775 feet. Neylandville Formation (Kne) consists of clay, calcareous, silty, sandy, medium gray; weathers light gray, forms somewhat irregular topography; scattered marine megafossils; thickness ±75 feet. Marlbrook Marl (Kmb) is marl, slightly glauconitic in upper part, highly plastic when wet, strikingly uniform throughout, medium bluish gray to yellowish gray; weathers light gray to white, forms smooth, rolling topography; marine megafossils scarce; thickness 150-450 feet, thins eastward. (Barnes and others 1966).

GROUND WATER

The Wilcox Group undivided is a multi-aquifer system, composed of fluvial channel sand distributed within the lower permeability interchannel sands and clays. (Kaiser, 1990). These two are considered to be one aquifer in this area. They are considerate the primary and most productive aquifer in the area. These aquifers are tapped by most of the local moderate to large-capacity wells. Locally, this aquifer is tapped by wells between about 240 and 1,250 feet deep. The aquifers are recharged as part of the precipitation that falls on the outcrops infiltrates the soil layers and percolates to the generally shallow water table. Water also moves between overlying alluvial and terrace aquifers according to

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hydraulic head differences. Recharge to the deeper sands is generally is limited to areas where these sands outcrop. In other areas, movement of groundwater into the deeper portions of the Wilcox Aquifer is insignificant because of the very low vertical permeability of the interbedded clay layers found in the Wilcox Group (Hall Southwest, 1990b). Water level fluctuations are mostly seasonal.

EVALUATIONS OF LOCAL RECHARGE POTIENTAL

Recharge from Precipitation

According to the National Weather Service (NOAA), the average annual precipitation rate in Hopkins County is about 38.1 inches per year. A significant amount of water that infiltrates to the water table moves slowly down the local hydraulic gradient and discharges through evapotranispiration or via seeps and springs into the surface drainage system. This rejected recharge supplies a major fraction of the base flow for streams in the area. The balance of the water is available to move downdip into the confined portions of the Wilcox Aquifer.

Retention Control Structures (RCS)

The USDA-NRCS Web Soil Survey for Hopkins-Rains Counties indicates the RCS was constructed in BeB - Bernaldo fine sandy loam. 1 to 3 percent slopes See Soil Interpretation Tables for detail information on theses soil. A Texas Licensed Professional Geoscientist certified the pond liner in the RCS. (See liner certification documents) as meeting the minimum requirements considered protective of groundwater as established by the TCEQ. An on-site evaluation was done on the RCSs. Mr. Bouma owner indicated there had not been any digging equipment in the RCS#1 since it was constructed. During the inspection no evidence was found to show any mechanical or structural damage to the liner. The RSC is being be properly maintained and there was no indication of seepage or leakage. The embankments are free of trash, brushes or trees and walls are stabilized and no erosion or deterioration has taken place. Based on these facts, there is little or no potential for hydraulic connection between the RCS and the underlying aquifer.

Wastewater Application Area

The USDA-NRCS Web Soil Survey for Hopkins-Rains Counties, Texas indicates that soils occurring on the wastewater application areas are: KnD - Kirvin gravelly fine sandy loam, 3 to 8 percent slopes, BeB - Bernaldo fine sandy loam. 1 to 3 percent slopes, Na - Nahatche soils, FrB - Freestone fine sandy loam, 1 to 3 percent slopes, and WoC - Wolfpen loamy fine sand, 1 to 5 percent slopes. Bernaldo, Nahatche and Wolfpen soils have a seasonal highwater table and Wolfpen soil has excessive permeability. See Soil Interpretation Tables for detail information on these soils. Sustaining and maintaining the bermuda grass cover and applying wastewater at agronomic rates will prevent nutrient build-up in the soil profile.

ARTIFICIAL RECHARGE FEATURE EVALUATION

Texas Railroad Commission Records

An inventory of oil and gas wells located on the property was conducted for this report. Texas Rail Road Commission records show there are fourteen abandoned or operating oil or gas wells located within a one-mile radius of the site.

Local Water District

Hopkins County does not have a local groundwater district. The rural water supply company for the area surrounding Bouma Dairy is in the Brinker Springs Water Supply Corporation. According to the Water Supply office, no public water supply wells are known to exist on the subject property.

Texas Water Development Board

Texas Water Development Board Water Data Interactive (TWDB WDI). was reviewed for registered wells within a 1-mile radius of the faculty site. There are no registered public

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wells within the site.

Current and Previous Landowners

Mr. Bouma stated there are no abandoned or operating oil or gas wells are located on or near the facility. Three private water wells are located on the facility. A certified well driller constructed the wells. Surface completion was in accordance with a Specified Surface Slab (Rule 287.44 (2) (A). The wells are 100 feet deep and surface casing was cemented to a depth of 60 feet below ground level. The previous landowner is not available to be contacted to locate any artificial recharge features. The water wells are identified Site Map

USDA Natural Resources Conservation Service (Hopkins County)

An inquiry was made to the USDA-NRCS office in Sulphur Springs relating to artificial or natural recharge features, which may be present on the site. They were not aware of any additional features.

On-Site Inspection

The property comprising Bouma Dairy was inspected by ground reconnaissance on the dairy property for signs or features that could be adversely affected due to the operation of the facility. Other than the areas identified within the attached maps, no other suspect areas were observed.

METHODS USED

Natural and artificial recharge features were identified by the following techniques: on-site inspection of the dairy site, interviews with the landowner, review of Texas Railroad Commission records, review of published maps and reports (refer to bibliography), review of Soil Survey of Hopkins and Rains Counties, Texas, NRCS information, review of Texas Water Development Board maps, well driller's logs, the Geologic Atlas of Texas Texarkana and personal knowledge of the area. The previous owner was not available for interview regarding recharge features**.**

CONCLUSIONS

1) The Wilcox Aquifer is the major water-bearing unit beneath the area. Deep Wilcox sand aquifers (greater than 100 feet deep) provide an important source groundwater to the area. It is highly unlikely that operations at the dairy will affect these deeper aquifers because of file presence of frequent low permeability clay beds in the Wilcox Group

2) The site is located in an area where shallow Wilcox sand bodies exist. These sand bodies have sufficient permeability and capacity to serve as local aquifers for domestic purposes. Because they are typically of limited lateral extent, they do not constitute a major source of groundwater in the area. The shallow aquifers are partially recharged by precipitation where the sand units crop out at or near ground surface.

3) The shallow fine-grained sand units present at the site do not represent a classic recharge feature for the regional aquifer system. A significant pathway between ground surface and the regional aquifers does not appear to exist at the site; however, a percentage of the annual precipitation will infiltrate through the unsaturated zone to the shallow aquifers underlying the site. Therefore, protective measures as Best Management Practices (BMPs) should be carried out to prevent any potential negative impacts to the underlying aquifer.

4) There are three private water wells located on the facility. A records search and on-site inspection were made and no other wells were found. Other water wells not identified during this investigation could be near the site.

5) The existing RCS was constructed prior to this application and meets GPTXG920000

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requirements for in-situ soil material pond liner. The RCSs are designed to hold all runoff water from the facility, including a 25-Year - 24-hour rainfall event.

RECOMMENDATIONS

Since a percentage of the annual precipitation will infiltrate through the unsaturated zone to the shallow, local aquifers underlying the site, the facility will employ BMPs, which are protective of the local aquifer underlying the site. These protective measures will be taken to prevent the possible migration of contaminants from, RCSs and the wastewater application areas to the underlying groundwater. As a minimum, these protective measures will include the following BMPs:

- Operations in and around the RCS will take care not to damage the in-suite clay liners. If the ponds are cleaned by a dragline, front-end loader or the waste storage pond liner disturbed, the dairy operator will request the pond liner be inspected and certified by a Texas Licensed Professional Engineer or Texas Licensed Professional Geoscientists
- The operator will prohibit livestock entry into the RCSs.
- Land application of wastewater in the recharge areas of the shallow, local aquifer will take place on designated application areas and at agronomic rates as an organic fertilizer. Wastewater application rates will not exceed the infiltration rates of the soil.
- Over watering of wastewater will be avoided to prevent leaching of nutrients below the crop root zone.
- Wastewater will not be applied when the ground is frozen or saturated or during rainfall events.
- Irrigation practices will be managed to minimize ponding and puddling of wastewater
- Wastewater and manure will be applied at agronomic rates and not allowed to runoff. Diversions or terraces will be constructed if necessary, to prevent wastewater from leaving the application areas.
- Wastewater will not be applied closer than 150 feet from any active water well. Wastewater will not be applied closer than 100 feet to waters of Texas. In addition, a vegetative buffer strip will be maintained between all waste application areas and waters of Texas.
- Dead animals will be properly buried in the designated burial area as identified on LMU Map. According to 30 TAC subchapter B: §§321.31-321.47 requirements.
- Pesticides and other chemicals will not be stored near the water wells or disposed of in the waste storage pond.
- Soils in the waste application areas will be sampled annually in accordance with TCEQ requirements.
- Thorough inspections of the RCSs, transport, treatment and disposal system will take place on regular intervals. If problems are encountered during these inspections, corrective action plans will be developed to address the specific problems encountered
- Any abandoned wells encountered will be reported, inspected and properly sealed to prevent possible point source contamination to the underlying aquifer.
- A 150-foot buffer zone will be maintained between any future water supply wells drilled and the waste storage facilities and other potential pollutants. The water wells will be properly cemented, cased and protected from inundation.
- If public water well is drilled on the dairy site, a 500 feet buffer will be maintained around the well and waste application areas.

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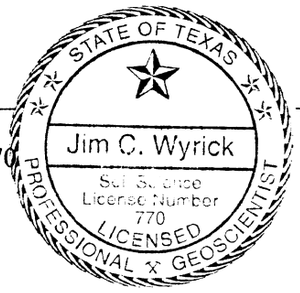
CERTIFICATION

The undersigned hereby certifies that natural recharge features and three potential artificial recharge features exist as defined in 30 TAC subchapter B: §§321.31-321.47 Part I on tracts operated or controlled by Bouma Dairy and utilized under this application. See Aquifer Protection Plan for the natural and artificial recharge features impact on the Aquifer.

Jim C. Wyrick 6/10/25

Jim C. Wyrick Date

Professional Geoscientist, License Number 770



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AQUIFER PROTECTION PLAN

The artificial recharge features are three private water wells. They are used exclusively for private water supply. The wells locations are shown on the Site and Runoff Map.

Well #1 is about 80 feet north of the commodity barn. Well #2 is about 75 feet west of the commodity barn and 140 feet north of the milking parlor. All runoff water from the commodity barns flows to the south away from the wells. The wastewater generated in the milking parlor flows south over a concrete lane and a pipeline into the RCS. Wastewater from the commodity or milking parlor could not enter the wells. The surrounding ground slopes away from the wells. Well #3 is about 110 feet north of the freestall barn and about 80 feet west of milking parlor. The wastewater generated in the milking parlor flows south over concrete and through a pipeline into the RCS. Wastewater generated in the freestall barns is flushed down a curbed concrete floor sloping to the south away from the well. Wastewater from the milking parlor or freestall cannot enter the wells. The surrounding ground slopes away from the well.

These BMPs are for use on all three wells. All wastewater is stored in the RCS. Wastewater application will not be applied near the wells. Cattle are not allowed to graze in the area around the wells. There are no other pollutant sources such as manure, sludge, wastewater, dust, fuel storage tanks, pesticide and lubricants stored near the wells. Dead animal burial area is not near the wells. The fuel storage tank is not located near the wells. Additional wellhead protective measures include, all wells have a sanitary seal, located on a concrete slab. The areas around the wells have a bermudagrass ground cover. Water wellhead backflow prevention devices have been added to the wells.

The wells and area around them will be inspected monthly to ensure contaminants are not running into the well. If for some reason a pollutant ever flows in the direction of the well, immediate action will be taken to divert the flow from the well. Any change in conditions of the wells will have corrective measures taken. The date Well#1 and Well#2 were drilled is unknown and well logs are not available. Well#3 was drilled on January 9, 2008 a copy of the well log is attached. The wells were completed in accordance with water well drilling rules at that time of drilling. These wellhead protective measures will prevent pollutants from entering the groundwater through the wells

The natural recharge features include surface water bodies, creeks, and tributaries. Structural and non-structural controls to be used to protect the natural recharge features are as follow:

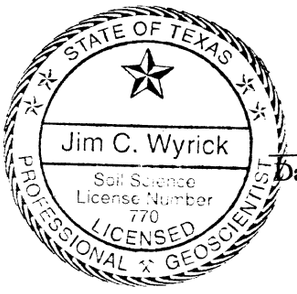
- Vegetative filter strips of Bermuda grass will filter, contain, and prevent the lateral movement of wastewater irrigation and manure.
- Waste will be applied only where the LMU cover vegetation is growing and has crop demand for nutrients.
- Waste will be applied at the nutrient requirements of the vegetative cover at the agronomic application rates.
- Wastewater will be applied at a rate less than the permeability of the soil to prevent ponding and runoff.
- Wastewater application will be at rate that ensures that wastewater will be used by the vegetative cover.
- Vegetative buffers of 150 feet for will be maintained around any newly drilled private water wells.
- 100 feet of vegetative cover buffer between waste and wastewater application areas and surface water and watercourses will be maintained.
- Records of climatic conditions during waste application such as: temperature, precipitation and cloud cover.

The following BMPs are to protect the groundwater for LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. These LMUs are on Kirvin gravelly fine sandy loam, 3 to 8 percent slopes, BeB - Bernaldo fine sandy loam. 1 to 3 percent slopes, Na - Nahatche soils, FrB - Freestone fine sandy loam, 1 to 3 percent slopes, and WoC - Wolfpen loamy fine sand, 1 to 5 percent slopes. Bernaldo, Nahatche and Wolfpen soils, which have a seasonal high-water table and have excessive permeability. The LMU locations are shown on the LMU Map.

1. Application of wastewater will be applied following the Nutrient Management Plan. This will ensure:
    - Intensive nutrient management practices to manage LMU limitations
    - All agricultural waste shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies.
    - Wastewater application rates will not exceed the soil infiltration rate so not to cause leaching and groundwater contamination.
    - Wastewater application rates will not exceed the available water holding capacity of the soil profile at the time of application, so not to cause leaching and groundwater contamination.
    - Wastewater will be applied at nutrients levels to meet the bermudagrass ground cover needs. This will prevent the movement of nutrients through the soil profile to groundwater caused by over irrigation
    - Annual soil sampling to determine soil available nutrient and amount of nutrients needed for crop production, according to30 TAC subchapter B: §§321.31-321.47.
2. Use of proper timing, formulation, and application methods for nutrients that maximize plant utilization of nutrients and minimize the loss to the ground water,
3. Wastewater will not be applied to saturated soils.
4. Irrigation will be limited on these soils areas when the potential for the seasonal water table to be near the soil surface. (November – May).
5. Timing of manure or waste water application should coincide as nearly as possible to the time when plants can use the nutrients -- that is, during the normal growing season
6. Continual inspection and maintenance of waste handling facilities and equipment will prevent unwarranted waste discharges into surface water and groundwater.
7. Records of crop yields will be kept to determine realistic crop yield expectations.
8. Application equipment should be calibrated and inspected for wear and damage periodically, and repaired when necessary.
9. Records of nutrient application rates will be maintained along with other management records for each field.

These BMPs will provide adequate protective measures for the natural recharge features.

Jim C. Wyrick
Professional Geoscientist, License Number 770



6/10/25
Date

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Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Monday, May 12, 2025 9:21 AM
To: Kayla Robichaux
Subject: Re: WQ0005477000 - Maiko Hessel Bouma
Attachments: NOD3 reply.pdf

Morning Kalya:

Attached is my rely to your comments on Bouma Dairy IP.

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BOUMA Dairy

1. Please revise the vicinity map, the topographic map, the NRCS soil map, the area land use map and the Recharge Feature Map to show the new location for LMU #7 that was submitted with the LMU map on 4/21/25.

   See revised Maps, the RFC Maps did show LMUs.

2. LMU #7 is listed on the LMU map and in the NMP as 113 acres, however the LMU Table on page 6 of the TIP lists it as 101 acres. Please revise.

   See attachment

3. Please submit the missing pages 14, 18 and 21 of the revised NMP dated 4/14/2025.

   See revised NMP

4. Please revise the LMU acreage on page 8 of the IP Application due to the change in LMU #7.

   See attachment

5. Please revise the LMU acreage for LMU #7 on the SPIF.

   See attachment

6. The SPIF lists a required capacity for SP. Please include this in the RCS tables on pg 4 & 5 of the TIP.

   The SP is not used for wastewater storage, the capacity was not determined. See corrected SPIF

7. Please revise the LMU table on pg 6 of the TIP so that the application rates are consistent with what is listed in the NMP. It appears that the values were given in acre-inches, not acre-feet.

   See revised TIP pg 6

8. The revised NMP dated 4/14/2025 lists the average weight of 1300 pounds, however the engineering calcs uses a weight of 1400 pounds. Please revise.

   See revised NMP

9. Tables are needed for the Nutrients Applied/Needed at the Maximum Effluent Rates and Nutrients Applied/Needed at the Maximum Solids Rates. Please include these tables in the NMP.

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See revised NMP

10. For the effluent and manure analyses, can you please provide additional information on how the conversions were made going from percent to lb/acre-in (effluent) and percent to lb/wet ton (manure). Please note that the values from the new analyses submitted (date processed 12/4/2024 by Texas A&M AgriLife Extension laboratory) still do not match up with the values in Table 1 of the NMP.

    See revised NMP

11. PI Index – With the new soil analyses submitted, the PI Index table must be updated to reflect the new Soil P test levels. Please revise this table based on the most recent soil analyses (received date 11/14/2024 by Texas A&M AgriLife Extension laboratory).

    See revised NMP

12. Please revise, sign & seal the Recharge Feature Certification to account for the change in location for LMU #7.

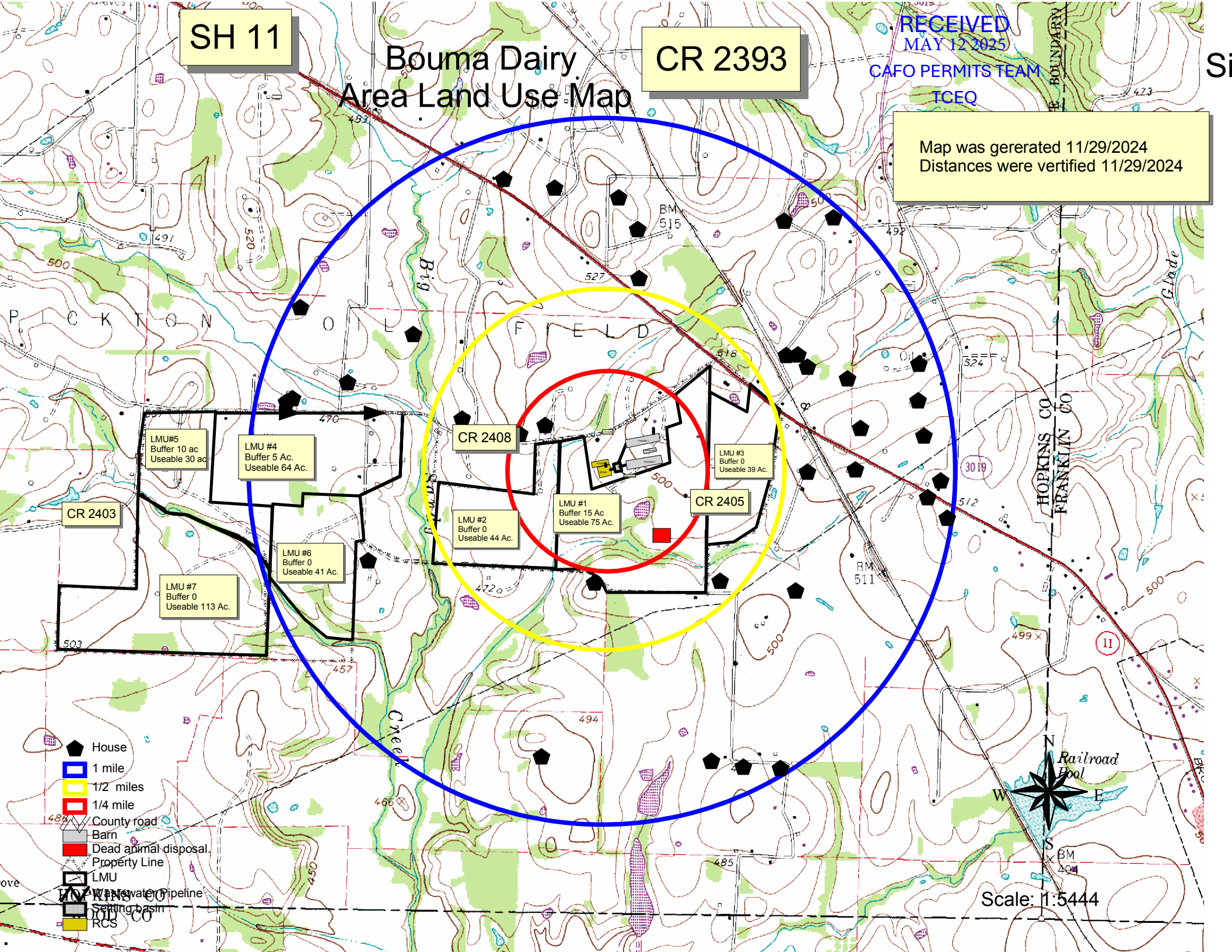
    RCF sign and sealed

13. Please clarify how the value for the recycled wastewater was obtained.

    72815 * 20% available for recycled wash 58252

14. Please clarify how the value of 90% vacuum efficiency was obtained and provide any available specs.

    See attached separation specifications


SH 11
Bouma Dairy
Area Land Use Map
CR 2393
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Map was gererated 11/29/2024
Distances were verified 11/29/2024
CR 2408
CR 2403
CR 2405
LMU#5
Buffer 10 ac
Useable 30 ac
LMU #4
Buffer 5 Ac.
Useable 64 Ac.
LMU #3
Buffer 0
Useable 39 Ac.
LMU #1
Buffer 15 Ac
Useable 75 Ac.
LMU #2
Buffer 0
Useable 44 Ac.
LMU #6
Buffer 0
Useable 41 Ac.
LMU #7
Buffer 0
Useable 113 Ac.
House
1 mile
1/2 miles
1/4 mile
County road
Barn
Dead animal disposal.
Property Line
LMU
Wastewater Pipeline
Setting basin
RCS
Scale: 1:5444

United States Department of Agriculture

NRCS

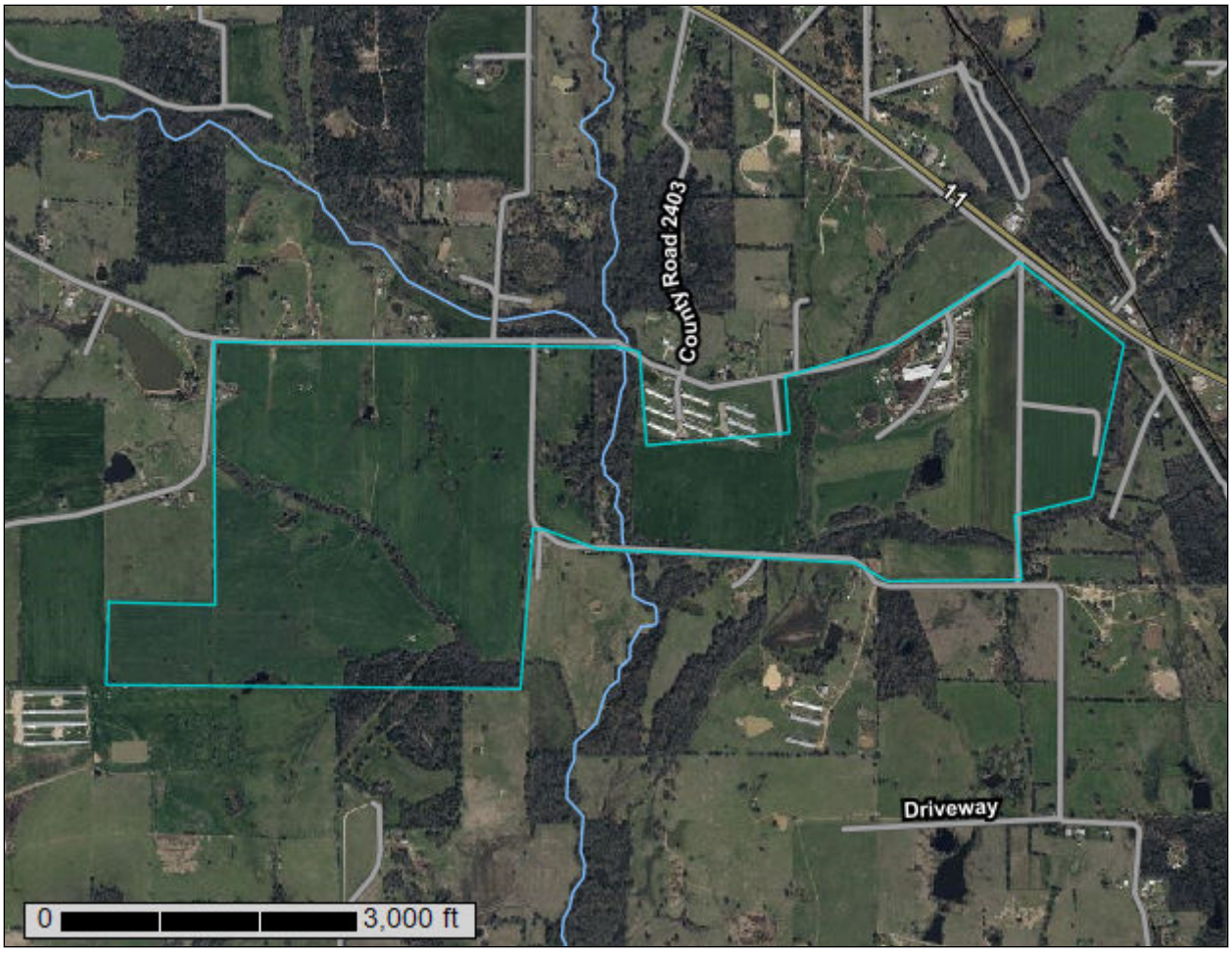
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Hopkins and Rains Counties, Texas

Bouma Dairy

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Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

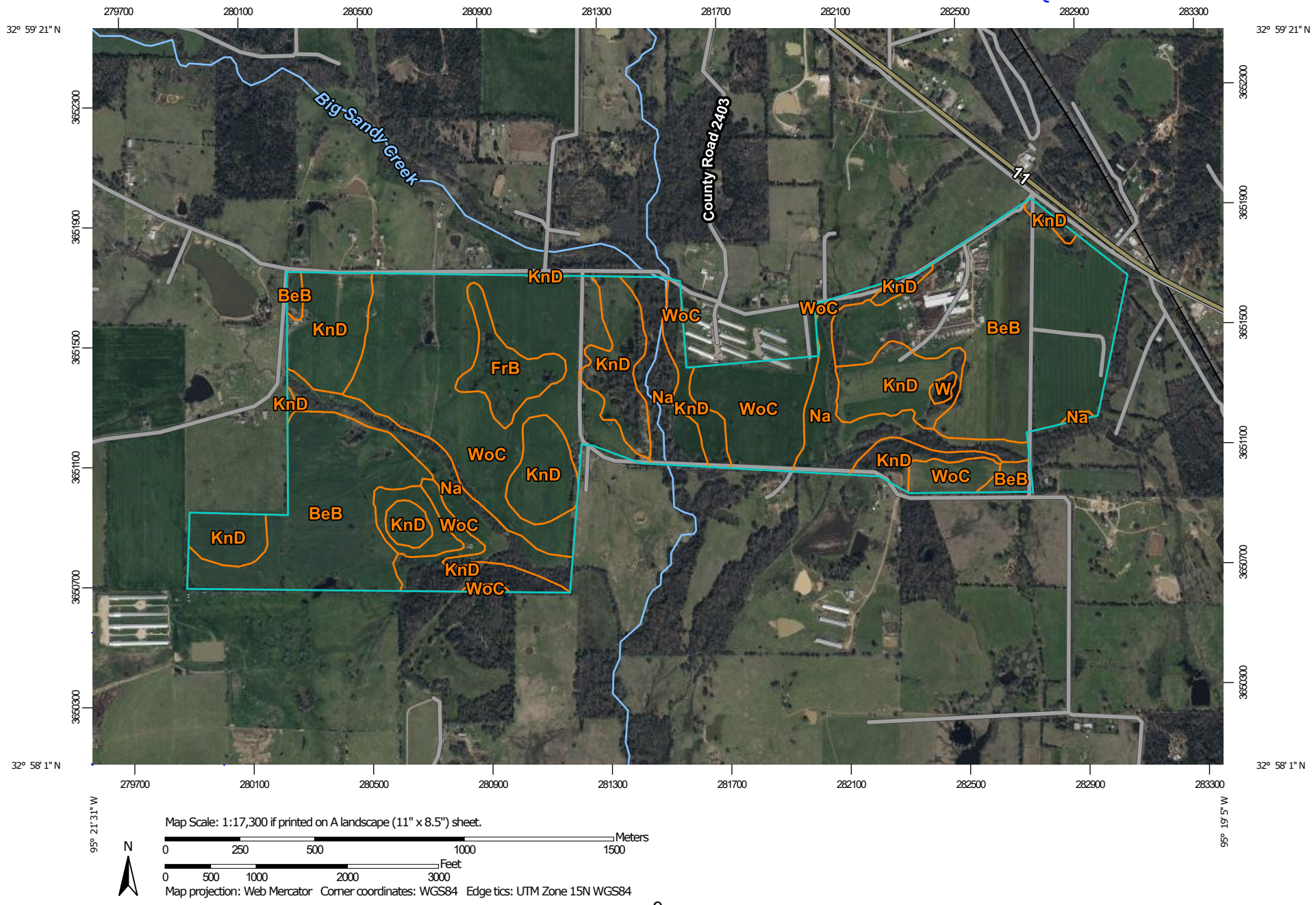
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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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Custom Soil Resource Report
Soil Map



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MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hopkins and Rains Counties, Texas
Survey Area Data: Version 20, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 19, 2023—Mar 5, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Bernaldo fine sandy loam, 1 to 3 percent slopes	176.6	32.4%
FrB	Freestone fine sandy loam, 1 to 3 percent slopes	16.1	3.0%
KnD	Kirvin gravelly fine sandy loam, 2 to 8 percent slopes	129.5	23.8%
Na	Nahatche soils, frequently flooded	70.5	12.9%
W	Water	1.5	0.3%
WoC	Wolfpen loamy fine sand, 2 to 5 percent slopes	150.7	27.7%
Totals for Area of Interest		**544.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

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was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

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Hopkins and Rains Counties, Texas

BeB—Bernaldo fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tf44
Elevation: 200 to 720 feet
Mean annual precipitation: 42 to 51 inches
Mean annual air temperature: 54 to 75 degrees F
Frost-free period: 240 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Bernaldo and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bernaldo

Setting

Landform: Stream terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Typical profile

A - 0 to 4 inches: fine sandy loam
E - 4 to 12 inches: fine sandy loam
Bt - 12 to 47 inches: sandy clay loam
Bt/E - 47 to 80 inches: sandy clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 42 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F133BY013TX - Terrace
Hydric soil rating: No

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Minor Components

Freestone

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Wolfpen

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

FrB—Freestone fine sandy loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wg9c
Elevation: 140 to 790 feet
Mean annual precipitation: 40 to 48 inches
Mean annual air temperature: 62 to 66 degrees F
Frost-free period: 218 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Freestone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freestone

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy alluvium derived from shale and siltstone

Typical profile

Ap - 0 to 4 inches: fine sandy loam
E - 4 to 11 inches: fine sandy loam
Bt - 11 to 20 inches: sandy clay loam

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B/Et1 - 20 to 28 inches: clay loam
B/Et2 - 28 to 44 inches: clay
B't - 44 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: R087BY003TX - Sandy Loam
Hydric soil rating: No

Minor Components

Raino

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Mounds
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

Woodtell

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: R087BY002TX - Claypan Savannah
Hydric soil rating: No

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KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tlk3
Elevation: 230 to 630 feet
Mean annual precipitation: 42 to 49 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 195 to 242 days
Farmland classification: Not prime farmland

Map Unit Composition

Kirvin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kirvin

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits

Typical profile

A - 0 to 4 inches: gravelly fine sandy loam
E - 4 to 12 inches: gravelly fine sandy loam
Bt - 12 to 31 inches: clay
BCt - 31 to 43 inches: clay loam
C - 43 to 80 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

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Ecological site: F133BY003TX - Loamy Over Clayey Upland
Hydric soil rating: No

Minor Components

Briley

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

Bowie

Percent of map unit: 5 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

Na—Nahatche soils, frequently flooded

Map Unit Setting

National map unit symbol: dklg
Elevation: 100 to 400 feet
Mean annual precipitation: 40 to 52 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 235 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Nahatche and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nahatche

Setting

Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy alluvium of holocene age

Typical profile

H1 - 0 to 7 inches: clay loam
H2 - 7 to 65 inches: loam

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H3 - 65 to 80 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: R087BY007TX - Loamy Bottomland
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 5 percent
Hydric soil rating: No

W—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

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WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tcnz
Elevation: 210 to 570 feet
Mean annual precipitation: 41 to 51 inches
Mean annual air temperature: 63 to 66 degrees F
Frost-free period: 204 to 236 days
Farmland classification: Not prime farmland

Map Unit Composition

Wolfpen and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wolfpen

Setting

Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 27 inches: loamy fine sand
Bt - 27 to 55 inches: sandy clay loam
Bt/E - 55 to 70 inches: sandy clay loam
B't - 70 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.1 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F133BY006TX - Northern Sandy Loam Upland
Hydric soil rating: No

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Minor Components

Oakwood

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: F133BY005TX - Loamy Upland
Hydric soil rating: No

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Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

AOI Inventory

This folder contains a collection of tabular reports that present a variety of soil information. Included are various map unit description reports, special soil interpretation reports, and data summary reports.

Map Unit Description (Brief)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the selected area. The component descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit. A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the associated soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas (components) for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The "Map Unit Description (Brief)" report gives a brief, general description of the soil components that occur in a map unit. Descriptions of nonsoil (miscellaneous areas) and minor map unit components may or may not be included. This description is written by the local soil scientists responsible for the respective soil survey area

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data. A more detailed description can be generated by the "Map Unit Description" report.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief)

Hopkins and Rains Counties, Texas

Map Unit: FrB—Freestone fine sandy loam, 1 to 3 percent slopes

Description Category: PHG

8C - LOAMY UPLAND - Moderately deep to very deep uplands with loamy surfaces and friable loamy subsoils; slopes 0 to 8 percent; medium natural fertility; medium to high water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: WSG

3w8 - Seasonally wet periods may cause moderate equipment limitations, seedling mortality, and plant competition. Important commercial tree species include loblolly pine, shortleaf pine, water oak, and sweetgum. These soils are suited for pine and hardwoods, and the site index for loblolly pine, water oak, and sweetgum is 80. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 230 board feet (Doyle rule) or 120 for sweetgum per acre per year. Native species important to wildlife include water oak, green ash, yaupon, and Alabama supplejack. High value grasses and forbs used by livestock include pinehill bluestemr, beaked panicum, longleaf uniola, wildrye, switchcane, and switchgrass. Stocking rate depend on canopy density and range from 6-50 acres per animal unit.

Map Unit: KnD—Kirvin gravelly fine sandy loam, 2 to 8 percent slopes

Description Category: PHG

8C - LOAMY UPLAND - Moderately deep to very deep uplands with loamy surfaces and friable loamy subsoils; slopes 0 to 8 percent; medium natural fertility; medium to high water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: WSG

4f2 - Rock fragments cause seedling mortality to increase during dry periods. Erosion hazards increase with slope. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 70. The yield from an unmanaged stand of loblolly

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pine over a 50-year period is approximately 130 board feet (Doyle rule) per acre per year. Native species important to wildlife include red oak, post oak, American beautyberry, and tickclover. High value grasses and forbs used by livestock include pinehill bluestem, big bluestem, longleaf uniola, indiangrass, and sedge. Stocking rates depend on canopy density and range from 6-40 acres per animal unit.

Map Unit: Na—Nahatche soils, frequently flooded

Description Category: PHG

2C - WET LOAMY BOTTOMLAND - Deep and very deep, wet, somewhat poorly to very poorly drained, loamy bottomlands with seasonal high water tables; may overflow; medium natural fertility; high to very high water holding capacity but poor plant-soil-moisture relationship; medium production potential.

Description Category: WSG

1w9 - Excessive wetness will cause severe equipment limitations, plant competition, and seedling mortality. Important commercial tree species include loblolly pine, water oak, willow oak, sweetgum, and green ash. These soils are suited for pine and hardwoods, and the site index for loblolly pine, sweetgum, and water oak is 100. The yield from an unmanaged stand over a 50-year period is approximately 430 board feet (Doyle rule) for loblolly pine, or 310 for sweetgum per acre per year. Native species important to wildlife include water oak, willow oak, green ash, yaupon, and blackgum. High value grasses and forbs used by livestock include pinehill bluestem, longleaf uniola, beaked panicum, and sedges. Stocking rates depend on canopy density and range from 6-60 acres per animal unit.

Map Unit: WoC—Wolfpen loamy fine sand, 2 to 5 percent slopes

Description Category: PHG

9A - SANDY UPLAND - Deep and very deep, sandy uplands with clayey or loamy subsoils within 40 inches; low natural fertility; low to medium water holding capacity with good plant-soil-moisture relationship; medium to high production potential.

Description Category: WSG

3s2 - Sandy texture may cause moderate equipment limitations and seedling mortality. Important commercial tree species include loblolly pine, shortleaf pine, and longleaf pine. These soils are suited for pines, and the site index for loblolly pine is 80. The yield from an unmanaged stand of loblolly pine over a 50-year period is approximately 230 board feet (Doyle rule) per acre per year. Native species important to wildlife include post oak, dogwood, and yaupon. High value grasses and forbs used by livestock include pinehill bluestem, little bluestem, longleaf uniola, and indiangrass. Stocking rates depend on canopy density and range from 8-40 acres per animal unit.

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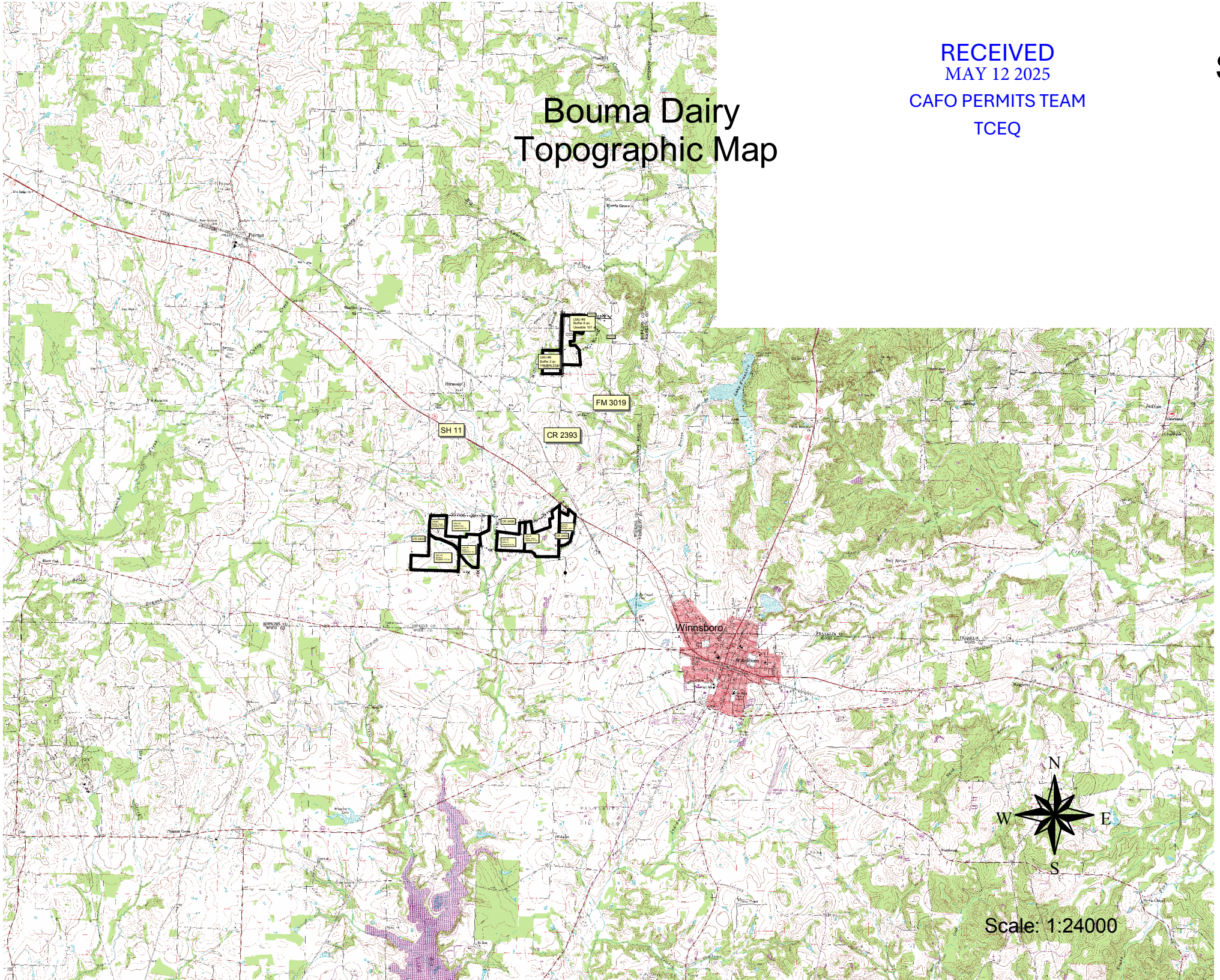
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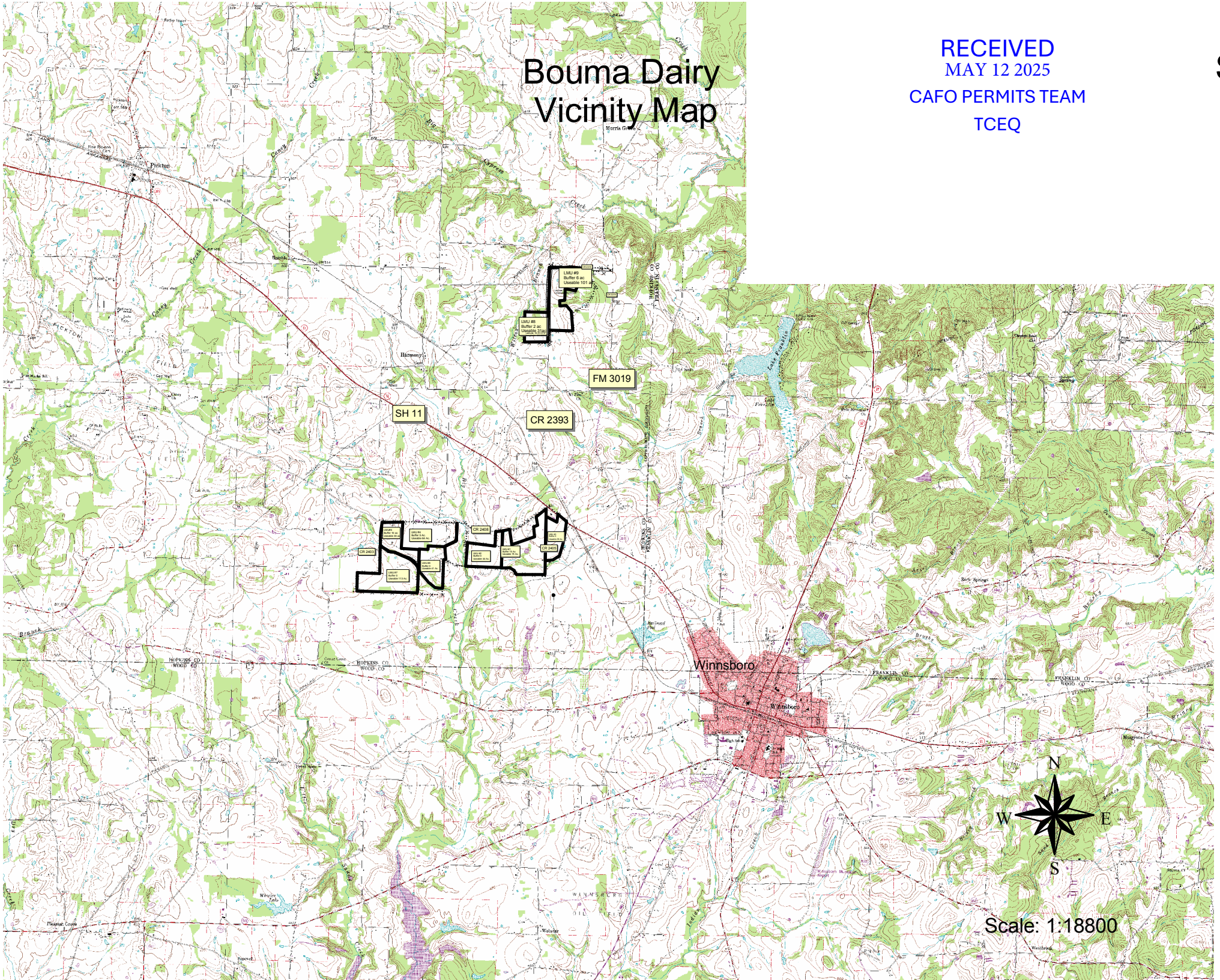
Bouma Dairy
Topographic Map



Bouma Dairy
Vicinity Map

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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)
LMU#1	75	Coastal graze 1 AU/1 ac, SG mod graze	2.5 Ac-ft/Ac/Year
LMU#2	44	Coastal graze 1 AU/1 ac, SG mod graze	3.9 Ac-ft/Ac/Year
LMU#3	39	Coastal Hay 4 cut, RG mod Graze	5.2 Ac-ft/Ac/Year
LMU#4	64	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#5	30	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#6	41	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#7	113	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#8	31	Common graze 1 AU/1 ac, SG mod graze	110 Tons/Ac/Year
LMU #9	101	Common graze 1 AU/1 ac, SG mod graze	110 Tons/Ac/Year

1) Wastewater production, ac-in/year: 43.17
2) Estimated Wastewater application, ac-in/year: 43.17
3) Manure production, tons/year: 3752
4) Estimated manure application, tons/year: 0 as dry manure. 3752 in draghose irrigation
5) Estimated manure transferred to other persons, tons/year: 0

Waste Utilization and Nutrient Management Plan

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Bouma Dairy
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

TCEQ Permit Number:
WQ0005477000

Owner
Maiko Bouma
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

Type of Waste Plan:
Other AFO-CAFO Waste Plan
located in Hopkins County

Prepared By:



(Signature)
Jim C. Wyrick
Nutrient Management Specialist
Certificate Number = TX20049
Expiration Date = December 31, 2025
East Texas Environmental Services
317 Highland Dr.
Sulphur Springs, TX 75482
903-243-0400

This plan is based on:
590 -633 Plan V 4.0_5

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Waste Utilization and Nutrient Management Plan

EXECUTIVE SUMMARY: Permit #: WQ0005477000

This Nutrient Management Plan has fields that meet NMP and/or NUP requirements.

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LOCATION AND PURPOSE OF THE PLAN

This animal operation is located in **Hopkins** 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 **2025** 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 Storage Pond (Not Agitated)** . Approximately **999** head will be confined with the average weight of **1400** pounds. The animals will be confined **24** hours per day for **365** days per year.

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.

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SOLIDS APPLICATION: (cont) Permit #: WQ0005477000

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.

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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.

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EFFLUENT APPLICATION: (cont) Permit #: WQ0005477000

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.

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MORTALITY MANAGEMENT: (cont) Permit #: WQ0005477000

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.

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EFFLUENT AND SOLIDS STORAGE & TESTING: Permit #: WQ0005477000

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.

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Waste Utilization and Nutrient Management Plan

RECORD KEEPING: Permit #: WQ0005477000

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

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OPERATION AND MAINTENANCE: Permit #: WQ0005477000

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:	**Jim C. Wyrick**	Date:	**5/8/2025**
Plan Approved by:	Jim C Wyrick	Date:	5/8/25
Producer Signature:	*	Date:	

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.

* will be reviewed with Producer after approval by TCEQ

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Waste Utilization and Nutrient Management Plan

Table 1 - Estimated Effluent and Solids Quantities Produced Permit #: WQ0005477000

Avg. Number of Animals	Type of Waste
999	**Dairy Storage Pond (Not Agitated)**
	Dairy 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* **255**

Estimated Tons Solids to be Land Applied Annually (on or off site)* **10,810.8**

*From engineering design.

Estimated Nutrient Availabilty Effluent

	pounds/yr	Pounds / 1000 gal	Pounds / Acre Inch	
N	34,030	4.91	133.3	**
P2O5	15,639	2.26	61.2	
K2O	59,031	8.51	231.2	

** Effluent Values Based on Analysis dated: December 4, 2024

Estimated Nutrient Availabilty Solids

	pounds / yr	pounds / ton	
N	46,080	4.3	**
P2O5	23,816	2.2	
K2O	36,960	3.4	

** Solids Values Based on Analysis dated: December 4, 2024

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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	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	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	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 or soil test P [1/] => 500 ppm in nutrient impaired TMDL areas.[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/ TMDL watersheds are designated by Texas Commission on Environmental Quality (TCEQ).

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Waste Utilization and Nutrient Management Plan

Table 3 - Crop Removal Rates (For Information Only) Permit #: WQ0005477000

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
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
3	39.0	Coastal Hay 4 cut, RG mod Graze M	NMP	Default	350	105	311
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
7	113.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233
8	31.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233
9	101.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233

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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 #: WQ0005477000

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)
10,811	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8	31.0	Common graze 1 AU/1 ac, SG mod graze H	113	217	A	98.5	3055
	9	101.0	Common graze 1 AU/1 ac, SG mod graze H	90	217	A	98.5	9952
Total Solids Application Acres								
132								
Max. Solids Application Allowable on-site (tons)								
13006.8								
Adequate								
Solids to be used off-site (tons)								
0.0								

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End of Table 4

Waste Utilization and Nutrient Management Plan

Table 5 - Nutrients Applied/Needs at Maximum Solids Rates Permit #: WQ0005477000

	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
1							
2							
3							
4							
5							
6							
7							
8	420	217	337	0	0	0	0
9	420	217	337	0	0	0	0

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Waste Utilization and Nutrient Management Plan

Table 6 - Planned Solids Application Rates Permit #: WQ0005477000

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)
1									
2									
3									
4									
5									
6									
7									
8		31.0	Common graze 1 AU/1 ac, SG mod graze H	113	A	98.5	84	82.8	2565.9
9		101.0	Common graze 1 AU/1 ac, SG mod graze H	90	A	98.5	84	82.8	8359.8
Acres		132.0							10925.7
10811			Tons of wet solids produced Annually					Will the planned per acre application rates use all of the Solids?	YES
0			Tons to be used off-site at Max. rates					Tons to be used off-site at planned rates	0

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Table 7 - Nutrients Applied/Needed at Planned Solids Rates Permit #: WQ0005477000

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
1							
2							
3							
4							
5							
6							
7							
8	353	182	283	45	0	0	0
9	353	182	283	25	0	0	0

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Table 8 - Maximum Effluent Application Per Field Permit #: WQ0005477000

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)
255	1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	216	136	A	2.2	165
Source:	2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	117	184	A	3	132
	3	39.0		Coastal Hay 4 cut, RG mod Graze M	141	248	A	4.1	160
Dairy Storage Pond (Not Agitated)	4	64.0		Common graze 1 AU/1 ac, SG mod graze M	112	193	A	3.2	205
	5	30.0		Common graze 1 AU/1 ac, SG mod graze M	77	193	A	3.2	96
	6	41.0		Common graze 1 AU/1 ac, SG mod graze M	91	193	A	3.2	131
	7	113.0		Common graze 1 AU/1 ac, SG mod graze H	145	193	A	3.2	362
	8								
	9								

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Total Effluent Application Acres

406

Maximum Effluent Application Allowable On-Site (ac in)

1251

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 #: WQ0005477000

	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
1	293	135	509	85	0	0	0
2	400	184	694	0	0	0	0
3	546	251	948	0	0	0	0
4	426	196	740	0	0	0	0
5	426	196	740	0	0	0	0
6	426	196	740	0	0	0	0
7	426	196	740	0	0	0	0
8							
9							

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Table 10 - Planned Effluent Application Rates Permit #: WQ0005477000

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)
1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	216	A	2.2	**21.0**	0.5	38
2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	117	A	3	**21.0**	0.6	26
3	39.0		Coastal Hay 4 cut, RG mod Graze M	141	A	4.1	**21.0**	0.9	35
4	64.0		Common graze 1 AU/1 ac, SG mod graze M	112	A	3.2	**21.0**	0.7	45
5	30.0		Common graze 1 AU/1 ac, SG mod graze M	77	A	3.2	**21.0**	0.7	21
6	41.0		Common graze 1 AU/1 ac, SG mod graze M	91	A	3.2	**20.0**	0.6	25
7	113.0		Common graze 1 AU/1 ac, SG mod graze H	145	A	3.2	**20.0**	0.6	68
8									
9									
Acres	**406.0**					**Will the planned application rates use all of the Effluent?**			**257**
									YES

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Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #: WQ0005477000

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
1	62	28	108	320	0	95	0
2	84	39	146	295	0	55	0
3	113	52	197	375	0	165	0
4	88	41	153	145	0	5	0
5	88	41	153	310	0	35	0
6	84	39	146	310	0	35	0
7	84	39	146	310	0	30	0
8							
9							

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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 #: WQ0005477000

LMU / Field #	AWC (inches)	Restrictive Texture
1	3.52	Sandy Clay loam
2	1.71	Loamy Fine Sand
3	3.52	Sandy Clay loam
4	3.52	Sandy Clay loam
5	1.71	Loamy Fine Sand
6	1.71	Loamy Fine Sand
7	1.8	Loamy Fine Sand
8		
9		

LMU / Field #	AWC (inches)	Restrictive Texture

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Table 13 - Non Application Areas by Field Permit #: WQ0005477000

FS = 393-Filter Strip; **FB** = 386-Field Border, **RFB** = 391-Riparian Forest Buffer; **OLEA** = Other Land Excluded Area

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
1	15.0	0.0	0.0		15.0
2	0.0	0.0	0.0		
3	0.0	0.0	0.0		
4	5.0	0.0	0.0		5.0
5	10.0	0.0	0.0		10.0
6	0.0	0.0	0.0		
7	0.0	0.0	0.0		
8	2.0	0.0	0.0		2.0
9	6.0	0.0	0.0		6.0

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LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
Totals	38.0	0.0	0.0	0.0	38.0

See Application Map for location of buffers

Total 590-633 application acres: 538.0

Total 590-633 Field Acres: 576.0

Waste Utilization and Nutrient Management Data Entries

General Data

Date :	4/14/2025
Farmer Name :	Bouma Dairy
County in which the Land is located :	Hopkins
Type of Waste Plan :	Other AFO-CAFO Waste Plan
Is this plan in a TMDL watershed for nutrients? Yes or No :	No
Is any field PERMITTED by TCEQ? Yes or No :	Yes
Permit # :	WQ0005477000

All other entries on General Page appear on the Cover Page

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Animal Information

Plan Year :	2025
Are you receiving waste from another producer?	No
Number of animals :	999
Approximate Weight :	1400
Days per year in confinement :	365
Hours per day confined :	24
***ACRE FEET* of effluent to be irrigated* :**	21.28
Estimated annual gallons of effluent to be irrigated/applied annually :	6934045.44
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)* :	2000
Is this the first Year of the AFO-CAFO Operation? :	No

Analysis Information

Effluent Information

Date of Analysis:	12/4/2024
Manure Source:	Dairy Storage Pond (Not Agitated)
Nitrogen % From Analysis:	0.0735
Phosphorus % From Analysis:	0.0118
Potassium % From Analysis:	0.085
Moisture % From Analysis:	97

Manure / Solids Information

Date of Analysis:	12/4/2024
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	1.44
Phosphorus % From Analysis:	0.26
Potassium % From Analysis:	0.77
Moisture % From Analysis:	81.5
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: 590 -633 Plan V 4.0
Printed on: 5/9/25 9:12 AM

Field and Buffer Entries

Permit #: WQ0005477000

Printed on: 5/9/25 9:12 AM

Plan is based on: 590 -633 Plan V 4.0_5

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	
1	90	15				15.0	75.0	
2	44	0				0.0	44.0	
3	39	0				0.0	39.0	
4	69	5				5.0	64.0	
5	40	10				10.0	30.0	
6	41	0				0.0	41.0	
7	113	0				0.0	113.0	
8	33	2				2.0	31.0	
9	107	6				6.0	101.0	

Soil Test, Crop Information and Plant Analysis Data Entries

Printed on: 5/9/25 9:12 AM Plan is based on: 590 -633 Plan V 4.0_5 Permit #: WQ0005477000

Soil Test Analysis				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)	Plant Analysis & Yield (optional) Use Only When Crop Removal is Required			
N (ppm)	P (ppm)	K (ppm)	Lime (enter amt or leave blank)							% N	% P	% K	Yield Air Dry Production (lbs/ac/yr)
10	216	40			1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
10	117	40			2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
26	141	70			3	39.0	Coastal Hay 4 cut, RG mod Graze M	E	N				
94	112	55			4	64.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
12	77	17			5	30.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
12	91	26			6	41.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
13	145	32			7	113.0	Common graze 1 AU/1 ac, SG mod graze H	E	N				
11	113	25			8	31.0	Common graze 1 AU/1 ac, SG mod graze H	S	N				
20	90	132			9	101.0	Common graze 1 AU/1 ac, SG mod graze H	S	N				

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Waste Utilization and Nutrient Management Plan

Table 5 - Nutrients Applied/Needs at Maximum Solids Rates Permit #: WQ0005477000

	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
1							
2							
3							
4							
5							
6							
7							
8	420	217	337	0	0	0	0
9	420	217	337	0	0	0	0

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Solids Application Rate Entries

Solids - Set the Planned Application Rates

Permit #: WQ

10811		"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
1							
2							
3							
4							
5							
6							
7							
8	31.0	Common graze 1 AU/1 ac, SG mod graze H	113	175	Annual	98.5	84.0
9	101.0	Common graze 1 AU/1 ac, SG mod graze H	90	175	Annual	98.5	84.0

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Effluent Application Rate Entries

Effluent - Set the Planned Application Rates

Permit #: WQ0005477000

6934045	Gallons of Effluent to be used annually				Will the planned rates use all of the effluent?			Yes
255	Acre inches of Effluent to be used annually							

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)
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	216	175	Annual	2.2	21.0	0.5	38
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	117	175	Annual	3	21.0	0.6	26
3	39.0	Coastal Hay 4 cut, RG mod Graze M	141	225	Annual	4.1	21.0	0.9	35
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	112	175	Annual	3.2	21.0	0.7	45
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	77	175	Annual	3.2	21.0	0.7	21
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	91	175	Annual	3.2	20.0	0.6	25
7	113.0	Common graze 1 AU/1 ac, SG mod graze H	145	175	Annual	3.2	20.0	0.6	68
8									
9									

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Total Effluent This Page: 257

Printed on: 5/9/25 9:12 AM

Plan is based on: 590 -633 Plan V 4.0_5

Available Water Capacity Entries

Printed on: 5/9/25 9:12 AM Plan is based on: 590 -633 Plan V 4.0_5 Permit #: WQ0005477000

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																
1	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
2	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
3	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
4	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
5	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
6	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
7	Loamy Fine Sand	0	6	0\.06	0.09	6	24	0.05	0.09	24				0				1.80
		0												0				

PI Index by Field

Printed on: 5/8/25 11:45 AM

This plan is based on: 590 -633 Plan V 4.0_2

Permit #: WQ0005477000

Client Name: Bouma Dairy

Planner: Jim C. Wyrick

Date: 5/8/2025

Location: Hopkins

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	2.0%	61	8	0	0.75	0	4	0	1	0	13.75	Medium	11/13/24
2	Coastal graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	2.5	1	0	17	Medium	11/13/24
3	Coastal Hay 4 cut, RG mod Graze	2.0%	58	8	0	1.5	0	4	0	0	0	13.5	Medium	11/13/24
4	Common graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	1.25	1	0	15.75	Medium	11/13/24
5	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	4	0	1.5	0	4	5	0	0	14.5	Medium	11/13/24
6	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	1.5	0	4	5	0	0	18.5	Medium	11/13/24
7	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/13/24
8	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/13/24
9	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/13/24

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City, State and Zip Code: WINNSBORO TX 75494

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: 754494

D. County or counties if more than 1: Hopkins

E. Latitude: 32.980666 Longitude: -95.328666

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

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G. Existing Maximum Number of Animals: 1200

Proposed Maximum Number of Animals: 999

H. What is the total LMU acreage? 538

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

Aeriation of hayland, no-till of winter pasture, plowing and seeding

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

13. List construction dates of any buildings or structures on the property: unknown
14. Provide a brief history of the property, and name of the architect/builder, if known: unknown

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

15. List each Retention Control Structure and its required capacity (Acre Feet). RCS1-5.56 AND RCS#2-6.92
16. Provide the location and number of acres where wastewater and manure are land applied: LMU#1-75, LMU#2-44, LMU#3-39, LMU#4-64, LMU#5-30, LMU#6-41, LMU#7-113, LMU#8-31 AND LMU#9-101
17. List the maximum number of head to be permitted. 999

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C. Wastewater:

1) Use or Disposal Method:

☒ Land Application to LMUs

☐ Total Evaporation

☐ Third Party Fields

☐ Other; specify: Click here to enter text.

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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)
LMU#1	75	Coastal graze 1 AU/1 ac, SG mod graze	.18 Ac-ft/Ac/Year
LMU#2	44	Coastal graze 1 AU/1 ac, SG mod graze	.25 Ac-ft/Ac/Year
LMU#3	39	Coastal Hay 4 cut, RG mod Graze	.34 Ac-ft/Ac/Year
LMU#4	64	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#5	30	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#6	41	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#7	113	Common graze 1 AU/1 ac, SG mod graze	.27 Ac-ft/Ac/Year
LMU#8	31	Common graze 1 AU/1 ac, SG mod graze	98.5 Tons/Ac/Year
LMU #9	101	Common graze 1 AU/1 ac, SG mod graze	98.5 Tons/Ac/Year

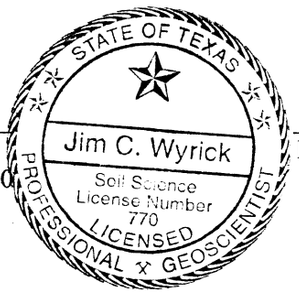
1) Wastewater production, ac-in/year: 43.17
2) Estimated Wastewater application, ac-in/year: 43.17
3) Manure production, tons/year: 3752
4) Estimated manure application, tons/year: 0 as dry manure. 3752 in draghose irrigation
5) Estimated manure transferred to other persons, tons/year: 0

The following BMPs are to protect the groundwater for LMU#1, LMU#2, LMU#3, LMU#4, LMU#5, LMU#6, LMU#7, LMU#8 and LMU#9. These LMUs are on Bernaldo, Nahatche and Wolfpen soils, which have a seasonal high-water table and have excessive permeability. The LMU locations are shown on the LMU Map.

1. Application of wastewater will be applied following the Nutrient Management Plan. This will ensure:
    - Intensive nutrient management practices to manage LMU limitations
    - All agricultural waste shall be utilized in a manner that minimizes the opportunity for contamination of surface and ground water supplies.
    - Wastewater application rates will not exceed the soil infiltration rate so not to cause leaching and groundwater contamination.
    - Wastewater application rates will not exceed the available water holding capacity of the soil profile at the time of application, so not to cause leaching and groundwater contamination.
    - Wastewater will be applied at nutrients levels to meet the bermudagrass ground cover needs. This will prevent the movement of nutrients through the soil profile to groundwater caused by over irrigation
    - Annual soil sampling to determine soil available nutrient and amount of nutrients needed for crop production, according to30 TAC subchapter B: §§321.31-321.47.
2. Use of proper timing, formulation, and application methods for nutrients that maximize plant utilization of nutrients and minimize the loss to the ground water,
3. Wastewater will not be applied to saturated soils.
4. Irrigation will be limited on these soils areas when the potential for the seasonal water table to be near the soil surface. (November – May).
5. Timing of manure or waste water application should coincide as nearly as possible to the time when plants can use the nutrients -- that is, during the normal growing season
6. Continual inspection and maintenance of waste handling facilities and equipment will prevent unwarranted waste discharges into surface water and groundwater.
7. Records of crop yields will be kept to determine realistic crop yield expectations.
8. Application equipment should be calibrated and inspected for wear and damage periodically, and repaired when necessary.
9. Records of nutrient application rates will be maintained along with other management records for each field.

These BMPs will provide adequate protective measures for the natural recharge features.

Jim C. Wyrick



5/8/25

Jim C. Wyrick Date
Professional Geoscientist, License Number 770

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NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
WASTE SEPARATION FACILITY

(No.)

CODE 632

DEFINITION

A filtration or screening device, settling tank, settling basin, or settling channel used to partition solids and/or nutrients from a waste stream.

PURPOSE

To partition solids, liquids and/or their associated nutrients to:

- improve or protect air quality
- improve or protect water quality
- improve manure handling methods or serve as a pre- or post-treatment for other processes

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where the waste separation facility will:

- remove solids from a liquid waste stream as a primary treatment process and facilitate further treatment processes.
- reduce solids accumulation in liquid waste storage facilities.
- reduce solids content in waste stream so liquids can be recycled for other uses.
- reduce solids content in a waste stream, to better facilitate land application of liquids using irrigation techniques.
- assist with partitioning nutrients in the waste stream to improve handling and application of nutrient management.

CRITERIA

General Criteria Applicable to All Purposes

Laws and Regulations. Plan, design and construct waste treatment facilities to meet all Federal, state, local and tribal regulations.

Location. Locate waste separation facilities so that the waste stream can be safely routed to and from the facility.

Waste Separator Selection. Capture efficiency varies widely for each type of separator depending on the type and consistency of the waste to be treated. Design the waste separation facility based on site specific data for the waste streams and management objectives. A combination of separation unit processes may be necessary to achieve the desired or required results.

Separation Efficiency. Table 1 provides estimated capture efficiencies for different types of separator systems. Base the volume of solids separated on estimates of daily waste water (if applicable) and the total solids capture efficiency for the type of separation device selected. Where manufacturer information or local data concerning total solids capture efficiencies are not available for the type of waste separation device selected, the efficiencies in Table 1 can be used to estimate the amount of separated material generated.

Chemical Amendments. To enhance the separation process, chemical amendments, such as metal salts and polymers, can be used to flocculate manure solids to enhance the separation process. Addition of chemicals to the liquid waste stream for improving total solids capture efficiencies must be done according to the criteria in Conservation Practice Standard 591, Amendments for Treatment of Agricultural Waste.

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Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service State Office or visit the Field Office Technical Guide.

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Table 1

Solid/Liquid Separators	Total Solids Capture Efficiency
Static Inclined Screen	10-20%
Inclined Screen with Drag Chain	10-30%
Vibratory Screen	15-30%
Rotating Screen	20-40%
Centrifuge	20-45%
Screw or Roller Press	30-50%
Settling Basin	40-65%
Weeping Wall	50-85%
Dry Scrape	50-90%
Geotextile Container	50-98%
Membranes	60-99%
Sand Settling Lanes	50-70%
Mechanical Sand Separator	50-95%

Storage of Separated Solids. Provide adequate storage areas for separated solids.

Design storage facilities for separated solids in accordance with requirements of applicable Conservation Practice Standards.

Discharges. Capture any seepage or discharge from solid storage, waste separation facility, or associated appurtenances in a waste storage or treatment structure unless it meets local, state and federal regulations regarding discharge to surface and ground water.

Conveyance System. Design waste transfer components for separated solids in accordance with requirements of applicable Conservation Practice Standards.

Outlets. Provide adequate outlet capacity to safely convey the waste to a storage or utilization location.

Use emergency overflow appurtenances such as notched weirs, or pipe bypasses to control flows exceeding design capacity. For separation facilities exposed to precipitation, design emergency overflow appurtenances to pass the peak runoff from the drainage area of the facility for a 25 year-24 hour storm frequency plus the normal waste stream discharge.

Additional Criteria for Mechanical Separators

Performance. The performance of mechanical separators is generally reported for a given throughput or flow rate. If different flow rates are required, obtain separator efficiencies from the manufacturer.

Flow Rate and Velocity. Follow manufacturer's recommendations for the design flow rate and liquid waste stream velocity for filtration and screening devices.

Structural Design. Design structural supports for filtration and screening devices in accordance with the requirements of Conservation Practice Standard 313, Waste Storage Facility.

For proper functioning of mechanical separation equipment, environmental conditions may require roofing and or building enclosure. Design roofs and enclosures in accordance with the requirements of applicable Conservation Practices.

General Criteria Applicable to Settling Basins

Velocity. Do not exceed 1.5 feet per second liquid waste stream flow velocity through settling basins.

Depth. Provide sufficient depth for solids and liquids storage and for the depth of influent flow as needed. Include a minimum of one foot freeboard for earthen settling basins.

Base the minimum liquid depth of settling basins on a minimum hydraulic retention time of 30 minutes.

Bottom Width. Establish the minimum bottom width for settling basins on the removal equipment used, but not less than 4 feet.

Construct settling basins of concrete and/or lined with a geosynthetic, compacted soil, or geomembrane liner. Design a settling basin not utilizing a concrete slab for the basin floor to provide adequate support for clean out equipment. Ensure that settling basins

constructed according to these criteria also meet appropriate criteria in Conservation Practice Standard 313, Waste Storage Facility.

Access. Establish the minimum top width of earthen embankments for settling basins at 15 feet when equipment access is needed for clean out. Where no access is required to the settling basin for clean out, base the minimum top width on the equipment used to construct the embankment or berm, but not less than 4 feet.

Construct the side slopes of earthen embankments no steeper than 2 horizontal to 1 vertical (2:1). For earthen embankments greater than 3 feet in height, construct the side slopes no steeper than 3:1 on the outside and 2:1 on the inside of the embankment.

Design access ramps to allow entry into the basin for clean out by normal front end loading equipment at no steeper than 10:1. Allow steeper sloped access ramps where special surfacing of the ramp is done for traction purposes and the equipment used can accommodate the increased slope but in no case steeper than 4:1.

Safety. Include in the design appropriate safety features to minimize the hazards of the facility. Provide warning signs, fences, ladders, ropes, bars, rails, and other devices, as appropriate, to ensure the safety of humans and livestock. Ensure that proper ventilation and adequate warning signage is provided for waste separation equipment in an enclosed facility or confined area, as necessary, to prevent explosion, poisoning, or asphyxiation.

Outlet. Provide at least 10% open area for screening used to separate solids at the outlet of settling basins.

Additional Criteria for Settling Basins Receiving Lot Runoff

Settling basins used in conjunction with or without screening to remove waste solids from process generated liquid waste streams (i.e. flush water from covered freestall barns, or milking parlor waste water) that include significant external drainage fall into this category.

Flow Rate. Design the flow rate for a settling basin that receives lot runoff on the normal liquid waste stream discharge from the operation plus the peak runoff from the drainage area of the basin computed using a 10 year-1 hour storm frequency.

Volume. Base the design for settling basins receiving lot runoff on the total volume needed for liquid and solids storage.

For solid accumulation rates from lot surfaces, use 2,180 cubic feet per acre of unpaved lot and 440 cubic feet per acre of paved lot per month. Increase these values by 50% if lots are steep or poorly maintained. The minimum solid accumulation period is one month but shall not be less than the anticipated time between cleaning.

For liquid volumes the settling basin shall contain the total runoff volume for a 25-year, 24-hour storm event, from the entire contributing drainage area, or safely pass the excess runoff from this storm event to a secondary containment facility, such that there shall be no potential for agricultural waste to enter the waters of the state.

The minimum release time for a sediment basin shall be 6 hours and the maximum shall be 72 hours.

Additional Criteria for Settling Basins that Exclude Lot Runoff

Settling basins used in conjunction with or without screening to remove waste solids from process generated liquid waste streams (i.e. flush water from covered freestall barns, or milking parlor waste water) and do not receive significant external drainage fall into this category.

Flow Rate. Design the capacity for a settling basin that excludes lot runoff on the normal liquid waste stream discharge from the operation.

Volume. Base the design volume for settling basins that exclude lot runoff on the volume needed to provide solids storage for a specified treatment period plus temporary liquid storage necessary during dewatering. Use a minimum temporary liquid storage based on the volume of the liquid waste stream for one-day.

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General Criteria for Sand Separation and Reuse

Separation processes that remove sand from water and organic material fall into this category.

Dilution. Provide adequate dilution water for sand laden manure to keep organic solids in suspension for proper sand separation. Use a minimum water to sand laden manure dilution ratio of 2:1 (volume basis).

Capacity. Provide adequate capacity for the system design to handle the required manure and sand loadings.

Sand Storage. Provide adequate storage of separated sand to allow for additional liquid drainage from the sand.

Additional Criteria for Non-Mechanical Sand Separation and Reuse

Velocity. Design the waste stream velocity between 1 and 2 feet per second. Adjust flow velocity according to sand size and distribution.

Volume. Provide a minimum settling area storage volume to correspond to the maximum cleanout period. Design the bottom width to be compatible with the removal equipment, but not be less than 8 feet.

Hydraulic Retention Time. Design the hydraulic retention time to be between 3 and 5 minutes. Make adjustments according to sand size and distribution.

CONSIDERATIONS

Location. When locating waste separation facilities, consider elevation and distance from the source of material to be separated and the location of long-term liquid and solid waste storage facilities. Take advantage of gravity flow wherever possible for locating waste separation facilities.

Other considerations for locating waste separation facilities include vehicle access, wind direction, neighboring dwellings, proximity of streams and floodplains, and visibility.

Weeping Walls. To maximize drainage and solid/liquid separation, install weeping walls around the entire perimeter of the waste to be treated and maintain drainage paths to and through the walls. Consider waste particle size, particle size distribution and length of flow paths when selecting screen opening size and spacing. Ensure drainage is transferred to a liquid storage facility.

Solid/Solid Separation. When separating poultry litter into fine and coarse fractions, a higher percentage of the nutrients is partitioned with the fine fraction. The coarse material, consisting mostly of shavings and feathers, has a lower nutrient content and could be reused as bedding or as an energy source.

Visual Screening. Consider using vegetative screens or other methods to shield waste separation facilities from public view and for more aesthetic conditions.

Rainfall. Rainfall falling on the solids storage areas associated with waste separation facilities can result in increased waste water discharge into the long term storage facility. Consider covering of solids storage facilities in locations where high rainfall amounts occur.

Sand System Abrasion Resistance. Where sand is a major component of the liquid waste stream, encourage the use of abrasion resistant waste transfer piping and pumps to reduce frequency of repairs.

PLANS AND SPECIFICATIONS

Prepare plans and specifications in accordance with the criteria of this standard and good engineering practice. Include all details necessary for construction and completion of the waste separation facilities in the plans and specifications.

As a minimum, provide the following in the plans and specifications:

1. Layout of waste production facilities, waste collection points, waste transfer pipelines, waste treatment and storage facilities.
2. Location of all inflow and discharge pipelines and a description of pipeline materials, diameter and slope.
3. Details of support systems for waste separation devices.
4. Fencing and signage as appropriate for safety purposes.

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5. Operating characteristics.

Warranties. If a manufactured waste separation device is installed, the manufacturer shall provide a warranty that describes the design life of the device and what the warranty covers.

OPERATION AND MAINTENANCE

Develop and review an operation and maintenance (O&M) plan with the owner and operator prior to constructing the waste separation facility. Ensure that the O&M plan is consistent with the purposes of the waste separation device chosen, its intended life, safety requirements, and the criteria for its design. As a minimum, include the following elements in the operation and maintenance plan:

1. Documentation of design factors related to operation and maintenance.
2. Design capacity for the facility.
3. A description of normal operation of the facility, safety issues, and normal maintenance items.
4. Alternative operation procedures in the event of equipment failure.
5. Daily and/or periodic (as described in the plan) inspection of the following:
    - Separation device and support structure.
    - Screens and outlets.
    - Remaining capacity in storage facilities.

Ensure that the owner and operator understand the level of operation and maintenance (O&M) required for the type of separator selected to operate as intended.

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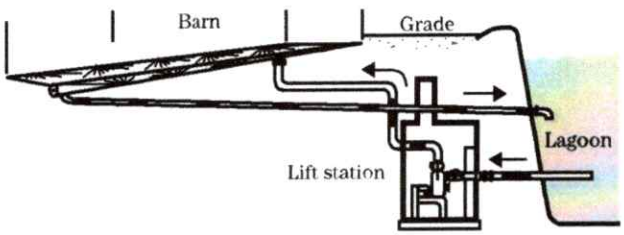
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operation) is critical to control building humidity and temper the cold drafts from freshly-pumped, cold flush water. This is especially important for new born and young livestock operations.

A cross gutter or drain that has adequate flow capacity is needed to smoothly carry away a large volume of flush water from an alley or gutter (fig. 12–31; also see ch. 9 of this handbook). The flow into the gutter or drain should be unrestricted. If flow is slowed, flush water backs up and solids separate and block the subsequent flush water.

Figure 12–30 Large-volume, low-pressure flush pump used in a recycle system (*Drawing courtesy of Gorman Rupp Co.*)



(l) Multiple function equipment

Some pieces of equipment serve multiple functions. They are used for collection of manure at the source and transfer to a storage facility or for transfer from the collection point or storage facility to the utilization area. For example, while they will be covered in a subsequent section, manure spreaders are considered as a utilization component of a waste management system, but they are also used to transfer manure from a collection point or storage area to the application/utilization area.

A piece of equipment that is used for both collection and transfer of manure to a storage facility is a manure vacuum (fig. 12–32).

The basic components of a manure vacuum are a hydraulically controlled variable width scraper, a large diameter hose connected to a vacuum blower, and a storage tank. It can be used to clean barn alleys or paved outdoor feed lots and holding areas and is best suited to handle semisolid or slurry manure containing a minimum amount of long straw bedding. Most models will handle sand laden manure typically found in

Figure 12–31 Cross gutter for alley flush water collection



Figure 12–32 Manure vacuum (*Photo courtesy of Mensch Mfg.*)



freestall dairy operations. Some of the advantages of using a manure vacuum are:

- adaptable to barns with differing alley widths
- can be used in multiple locations on an operation eliminating the need for separate handling systems in each barn on the facility
- can transfer manure to a storage or treatment facility no matter where it is located on the operation
- expansion of facilities is not limited by the need to consider manure storage/treatment location
- a barn alley can be cleaned in a single pass as opposed to the required forward and reverse maneuvering of a bucket loader

The primary disadvantage of a manure vacuum as compared to a cable or chain alley scraper or flush system is the time needed for an operator whenever manure is being collected.

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651.1204 Waste transfer equipment

The movement or transfer of agricultural wastes is described in chapter 9 of this handbook. As further explained in chapter 10, transfer equipment can be an extension of the waste collection equipment. The equipment that has common use either for collection or for transfer of waste is explained in section 651.1203. It includes:

- tractor front-end loader
- skid steer and articulated steer loaders
- all-wheel drive front-end loader
- ramps and bumper walls
- earth mover scrapers
- manure vacuum

Solid waste is commonly transferred a batch or more at a time (i.e., scoopful, wagon load) and at a relatively low rate. It is relatively dense and not easily moved. While batch movement is intermittent, a relatively larger quantity of semisolid, slurry, and liquid waste generally is transferred at one setting with continuous flow-type equipment than with other equipment. Depending on what is calculated and how (e.g., labor, investment, odor, appearance, nutrient), the cost of actual dry matter transferred is probably similar. The liquid portion facilitates waste transfer, but, unless needed for irrigation itself has little value and adds to transfer quantity.

(a) Augers and conveyors

A standard pitch auger that is 0.3 to 1.5 feet in diameter can be used to transfer solid, semisolid, and liquid wastes. A clean auger intake and relatively tight auger fit within its housing assist throughput. A short pitch, sometimes called *double flight* auger (twice the flighting per foot) aids slurry or liquid waste transfer if operating at relatively steep inclines. Table 12–3 shows how water throughput changes with auger size, speed, power, and elevating angle. With slurry and semisolid wastes, less throughput can be expected than that for liquid waste (MWPS 1975).

(iii) Tank-type spreaders

Manure that is approximately 4 percent solids or less is liquid and is best handled with a tank-type spreader if it is going to be hauled. Tank spreaders are also frequently used to handle slurry manure. A tank spreader is basically a steel tank that is mounted on running gear (frame and wheels) to be towed by a tractor or mounted on a truck. While there are other features that set tank spreaders apart, there are primarily two types based on the method by which they are loaded.

The first type requires a separate pump for loading and is frequently referred to as a spreader tanker (fig. 12–102). Spreader tankers are available in sizes from 1,000 to 12,000 gallons for single tank spreaders. One manufacturer makes a unit that allows coupling two smaller tanks together for a total capacity of 15,000 gallons (fig 12–103). The guide for uniform tanker capacity rating (in gallons) among manufacturers is the ASAE Standard S326.1 Volumetric Capacity of Closed Tank Type Manure Spreaders (ASAE [h] 1989 (R2009)).

Options, such as tanker agitation, inside tank access, wheel arrangement and size, injector spreader distributor, and other accessories, can increase the investment cost for this equipment. A sight-glass or other type of level indicator on the tanker, for example, permits ready observation of the tanker content during filling and emptying. A PTO or hydraulic motor-powered recirculating pump or floor auger may be used to continually agitate the contents, which would aid in more uniform spreading, especially with injector spreading. Some models use a spreader discharge located at the top-rear of the tanker. This discharge is supplied by the tanker agitation pump to assist with a wider broadcast spread. This arrangement also minimizes dripping and accidental tank unload. In spite of these benefits, odor concerns have caused most manufacturers to return to unloading at the bottom of the tank if the manure is going to be surface applied. Interior tank access for loading, cleaning, and repair through a top hatch door is simplest; however an end door has minimum hazard for inside air and gas ventilation and is more convenient for repairs.

The second type of tanker used to haul and spread slurry and liquid wastes includes an integral PTO or hydraulic motor-powered air-vacuum pump for loading and unloading (fig. 12–104). For more information on this type pump, see sections 651.1204(b)(2). The addition of this pump makes an "all-in-one" unit. To load the tanker, the vacuum pump empties air down to a pre-set level out of the airtight tank. A transfer hose is then inserted in the stored waste, the load valve is opened, and the waste is drawn up into the tank. The hose is 4 to 6 inches in diameter and 25 feet long. It is made of hard rubber and is relatively stiff. A loading rate at about 200 to 300 gallons per minute is limited to a vertical lift of no more than 12 feet.

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Figure 12–102 Spreader tanker (*Photo by Bill Boyd, NRCS*)



Figure 12–103 Spreader tankers in tandem (*Photo by Bill Boyd, NRCS*)



Although a separate agitation pump is more effective, the vacuum tanker can be used to agitate stored liquid waste by first loading the tanker, then switching the vacuum pump to pressure mode, pressurizing, and then unloading the full tanker load back into the storage. Tanker capacity and size, running gear options, and spreading aids are similar to those of the pump load spreader tanker.

Both types of towed spreaders are now being constructed with tandem wheels mounted with flotation tires to reduce soil compaction and axle load. Some of the larger models have three and even four wheels in tandem on each side of the spreader. Load per axle is usually kept below 12 tons. In comparison, a 600 bushel grain cart may have axle loads as high as 20 tons. Tandem wheels are not, however, without problems. Sharp turns cause extreme axle stress. To address this issue, some manufacturers have developed spreader wheels that turn when the tractor turns (fig. 12–105).

It is not efficient or cost effective to use a towed tanker-type spreader to haul manure very far on the road to get to the application area. To speed up hauling and spreading liquid or slurry waste to distant fields, a semitrailer nurse tanker is used to haul waste from the storage to the towed tank spreader in the field (fig. 12–106). This not only shortens the time it takes to get the manure to the application area, it allows the tractor towed tank spreader to continue working while the semitrailer returns for another load.

Safety precautions need to be taken in the operation of tractor towed tanker spreaders. Safety hazards are related to limited operator view, relatively slow speed, heavy braking needs, and potential for overturning and spillage. Tank-type spreaders continue to get larger challenging the capacity and weight of the tractor required to tow them. Mechanical or hydraulic brakes have become standard on larger models. Still, a high degree of experience and expertise is needed to operate and control the equipment. A moderate sized tank spreader that hauls approximately 5,000 gallons of manure weighs about 26 tons and a minimum 150 horsepower tractor weighing about 17 tons to oper-

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Figure 12–105 Tank spreaders with directional wheels (*Photo courtesy of GEA Houle, Inc.*)



Figure 12–104 Vacuum tank spreader (*Photo courtesy of Calumet*)



Figure 12–106 Towed tank spreader being filled from semitrailer nurse tanker truck (*Photo courtesy of Jim Hodel, Inc.*)



ate safely if the spreader does not have brakes. Table 12–10 provides recommendations for spreader capacity and power need. ASAE Standard S318.17 provides guidelines for operation of towed equipment without brakes. A surge trailer brake is designed for forward motion and may not function if the tractor power fails going uphill (ASAE [e] 2009).

Self-propelled tanker spreaders that have large flotation tires are designed to haul large loads for several miles or to use on soft soil (fig. 12–107). Most of these tankers have self-contained, high-capacity vacuum pumps and extra options that are not available with towed tanker models. Sizes range from a 2,000- to more than a 5,000-gallon capacity with advertised spreading rates of about 15,000 gallons per hour with reasonable loading and haul conditions. Operator comfort, control, safety, and day or night operation are favorable features. Year-around use, such as that done by custom operators, can justify the needed investment.

Broadcast spreading waste from either tanker spreader can use a gravity baffle or splash plate or a powered rotating distributor (fig. 12–108). Models that use tanker pump agitation pump contents up and spread them from the top rear of the tanker, which allows more uniform spreading. The agitation pump is generally located under the tanker rear outlet. A hand or hydraulic-operated gate valve is adjusted open to empty the tank. Soil injection spreading is done with either tanker as explained in section 651.1207(2).

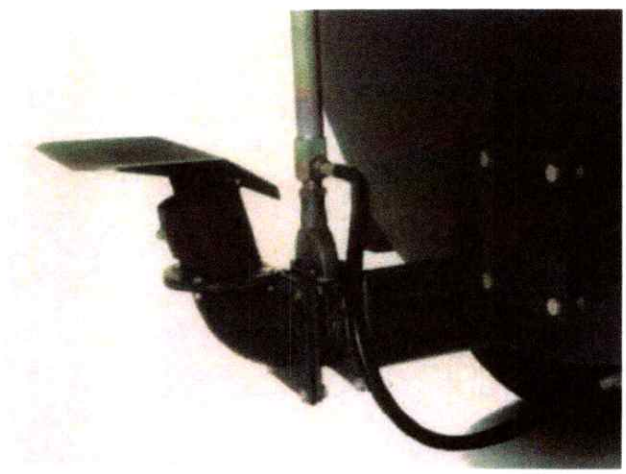
Table 12–10 Approximate waste spreader and tractor sizes (NE Dairy 1977)

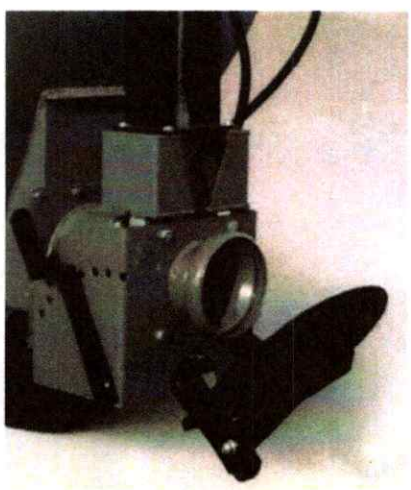
Box spreader heaped capacity (ft^3)	Minimum tractor horsepower	Tanker capacity (gal)	Minimum tractor horsepower
150	40	800	60
200	60	1,000	75
250	75	1,500	80
310	85	2,250	90
390	100	3,250	100
470	130	4,000	—

Figure 12–107 Self-propelled tanker spreader (*Photo Bill Boyd, NRCS*)



Figure 12–108 Baffle plate distributor on tanker spreaders (*Photos courtesy of J-Star and Badger Northland, Inc.*)





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Uniform spreading by gravity flow out of a tanker is difficult. The solids can partly block the tank discharge or less waste will flow as the waste depth in the tank decreases. Also, as the load lessens, travel speed changes. Equipment manufacturers have addressed by including computers in the tractor cab that monitor and adjust ground speed and discharge rates using electronic and hydraulic controls on the spreader discharge. Some are also using global positioning systems (GPS) to automatically adjust application rates based on soil productivity classes in the application area. Generally this more sophisticated technology is used when manure is being injected rather than surface spread.

Overall construction strength is critical for a tanker spreader, especially where it has attached soil injector spreading. Generally, 1/4-inch-thick corrosion resistant plate steel (painted) is used to construct the tank. Some manufacturers have started using galvanized steel tanks. As vacuum tanker spreaders age and corrode, too high of an evacuation of the tank can cause an end or side to collapse inward if the evacuation overload control device malfunctions. Regular maintenance, cleanup after use, and covered storage extends tanker life and increases trade-in-value.

Vacuum pumps, moisture traps, pipe couplers, tires, and power shafts need regular attention. Shops that specialize in tanker repair report that a vacuum tanker regularly used for swine waste typically has about a 10-year life. The pump and running gear frequently outlast the tank, although adjustable wheel types (for different row crop spacings) and broken wheel spindles have been problems. Pump seals, vanes, and valves may need replacement depending on the level of regular maintenance provided.

Handling liquid and slurry manure with low solids content can be a high cost option if application areas are located many miles from the production area. Dairy and swine operations that use flushing-type systems produce large volumes of waste with low nutrient concentrations. Capital investment in spreading equipment is high as are power requirements to handle the equipment. Labor and time inputs are also high due to the slow travel speeds in getting to the application areas. In spite of continuing development of equipment to address these issues such as use of "nurse tanks," application costs may greatly exceed value of manure. Producers who find themselves in this situation should probably consider other options such as liquid-solid separation prior to application with recycling of liquids or employment of custom applicators to reduce labor inputs, capital investment, and operation and maintenance costs of equipment. Producers with application areas closer to the production facility might want to consider the drag hose technology covered in the next section.

(2) Soil injection equipment

Injecting (also called knifing or chiseling) liquid and slurry waste 3 inches or more into the soil minimizes odor and nutrient losses (Goodrich 1993). Nitrogen loss is significant within 4 to 6 hours after broadcast surface spreading. Chapter 11 of this handbook gives more detailed information on this loss. Injection is necessary, for example, when a nitrification inhibitor is added for N loss reduction of waste or when anhydrous ammonia is added to waste to enhance the N content and better suit crop needs (Sutton, Nelson, and Jones 1983).

Traditional injector spreader equipment can be used on a tanker spreader (figs. 12–103 and 12–107) or directly injected with tractor-mounted toolbar equipment when waste is pumped to the field. A tanker needs the framework constructed for the twisting, bending loads from the attached injectors. Typically, two to six or more injectors are mounted at the rear of a tanker about 2 feet apart. In the past, injectors were sometimes mounted at the front of the tanker or on a toolbar attached on the tractor pulling the tanker to improve depth control, traction, and the operator's view. However, this arrangement interferes with hitching and maneuvering. Also, the pressure of the tractor wheels on the injected soil forces out some of the injected waste, which defeats the purpose of injection. Staggered injector shanks reduce trash plugging, and injector shanks that swivel can make short turns. Some models use adjustable injector depth gage wheels. Most use hydraulic lift to raise or lower the injectors.

The soil surface moisture, field topography, and travel speed affect the power needed to pull a loaded tanker. Injector load is also a consideration and is affected by injector design and operating depth. Figure 12–109 can help to estimate power needs. For example, to pull a loaded 3,000 gallon tanker with four injectors running 4 inches deep in plowed soil at 3 miles per hour would require 80 horsepower [42 + 10 + (7 × 4)]. A Purdue

Kayla Robichaux

From: wyrick@suddenlink.net
Sent: Monday, April 21, 2025 1:13 PM
To: Kayla Robichaux
Subject: RE: WQ0005477000- Maiko Hessel Bouma
Attachments: Reply.pdf

Kayla:

Attached are my responces to your comments on Bouma

Kayla Robichaux

From: Kayla Robichaux
Sent: Monday, March 31, 2025 9:08 AM
To: 'wyrick@suddenlink.net'
Subject: RE: WQ0005477000- Maiko Hessel Bouma

Good morning, Mr. Wyrick.

I will make a note to extend the due date to April 30, 2025.

Thank you,
Kayla Robichaux
Land Applications Team, Water Quality Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. F
MC-150
Austin, TX 78753
Office: 512.239.4742
kayla.robichaux@tceq.texas.gov

From: wyrick@suddenlink.net <wyrick@suddenlink.net>
Sent: Saturday, March 29, 2025 11:29 AM
To: Kayla Robichaux <Kayla.Robichaux@tceq.texas.gov>
Subject: WQ0005477000- Maiko Hessel Bouma

Morning Kayla

I am working on the reply to your comments on the Bouma IP application. But I will need a 30-day extension on the comments due date.

Thanks

Thanks

Jim

Kayla Robichaux

From: Kayla Robichaux
Sent: Friday, March 14, 2025 11:16 AM
To: 'Jim Wyrick'
Subject: WQ0005477000- Maiko Hessel Bouma

Good morning, Mr. Wyrick.

Please see the comments below for what needs to be addressed on the application for WQ0005477000.

1. Please revise the application to remove LMU #7. The TCEQ was contacted by adjacent landowner Mr. Blain Blake who claims to own the property labeled as LMU #7 on the map. According to him, he has not agreed to lease or sell the property to the dairy owner.
2. Please submit a revised Core Data Form (CDF) with the correct customer legal name in Section II.6. The name is listed as "Maiko Hessel Bomua" instead of Bouma.
3. Please revise the public viewing location on page 6 of the IP application. Google maps shows the address to be 1200 B Houston Street.
4. Please revise the BMP in Table 1 relating to potential Pollutant Sources for "dust" on page 2 of the Technical Information Packet (TIP). It seems a word might be missing in the paragraph.
5. Please revise the application rates in Table 4 on page 6 of the TIP to match what is listed in the NMP.
6. The revised NMP dated 2/4/2025 needs to be signed by a certified nutrient management specialist.
7. Please submit missing Page 13 of the NMP dated 2/4/2025.
8. The manure calcs and page 6 of the TIP show manure production of 3,752 tons/year. However, the data entry page of the NMP only lists 2,000 tons. Please revise.
9. The effluent and manure analyses do not match figures in Table 1 of the NMP or the Nutrient Management Data Entries page for effluent and manure information. Please correct these pages of the NMP to reflect the analyses submitted.
10. PI Index – LMU 9 has a soil P test level of 92 ppm, which equates to a soil P test Rating of High (4) instead of 8. Please submit a corrected PI Index to reflect this change. LMUs 2, 8, and 9 should have a P Runoff Potential of High due to having a P Index Classification of 23 points or more.
11. Please provide the coordinates for the off-site LMUs #8 and #9.
12. Please revise the vicinity map to show the property boundary outline for Bouma Dairy including the property for LMUs #8 and #9.
13. Please label the roads on the LMU maps.
14. Please identify the milking parlor on the runoff control map.
15. Please move the labels for the Wells so they are visible on the runoff control map.
16. Please provide a wastewater flowchart.
17. Please send the engineering calculations with sharper font. The scanned copy is illegible.
18. Two small ponds are shown on aerial imagery and the USGS topographic map within LMU #8 and a larger pond is shown in LMU #1. In both cases the LMU label on the submitted LMU site maps covers the location of the surface water on the map. Please move the label to identify these features.
19. There appear to be cows located in LMU #9 as well as a small pond that does not appear to be buffered on the map.



Please let me know if you have any questions. The response due date is March 28, 2025.

Thank you,
Kayla Robichaux
Land Applications Team, Water Quality Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg. F
MC-150
Austin, TX 78753
Office: 512.239.4742
kayla.robichaux@tceq.texas.gov

Reply to Bouma Dairy WQ0005477000 comments.

1. Please revise the application to remove LMU #7. The TCEQ was contacted by adjacent landowner Mr. Blain Blake who claims to own the property labeled as LMU #7 on the map. According to him, he has not agreed to lease or sell the property to the dairy owner.

   See revised LMU Map

2. Please submit a revised Core Data Form (CDF) with the correct customer legal name in Section II.6. The name is listed as “Maiko Hessel Bomua” instead of Bouma.

   See revised Core Data Form (CDF)

3. Please revise the public viewing location on page 6 of the IP application. Google maps shows the address to be 1200 B Houston Street.

   According to AgriLife web site the address is 1200 West Houston St.

4. Please revise the BMP in Table 1 relating to potential Pollutant Sources for “dust” on page 2 of the Technical Information Packet (TIP). It seems a word might be missing in the paragraph.

   See revised TIP Page 1

5. Please revise the application rates in Table 4 on page 6 of the TIP to match what is listed in the NMP.

   See revised TIP. Page 6 used rates from the updated NMP

6. The revised NMP dated 2/4/2025 needs to be signed by a certified nutrient management specialist.

   See revised NMP

7. Please submit missing Page 13 of the NMP dated 2/4/2025.

   See revised NMP

8. The manure calcs and page 6 of the TIP show manure production of 3,752 tons/year. However, the data entry page of the NMP only lists 2,000 tons. Please revise.

   The 2000 tons of manure is scraped from the barn and applied directly to the LMUs. The remaining 1,752 is flushed down the lanes of the freestall barns mixed with waste water then applied to the LMUs through the drag house system.

9. The effluent and manure analyses do not match figures in Table 1 of the NMP or the Nutrient Management Data Entries page for effluent and manure information. Please correct these pages of the NMP to reflect the analyses submitted.

   See revised NMP

10. PI Index – LMU 9 has a soil P test level of 92 ppm, which equates to a soil P test Rating of High (4) instead of 8. Please submit a corrected PI Index to reflect this change. LMUs 2, 8, and 9 should have a P Runoff Potential of High due to having a P Index Classification of 23 points or more.

    See revised NMP

11. Please provide the coordinates for the off-site LMUs #8 and #9.

    See attachment LMU offsite map.

12. Please revise the vicinity map to show the property boundary outline for Bouma Dairy including the property for LMUs #8 and #9.

    See revised Vicinity Map

13. Please label the roads on the LMU maps.

    See revised LMU map

14. Please identify the milking parlor on the runoff control map.

    See revised runoff control map

15. Please move the labels for the Wells so they are visible on the runoff control map.

    See revised runoff control map

16. Please provide a wastewater flowchart.

    See wastewater flowchart

17. Please send the engineering calculations with sharper font. The scanned copy is illegible.

    See engineering calculations

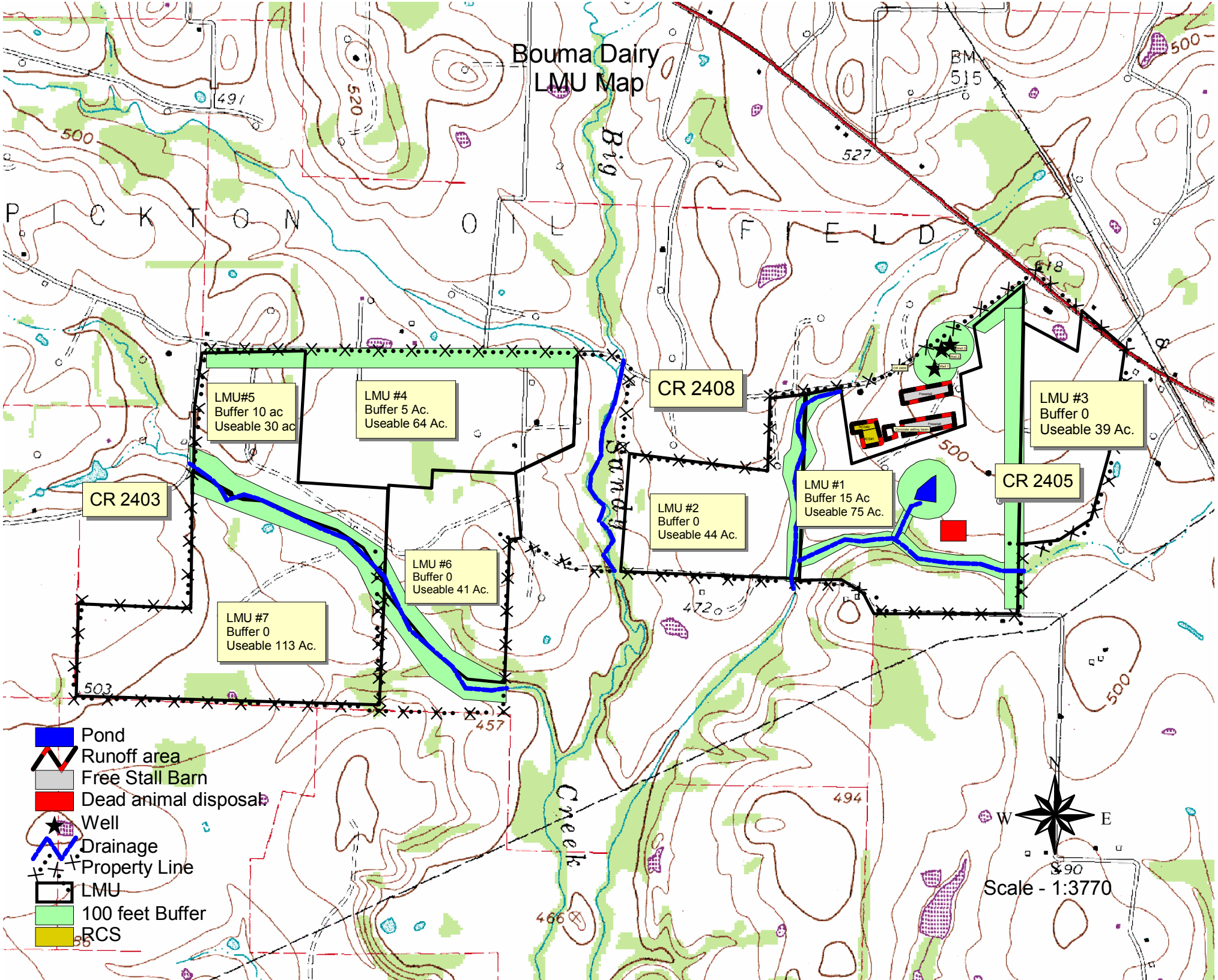
18. Two small ponds are shown on aerial imagery and the USGS topographic map within LMU #8 and a larger pond is shown in LMU #1. In both cases the LMU label on the submitted LMU site maps covers the location of the surface water on the map. Please move the label to identify these features.

    See revised LMU Map Offsite. The pond in LMU#8 on the Topo map has been filled in and no longer there.

19. There appear to be cows located in LMU #9 as well as a small pond that does not appear to be buffered on the map.

    See revised LMU Map Offsite

CAFO-plain-language pages 3 and 5 were revised due to changes in LMUs acres.


Bouma Dairy
LMU Map
PICKTON OIL FIELD
Big Sandy Creek
CR 2408
CR 2403
CR 2405
LMU#5
Buffer 10 ac
Useable 30 ac
LMU #4
Buffer 5 Ac.
Useable 64 Ac.
LMU #3
Buffer 0
Useable 39 Ac.
LMU #1
Buffer 15 Ac
Useable 75 Ac.
LMU #2
Buffer 0
Useable 44 Ac.
LMU #6
Buffer 0
Useable 41 Ac.
LMU #7
Buffer 0
Useable 113 Ac.
Pond
Runoff area
Free Stall Barn
Dead animal disposal
Well
Drainage
Property Line
LMU
100 feet Buffer
RCS
N
W
E
S
Scale - 1:3770

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☒ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 601231814		RN 102334539

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	9/3/2024

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Maiko Hessel Bouma	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer:

☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☒ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant ☐ Other:

15. Mailing Address:	4252 COUNTY ROAD 2408						
	City	WINNSBORO	State	TX	ZIP	75494	ZIP + 4	4100

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(903) 855-2748		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

BOUMA DAIRY FARM

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	Manure generated in the freestalls is flushed into the settling basin then into RCS #1 and irrigated to the LMUs with the irrigation water. Very limited amount will be stockpiled at end of the freestalls and hauled to LMUs.
Wastewater	All wastewater gravity flows from the freestalls into the settling basin then into the RCS#1. Where it is stored until there is a crop demand for water and nutrients, and then applied to LMUs at an agronomic rate.
Sludge	Sludge will be cleaned from the RCSs before the sludge volume reaches the designed capacity. A system of irrigation and vacuum tanks will be used to with the sludge from the RCSs
Compost	NA
Feed and Bedding	Feed when spoiled, will be applied to LMUs. When applied it will be applied at a rate similar to that of manure.
Silage stockpiles	Most of the silage is stored under plastic. The plastic will be removed and disposed of in the appropriate waste containers. If the silage is not covered, any ruined silage will be land applied
Dead animals	All dead animals are collected within 24-hours and properly buried within 72 hours of death following TCEQ guidelines.
Dust	Water will be applied to the road until the conductions for dust have passed.
Lubricants	All oil and lubricant products will be stored in a covered storage area in covered, waterproof container. Empty containers are to be disposed of following all precautionary guidelines on the container or placing in a commercial garbage

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)
LMU#1	75	Coastal graze 1 AU/1 ac, SG mod graze	2.5 Ac-ft/Ac/Year
LMU#2	44	Coastal graze 1 AU/1 ac, SG mod graze	3.9 Ac-ft/Ac/Year
LMU#3	39	Coastal Hay 4 cut, RG mod Graze	5.2 Ac-ft/Ac/Year
LMU#4	64	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#5	30	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#6	41	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#7	101	Common graze 1 AU/1 ac, SG mod graze	4.1 Ac-ft/Ac/Year
LMU#8	31	Common graze 1 AU/1 ac, SG mod graze	110 Tons/Ac/Year
LMU #9	101	Common graze 1 AU/1 ac, SG mod graze	110 Tons/Ac/Year

1) Wastewater production, ac-in/year: 43.17
2) Estimated Wastewater application, ac-in/year: 43.17
3) Manure production, tons/year: 3752
4) Estimated manure application, tons/year: 0 as dry manure. 3752 in draghose irrigation
5) Estimated manure transferred to other persons, tons/year: 0

Waste Utilization and Nutrient Management Plan

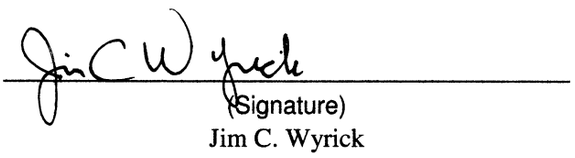
Bouma Dairy
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

TCEQ Permit Number:
WQ0005477000

Owner
Maiko Bouma
4252 CR 2408
Winnsboro, TX 75494
903-342-3245

Type of Waste Plan:
Other AFO-CAFO Waste Plan
located in Hopkins County

Prepared By:



(Signature)
Jim C. Wyrick
Nutrient Management Specialist
Certificate Number = TX20049
Expiration Date = December 31, 2025
East Texas Environmental Services
317 Highland Dr.
Sulphur Springs, TX 75482
903-243-0400

This plan is based on:
590 -633 Plan V 4.0_5

4/14/25 12:32 PM

Waste Utilization and Nutrient Management Plan

EXECUTIVE SUMMARY: Permit #: WQ0005477000

This Nutrient Management Plan has fields that meet NMP and/or NUP requirements.

LOCATION AND PURPOSE OF THE PLAN

This animal operation is located in **Hopkins** 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 **2025** 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 Solids** . Approximately **999** head will be confined with the average weight of **1300** pounds. The animals will be confined **24** hours per day for **365** days per year.

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.

SOLIDS APPLICATION: (cont) Permit #: WQ0005477000

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.

EFFLUENT APPLICATION: (cont) Permit #: WQ0005477000

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 #: WQ0005477000

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 #: WQ0005477000

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 #: WQ0005477000

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:	**Jim C. Wyrick**	Date:	**4/14/2025**
Plan Approved by:	Jim C Wyrick	Date:	4/14/25
Producer Signature:	*	Date:	

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.

* NMP will be reviewed with producer after approval by TCEQ

Waste Utilization and Nutrient Management Plan

Table 1 - Estimated Effluent and Solids Quantities Produced Permit #: WQ0005477000

Avg. Number of Animals	Type of Waste
999	**Dairy Solids**
	Dairy 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* **255**

Estimated Tons Solids to be Land Applied Annually (on or off site)* **12,121.2**

*From engineering design.

Estimated Nutrient Availabilty Effluent

	pounds/yr	Pounds / 1000 gal	Pounds / Acre Inch	
N	**26,360**	**3.80**	**103.2**	**
P2O5	**13,624**	**1.96**	**53.4**	
K2O	**21,143**	**3.05**	**82.8**	

** Effluent Values Based on Analysis dated: December 4, 2024

Estimated Nutrient Availabilty Solids

	pounds / yr	pounds / ton	
N	**46,080**	**3.8**	**
P2O5	**23,816**	**2.0**	
K2O	**36,960**	**3.0**	

** Solids Values Based on Analysis dated: December 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	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	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	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 or soil test P [1/] => 500 ppm in nutrient impaired TMDL areas.[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/ TMDL watersheds are designated by Texas Commission on Environmental Quality (TCEQ).

Waste Utilization and Nutrient Management Plan

Table 3 - Crop Removal Rates (For Information Only) Permit #: WQ0005477000

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
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	NUP	Default	300	90	267
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	NMP	Default	300	90	267
3	39.0	Coastal Hay 4 cut, RG mod Graze M	NMP	Default	350	105	311
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	NMP	Default	262	85	233
7	113.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233
8	31.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233
9	101.0	Common graze 1 AU/1 ac, SG mod graze H	NMP	Default	262	85	233

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 #: WQ0005477000

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)
12,121	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8	31.0	Common graze 1 AU/1 ac, SG mod graze H	113	217	A	110.5	3425
	9	101.0	Common graze 1 AU/1 ac, SG mod graze H	90	217	A	110.5	11158
Total Solids Application Acres								
132								
Max. Solids Application Allowable on-site (tons)								
14583.3								
Adequate								
Solids to be used off-site (tons)								
0.0								

End of Table 4

Waste Utilization and Nutrient Management Plan

Table 4 - Maximum Solids Application per Field Permit #: WQ0005477000

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)
12,121	1							
	2							
	3							
	4							
	5							
	6							
	7							
	8	31.0	Common graze 1 AU/1 ac, SG mod graze H	113	217	A	110.5	3425
	9	101.0	Common graze 1 AU/1 ac, SG mod graze H	90	217	A	110.5	11158
Total Solids Application Acres								
132								
Max. Solids Application Allowable on-site (tons)								
14583.3								
Adequate								
Solids to be used off-site (tons)								
0.0								

End of Table 4

Waste Utilization and Nutrient Management Plan

Table 6 - Planned Solids Application Rates Permit #: WQ0005477000

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)
1									
2									
3									
4									
5									
6									
7									
8		31.0	Common graze 1 AU/1 ac, SG mod graze H	113	A	110.5	84	92.8	2876.9
9		101.0	Common graze 1 AU/1 ac, SG mod graze H	90	A	110.5	84	92.8	9373.1
Acres		132.0							12250.0
12121			Tons of wet solids produced Annually					Will the planned per acre application rates use all of the Solids?	YES
0			Tons to be used off-site at Max. rates					Tons to be used off-site at planned rates	0

Waste Utilization and Nutrient Management Plan

Table 7 - Nutrients Applied/Needed at Planned Solids Rates Permit #: WQ0005477000

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
1							
2							
3							
4							
5							
6							
7							
8	353	182	283	45	0	0	0
9	353	182	283	25	0	0	0

Waste Utilization and Nutrient Management Plan

Table 8 - Maximum Effluent Application Per Field Permit #: WQ0005477000

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)
255	1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	216	136	A	2.5	188
Source:	2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	117	207	A	3.9	172
	3	39.0		Coastal Hay 4 cut, RG mod Graze M	141	279	A	5.2	203
	4	64.0		Common graze 1 AU/1 ac, SG mod graze M	112	217	A	4.1	262
Dairy Solids	5	30.0		Common graze 1 AU/1 ac, SG mod graze M	77	217	A	4.1	123
	6	41.0		Common graze 1 AU/1 ac, SG mod graze M	91	217	A	4.1	168
	7	113.0		Common graze 1 AU/1 ac, SG mod graze H	145	217	A	4.1	463
	8								
	9								
Total Effluent Application Acres									
406									
Maximum Effluent Application Allowable On-Site (ac in)									
1579									
Adequate									
Effluent to be used Off-Site (ac in)									
0									

End of Table 8

Waste Utilization and Nutrient Management Plan

Table 8 - Maximum Effluent Application Per Field Permit #: WQ0005477000

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)
255	1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	216	136	A	2.5	188
Source:	2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	117	207	A	3.9	172
	3	39.0		Coastal Hay 4 cut, RG mod Graze M	141	279	A	5.2	203
	4	64.0		Common graze 1 AU/1 ac, SG mod graze M	112	217	A	4.1	262
Dairy Solids	5	30.0		Common graze 1 AU/1 ac, SG mod graze M	77	217	A	4.1	123
	6	41.0		Common graze 1 AU/1 ac, SG mod graze M	91	217	A	4.1	168
	7	113.0		Common graze 1 AU/1 ac, SG mod graze H	145	217	A	4.1	463
	8								
	9								
Total Effluent Application Acres									
406									
Maximum Effluent Application Allowable On-Site (ac in)									
1579									
Adequate									
Effluent to be used Off-Site (ac in)									
0									

End of Table 8

Waste Utilization and Nutrient Management Plan

Table 10 - Planned Effluent Application Rates Permit #: WQ0005477000

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)
1	75.0		Coastal graze 1 AU/1 ac, SG mod graze M	216	A	2.5	**15.0**	0.4	30
2	44.0		Coastal graze 1 AU/1 ac, SG mod graze M	117	A	3.9	**15.0**	0.6	26
3	39.0		Coastal Hay 4 cut, RG mod Graze M	141	A	5.2	**15.0**	0.8	31
4	64.0		Common graze 1 AU/1 ac, SG mod graze M	112	A	4.1	**15.0**	0.6	38
5	30.0		Common graze 1 AU/1 ac, SG mod graze M	77	A	4.1	**20.0**	0.8	24
6	41.0		Common graze 1 AU/1 ac, SG mod graze M	91	A	4.1	**15.0**	0.6	25
7	113.0		Common graze 1 AU/1 ac, SG mod graze H	145	A	4.1	**20.0**	0.8	90
8									
9									
Acres	**406.0**					**Will the planned application rates use all of the Effluent?**			**265**
									YES

Waste Utilization and Nutrient Management Plan

Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #: WQ0005477000

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
1	39	20	32	340	0	170	0
2	60	31	48	320	0	155	0
3	81	42	65	405	0	295	0
4	63	33	51	170	0	105	0
5	84	43	67	310	0	120	0
6	63	33	51	335	0	130	0
7	84	43	67	310	0	105	0
8							
9							

Waste Utilization and Nutrient Management Plan

Table 11 - Nutrients Applied/Needed at the Planned Effluent Rates Permit #: WQ0005477000

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
1	39	20	32	340	0	170	0
2	60	31	48	320	0	155	0
3	81	42	65	405	0	295	0
4	63	33	51	170	0	105	0
5	84	43	67	310	0	120	0
6	63	33	51	335	0	130	0
7	84	43	67	310	0	105	0
8							
9							

Waste Utilization and Nutrient Management Plan

Table 13 - Non Application Areas by Field Permit #: WQ0005477000

FS = 393-Filter Strip; **FB** = 386-Field Border, **RFB** = 391-Riparian Forest Buffer; **OLEA** = Other Land Excluded Area

LMU / Field #	FS Acres	FB Acres	RFB Acres	OLEA Acres	Total Excluded
1	15.0	0.0	0.0		15.0
2	0.0	0.0	0.0		
3	0.0	0.0	0.0		
4	5.0	0.0	0.0		5.0
5	10.0	0.0	0.0		10.0
6	0.0	0.0	0.0		
7	0.0	0.0	0.0		
8	2.0	0.0	0.0		2.0
9	6.0	0.0	0.0		6.0
Totals	38.0	0.0	0.0	0.0	38.0

See Application Map for location of buffers

Total 590-633 application acres: 538.0

Total 590-633 Field Acres: 576.0

Waste Utilization and Nutrient Management Data Entries

General Data

Date :	4/14/2025
Farmer Name :	Bouma Dairy
County in which the Land is located :	Hopkins
Type of Waste Plan :	Other AFO-CAFO Waste Plan
Is this plan in a TMDL watershed for nutrients? Yes or No :	No
Is any field PERMITTED by TCEQ? Yes or No :	Yes
Permit # :	WQ0005477000

All other entries on General Page appear on the Cover Page

Animal Information

Plan Year :	2025
Are you receiving waste from another producer?	No
Number of animals :	999
Approximate Weight :	1300
Days per year in confinement :	365
Hours per day confined :	24
***ACRE FEET* of effluent to be irrigated* :**	21.28
Estimated annual gallons of effluent to be irrigated/applied annually :	6934045.44
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)* :	2000
Is this the first Year of the AFO-CAFO Operation? :	No

Analysis Information

Effluent Information

Date of Analysis:	12/4/2024
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	0.0735
Phosphorus % From Analysis:	0.0118
Potassium % From Analysis:	0.085
Moisture % From Analysis:	97

Manure / Solids Information

Date of Analysis:	12/4/2024
Manure Source:	Dairy Solids
Nitrogen % From Analysis:	1.44
Phosphorus % From Analysis:	0.26
Potassium % From Analysis:	0.77
Moisture % From Analysis:	83.5
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: 590 -633 Plan V 4.0

Printed on: 4/14/25 12:32 PM

Field and Buffer Entries

Permit #: WQ0005477000

Printed on: 4/14/25 12:32 PM

Plan is based on: 590 -633 Plan V 4.0_5

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	
1	90	15				15.0	75.0	
2	44	0				0.0	44.0	
3	39	0				0.0	39.0	
4	69	5				5.0	64.0	
5	40	10				10.0	30.0	
6	41	0				0.0	41.0	
7	113	0				0.0	113.0	
8	33	2				2.0	31.0	
9	107	6				6.0	101.0	

Soil Test, Crop Information and Plant Analysis Data Entries

Printed on: 4/14/25 12:32 PM Plan is based on: 590 -633 Plan V 4.0_5 Permit #: WQ0005477000

Soil Test Analysis				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)	Plant Analysis & Yield (optional) Use Only When Crop Removal is Required			
N (ppm)	P (ppm)	K (ppm)	Lime (enter amt or leave blank)							% N	% P	% K	Yield Air Dry Production (lbs/ac/yr)
10	216	40			1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
10	117	40			2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	E	N				
26	141	70			3	39.0	Coastal Hay 4 cut, RG mod Graze M	E	N				
94	112	55			4	64.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
12	77	17			5	30.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
12	91	26			6	41.0	Common graze 1 AU/1 ac, SG mod graze M	E	N				
13	145	32			7	113.0	Common graze 1 AU/1 ac, SG mod graze H	E	N				
11	113	26			8	31.0	Common graze 1 AU/1 ac, SG mod graze H	S	N				
20	90	132			9	101.0	Common graze 1 AU/1 ac, SG mod graze H	S	N				

Solids Application Rate Entries

Solids - Set the Planned Application Rates

Permit #: WQ

12121		"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
1							
2							
3							
4							
5							
6							
7							
8	31.0	Common graze 1 AU/1 ac, SG mod graze H	113	175	Annual	110.5	84.0
9	101.0	Common graze 1 AU/1 ac, SG mod graze H	90	175	Annual	110.5	84.0

Printed on: 4/14/25 12:32 PM

Plan is based on: 590 -633 Pl

Effluent Application Rate Entries

Effluent - Set the Planned Application Rates

Permit #: WQ0005477000

6934045	Gallons of Effluent to be used annually				Will the planned rates use all of the effluent?				Yes
255	Acre inches of Effluent to be used annually								

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)
1	75.0	Coastal graze 1 AU/1 ac, SG mod graze M	216	175	Annual	2.5	15.0	0.4	30
2	44.0	Coastal graze 1 AU/1 ac, SG mod graze M	117	175	Annual	3.9	15.0	0.6	26
3	39.0	Coastal Hay 4 cut, RG mod Graze M	141	225	Annual	5.2	15.0	0.8	31
4	64.0	Common graze 1 AU/1 ac, SG mod graze M	112	175	Annual	4.1	15.0	0.6	38
5	30.0	Common graze 1 AU/1 ac, SG mod graze M	77	175	Annual	4.1	20.0	0.8	24
6	41.0	Common graze 1 AU/1 ac, SG mod graze M	91	175	Annual	4.1	15.0	0.6	25
7	113.0	Common graze 1 AU/1 ac, SG mod graze H	145	175	Annual	4.1	20.0	0.8	90
8									
9									

Total Effluent This Page: 265

Printed on: 4/14/25 12:32 PM

Plan is based on: 590 -633 Plan V 4.0_5

Available Water Capacity Entries

Printed on: 4/14/25 12:32 PM Plan is based on: 590 -633 Plan V 4.0_5 Permit #: WQ0005477000

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																
1	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
2	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
3	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
4	Sandy Clay loam	0	10	0.11	0.16	10	24	0.13	0.18	24				0				3.52
5	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
6	Loamy Fine Sand	0	6	0.06	0.09	6	24	0.05	0.09	24				0				1.71
7	Loamy Fine Sand	0	6	0\.06	0.09	6	24	0.05	0.09	24				0				1.80
		0												0				

PI Index by Field

Printed on: 4/14/25 12:49 PM

This plan is based on: 590 -633 Plan V 4.0_2

Permit #: WQ0005477000

Client Name: Bouma Dairy

Planner: Jim C. Wyrick

Date: 4/14/2025

Location: Hopkins

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	2.0%	61	8	0	0.75	0	4	0	1	0	13.75	Medium	11/3/24
2	Coastal graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	2.5	1	0	17	Medium	11/3/24
3	Coastal Hay 4 cut, RG mod Graze	2.0%	58	8	0	1.5	0	4	0	0	0	13.5	Medium	11/3/24
4	Common graze 1 AU/1 ac, SG mod graze	2.0%	61	8	0	1.5	0	4	1.25	1	0	15.75	Medium	11/3/24
5	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	4	0	1.5	0	4	5	0	0	14.5	Medium	11/3/24
6	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	1.5	0	4	5	0	0	18.5	Medium	11/3/24
7	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/3/24
8	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/3/24
9	Common graze 1 AU/1 ac, SG mod graze	3.0%	39	8	0	6	0	4	5	0	0	23	High	11/3/24

TEXAS A&M AGRILIFE EXTENSION

Boy
LMU #1

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672022
Customer Sample ID: 188
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.3	(5.8)	-	Strongly Acid	
Conductivity	33	(-)	umho/cm	None	
Nitrate-N	10	(-)	ppm**		75 lbs N/acre
Phosphorus	216	(50)	ppm		0 lbs P2O5/acre
Potassium	40	(150)	ppm		180 lbs K20/acre
Calcium	217	(180)	ppm		0 lbs Ca/acre
Magnesium	57	(50)	ppm		0 lbs Mg/acre
Sulfur	13	(13)	ppm		0 lbs S/acre
Sodium	14	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.45 tons 100ECCE/acre

8

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Phosphorus: Phosphorus is highly elevated, avoid phosphorus containing fertilizers and organics for the next 5 years, retest annually.
Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Bou
LMU #2

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

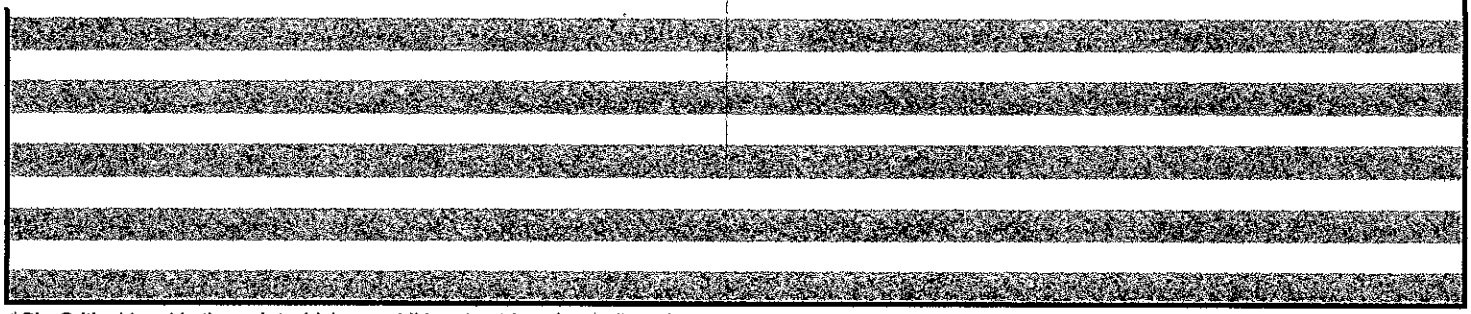
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672023
Customer Sample ID: 189
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.6	(5.8)	-	Strongly Acid	
Conductivity	28	(-)	umho/cm	None	
Nitrate-N	10	(-)	ppm**		75 lbs N/acre
Phosphorus	117	(50)	ppm		0 lbs P2O5/acre
Potassium	40	(150)	ppm		180 lbs K20/acre
Calcium	389	(180)	ppm		0 lbs Ca/acre
Magnesium	65	(50)	ppm		0 lbs Mg/acre
Sulfur	12	(13)	ppm		5 lbs S/acre
Sodium	18	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.40 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Sulfur: Available sulfur may be found deeper in soil profile, thus limiting any response to added sulfur.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Boy
LMU #3

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

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Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672024
Customer Sample ID: 190
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended
pH	4.9	(5.8)	-	Strongly Acid							
Conductivity	55	(-)	umho/cm	None			CL*				
Nitrate-N	26	(-)	ppm**								45 lbs N/acre
Phosphorus	141	(50)	ppm								0 lbs P2O5/acre
Potassium	70	(150)	ppm								130 lbs K20/acre
Calcium	734	(180)	ppm								0 lbs Ca/acre
Magnesium	98	(50)	ppm								0 lbs Mg/acre
Sulfur	16	(13)	ppm								0 lbs S/acre
Sodium	11	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											0.45 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672074
Customer Sample ID: 113
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow	VLow	Low	Mod	High	VHigh	Excess.	Fertilizer Recommended
pH	4.2	(5.8)	-	Strongly Acid							
Conductivity	199	(-)	umho/cm	None				CL*			
Nitrate-N	94	(-)	ppm**								0 lbs N/acre
Phosphorus	112	(50)	ppm								0 lbs P2O5/acre
Potassium	55	(150)	ppm								155 lbs K20/acre
Calcium	345	(180)	ppm								0 lbs Ca/acre
Magnesium	54	(50)	ppm								0 lbs Mg/acre
Sulfur	17	(13)	ppm								0 lbs S/acre
Sodium	11	(-)	ppm								
Iron											
Zinc											
Manganese											
Copper											
Boron											
Limestone Requirement											0.65 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Boy
LMU #5

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

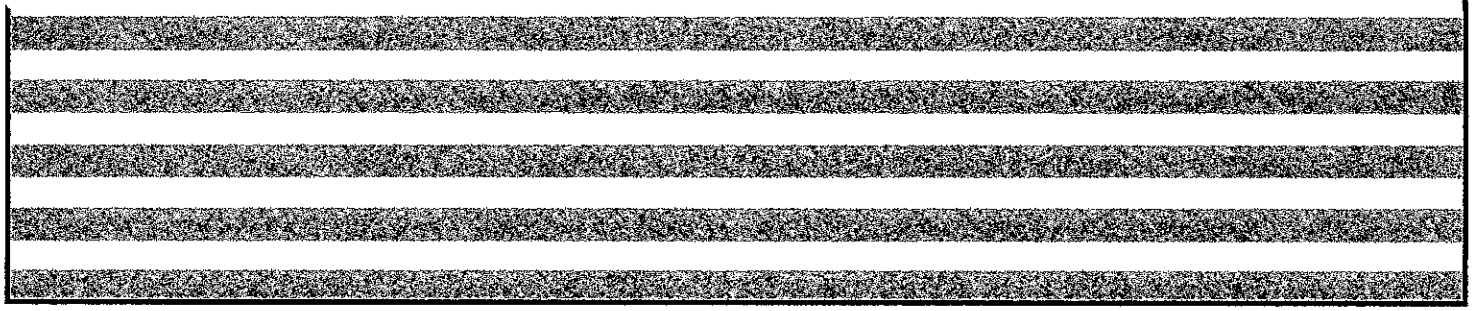
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Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672025
Customer Sample ID: 191
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.8	(5.8)	-	Strongly Acid	
Conductivity	49	(-)	umho/cm	None	
Nitrate-N	12	(-)	ppm**		75 lbs N/acre
Phosphorus	77	(50)	ppm		0 lbs P2O5/acre
Potassium	17	(150)	ppm		220 lbs K2O/acre
Calcium	403	(180)	ppm		0 lbs Ca/acre
Magnesium	39	(50)	ppm		5 lbs Mg/acre
Sulfur	22	(13)	ppm		0 lbs S/acre
Sodium	34	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.30 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Bou
LMU #6

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

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Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672026
Customer Sample ID: 192
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.6	(5.8)	-	Strongly Acid	
Conductivity	56	(-)	umho/cm	None	
Nitrate-N	12	(-)	ppm**		75 lbs N/acre
Phosphorus	91	(50)	ppm		0 lbs P2O5/acre
Potassium	26	(150)	ppm		205 lbs K2O/acre
Calcium	328	(180)	ppm		0 lbs Ca/acre
Magnesium	47	(50)	ppm		5 lbs Mg/acre
Sulfur	15	(13)	ppm		0 lbs S/acre
Sodium	22	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.35 tons 100ECCE/acre

8

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Bou
LMU #7

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

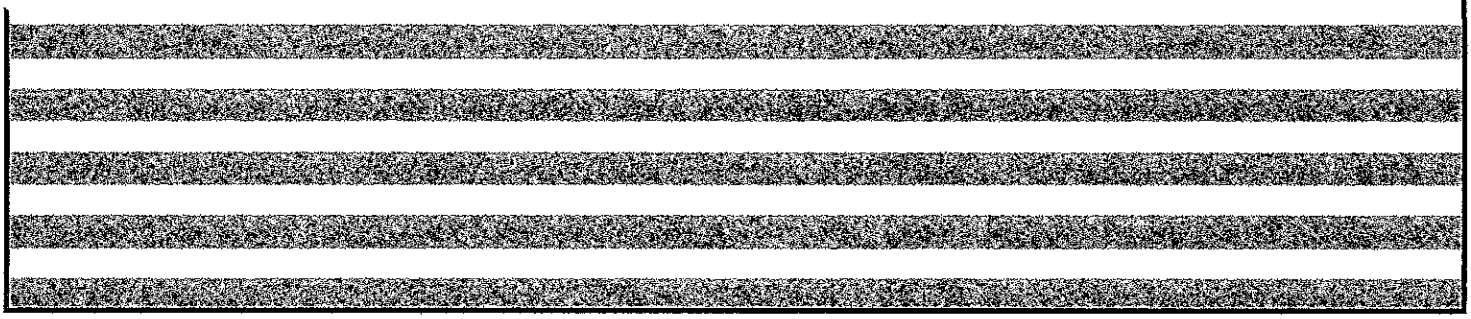
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672028
Customer Sample ID: 194
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.5	(5.8)	-	Strongly Acid	
Conductivity	45	(-)	umho/cm	None	
Nitrate-N	13	(-)	ppm**		70 lbs N/acre
Phosphorus	145	(50)	ppm		0 lbs P2O5/acre
Potassium	32	(150)	ppm		195 lbs K20/acre
Calcium	320	(180)	ppm		0 lbs Ca/acre
Magnesium	52	(50)	ppm		0 lbs Mg/acre
Sulfur	12	(13)	ppm		5 lbs S/acre
Sodium	15	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.40 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Sulfur: Available sulfur may be found deeper in soil profile, thus limiting any response to added sulfur.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Boy
LMU #8

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672027
Customer Sample ID: 193
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.5	(5.8)	-	Strongly Acid	
Conductivity	44	(-)	umho/cm	None	
Nitrate-N	11	(-)	ppm**		75 lbs N/acre
Phosphorus	113	(50)	ppm		0 lbs P2O5/acre
Potassium	25	(150)	ppm		205 lbs K2O/acre
Calcium	277	(180)	ppm		0 lbs Ca/acre
Magnesium	46	(50)	ppm		5 lbs Mg/acre
Sulfur	13	(13)	ppm		5 lbs S/acre
Sodium	14	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.35 tons 100ECCE/acre

8

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Potassium: Split apply potassium fertilizer if recommendation is for more than 75 lbs K2O per acre.

Sulfur: Available sulfur may be found deeper in soil profile, thus limiting any response to added sulfur.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Bouma
LMU #9

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
(979)321-5960

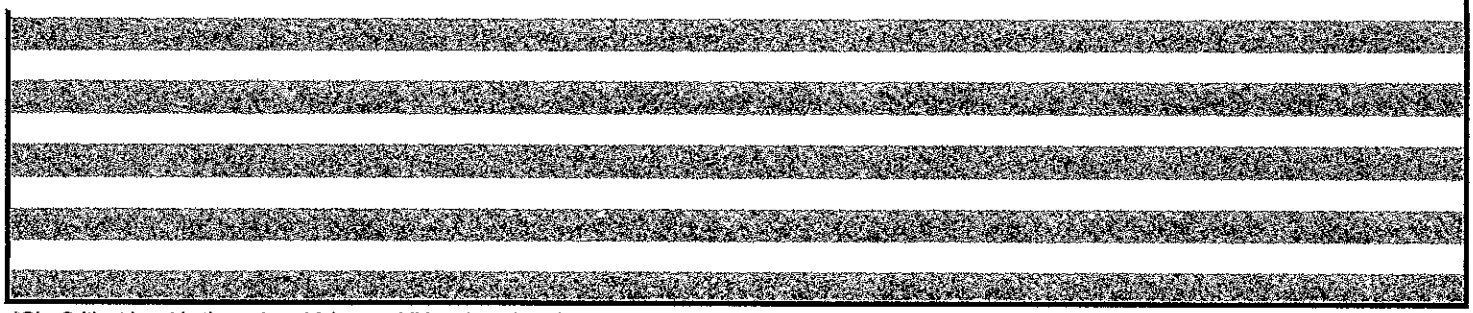
Visit our website: http://soiltesting.tamu.edu

Report generated for:
East Texas Environmental Services
Jim Wyrick
317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Sample received on: 11/13/2024
Printed on: 11/20/2024
Area Represented: 40 acres

Hopkins County
Laboratory Number: 672130
Customer Sample ID: 187
Crop Grown: IMPROVED AND HYBRID BERMUDA GRASS (3 HAY CUTTINGS-2 TONS/A AVG.)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	4.9	(5.8)	-	Strongly Acid	
Conductivity	115	(-)	umho/cm	None	
Nitrate-N	20	(-)	ppm**		60 lbs N/acre
Phosphorus	90	(50)	ppm		0 lbs P2O5/acre
Potassium	132	(150)	ppm		25 lbs K2O/acre
Calcium	480	(180)	ppm		0 lbs Ca/acre
Magnesium	79	(50)	ppm		0 lbs Mg/acre
Sulfur	34	(13)	ppm		0 lbs S/acre
Sodium	37	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.30 tons 100ECCE/acre



*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Limestone recommendations are based on 100 ECCE liming products. Limestone applications >3 tons/acre should be made >4 months prior to crop establishment to lessen micro-nutrient availability issues.

Nitrogen: Apply an additional 100 lbs/A of nitrogen for each subsequent hay cuttings.

Online fertilizer calculators to determine appropriate fertilizers and application rates.
http://soiltesting.tamu.edu

TEXAS A&M AGRILIFE EXTENSION

Bio-Liquid Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979/845-4816

Visit our website:
http://soiltesting.tamu.edu

Baums

114

Rep[illegible]enerated for:
East[illegible]as Environmental Services

317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Date Printed: 12/4/2024

Sample(s) from Hopkins County

Section 1: Bio-liquids are analyzed on an as received basis

Laboratory #	Customer Sample Identification	Total Nitrogen %	Total Phosphorus %	Total Potassium %	Total Calcium %	Total Magnesium %	Total Sodium %	Total Zinc ppm	Total Iron ppm
45022056	112	0.0676	0.0092	0.0920	0.0235	0.0169	0.0477	8.56	23.00
45022057	113	0.0556	0.0045	0.0451	0.0107	0.0068	0.0199	1.06	5.27
45022058	114	0.0735	0.0118	0.0860	0.0255	0.0171	0.0456	4.50	7.17
45022059	115	0.0614	0.0118	0.0824	0.0274	0.0131	0.0368	3.95	7.34

Laboratory #	Total Copper ppm	Total Manganese ppm	Total Sulfur ppm	Total Boron ppm	Nitrate-N ppm	Ammonium-N ppm	pH	Conductivity umhos/cm
45[illegible]56	0.41	2.53						
450[illegible]57	0.29	2.04						
45022058	0.54	3.18						
45022059	0.70	2.95						

Section 2: Interpretation of Bio-Liquid Analysis—pounds of nutrients per acre inch of effluent.

Laboratory #	Customer Sample Identification	Nitrogen lbs/acre inch	P_2O_5 lbs/acre inch	K_2O lbs/acre inch	Calcium lbs/acre inch	Magnesium lbs/acre inch	Sodium lbs/acre inch	Zinc lbs/acre inch	Iron lbs/acre inch
45022056	112	163	47	250	53	38	108	0.81	5.21
45022057	113	126	23	123	24	15	45	0.24	1.19
45022058	114	166	61	231	58	39	103	1.02	1.62
45022059	115	139	61	224	62	30	83	0.89	1.66

Laboratory #	Copper lbs/acre inch	Manganese lbs/acre inch	Sulfur lbs/acre inch	Boron lbs/acre inch	Nitrate-N lbs/acre inch	Ammonium-N lbs/acre inch
45022056	0.09	0.57				
45022057	0.07	0.46				
45022058	0.12	0.72				
45[illegible]59	0.16	0.67				

* one acre inch equals 27150 gallons

TEXAS A&M AGRILIFE EXTENSION

Bio-Solid Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979/845-4816

Visit our website:
http://soiltesting.tamu.edu

generated for:

East Texas Environmental Services

Bowman
116

317 Highland Dr.
SULPHUR SPRINGS, TX 75482

Date Processed: 12/4/2024

Sample(s) from Hopkins County

Section 1: **Based on analysis of oven dried sample(s)**

Laboratory #	Customer Sample Identification	Total Nitrogen %	Total Phosphorus %	Total Potassium %	Total Calcium %	Total Magnesium %	Total Sodium %	Total Zinc ppm	Total Iron ppm
45022060	116	1.44	0.26	0.77	1.24	0.27	0.71	163.00	2698.00
45022061	117	1.78	0.52	0.20	3.26	0.61	0.34	382.00	7549.00
45022062	118	0.61	0.11	0.33	0.68	0.08	0.18	55.50	2965.00

Laboratory #	Total Copper ppm	Total Manganese ppm	Total Sulfur ppm	Total Boron ppm	% Dry Matter
45022060	128.00	0.20	2424.00	82.40	18.5
061	58.30	13.10	2958.00	48.40	30.5
45022062	12.50	0.20	853.00	39.80	46.0

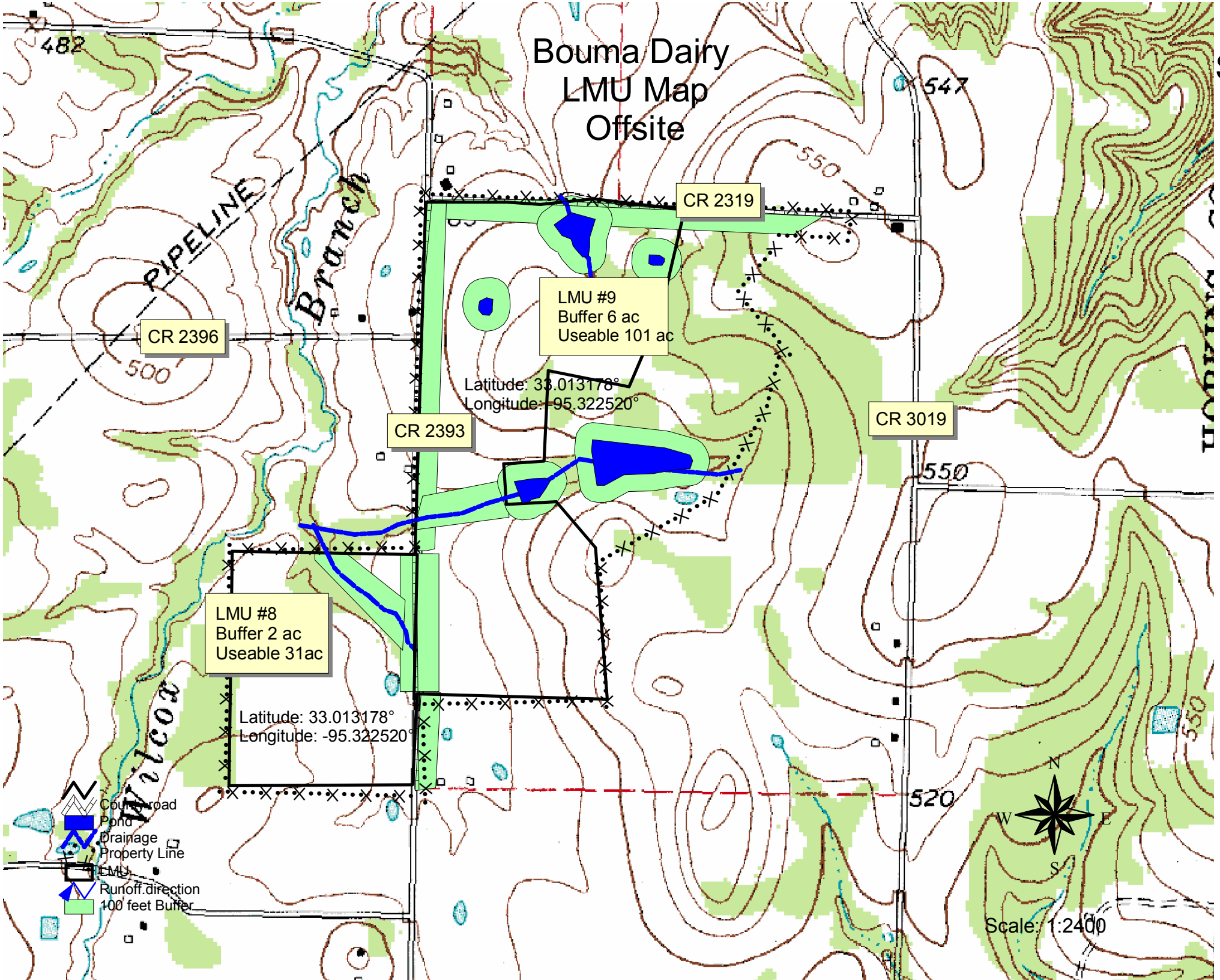
Section 2: **Pounds of nutrient per ton on an as received basis**

Laboratory #	Customer Sample Identification	Nitrogen lbs/wet ton	P_2O_5 lbs/wet ton	K_2O lbs/wet ton	Calcium lbs/wet ton	Magnesium lbs/wet ton	Sodium lbs/wet ton	Zinc lbs/wet ton	Iron lbs/wet ton
45022060	116	5.32	2.23	3.43	4.59	0.98	2.62	0.060	1.072
45022061	117	10.83	7.20	1.49	19.87	3.71	2.07	0.233	4.598
45022062	118	5.57	2.33	3.64	6.28	0.75	1.68	0.051	2.726

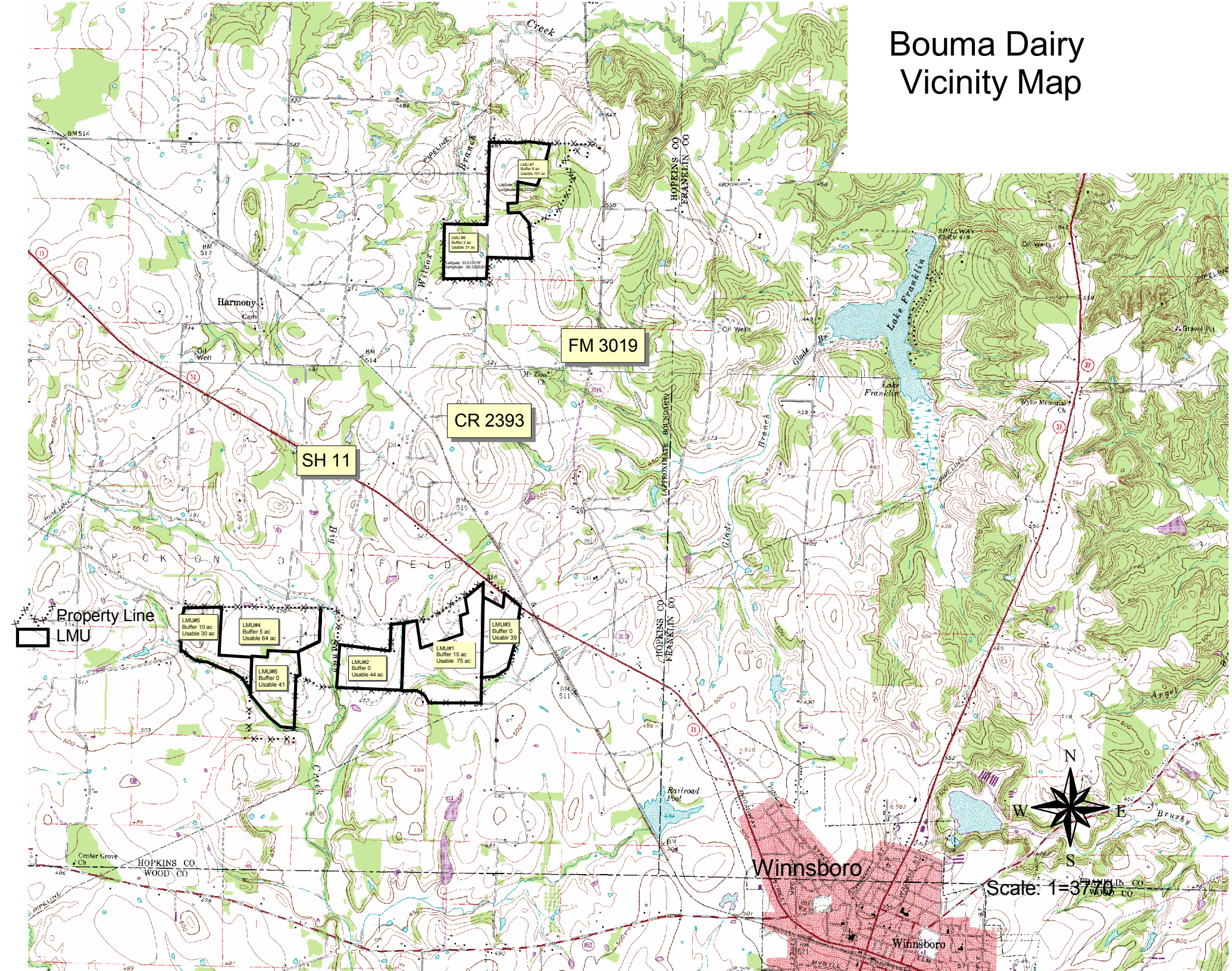
Laboratory #	Copper lbs/wet ton	Manganese lbs/wet ton	Sulfur lbs/wet ton	Boron lbs/wet ton
45022060	0.047	0.000	0.897	0.030
45022061	0.036	0.008	1.802	0.029
45022062	0.011	0.000	0.784	0.037

LMU#7
Latitude: 33.013178°
Longitude: -95.322520°

LMU#8
Latitude: 33.008603°
Longitude: -95.327098°


Bouma Dairy
LMU Map
Offsite
CR 2319
CR 2396
CR 2393
CR 3019
LMU #9
Buffer 6 ac
Useable 101 ac
Latitude: 33.013178°
Longitude: -95.322520°
LMU #8
Buffer 2 ac
Useable 31ac
Latitude: 33.013178°
Longitude: -95.322520°
PIPELINE
Branch
Wilcox
482
547
550
500
520
County road
Pond
Drainage
Property Line
LMU
Runoff direction
100 feet Buffer
N
W
E
S
Scale: 1:2400

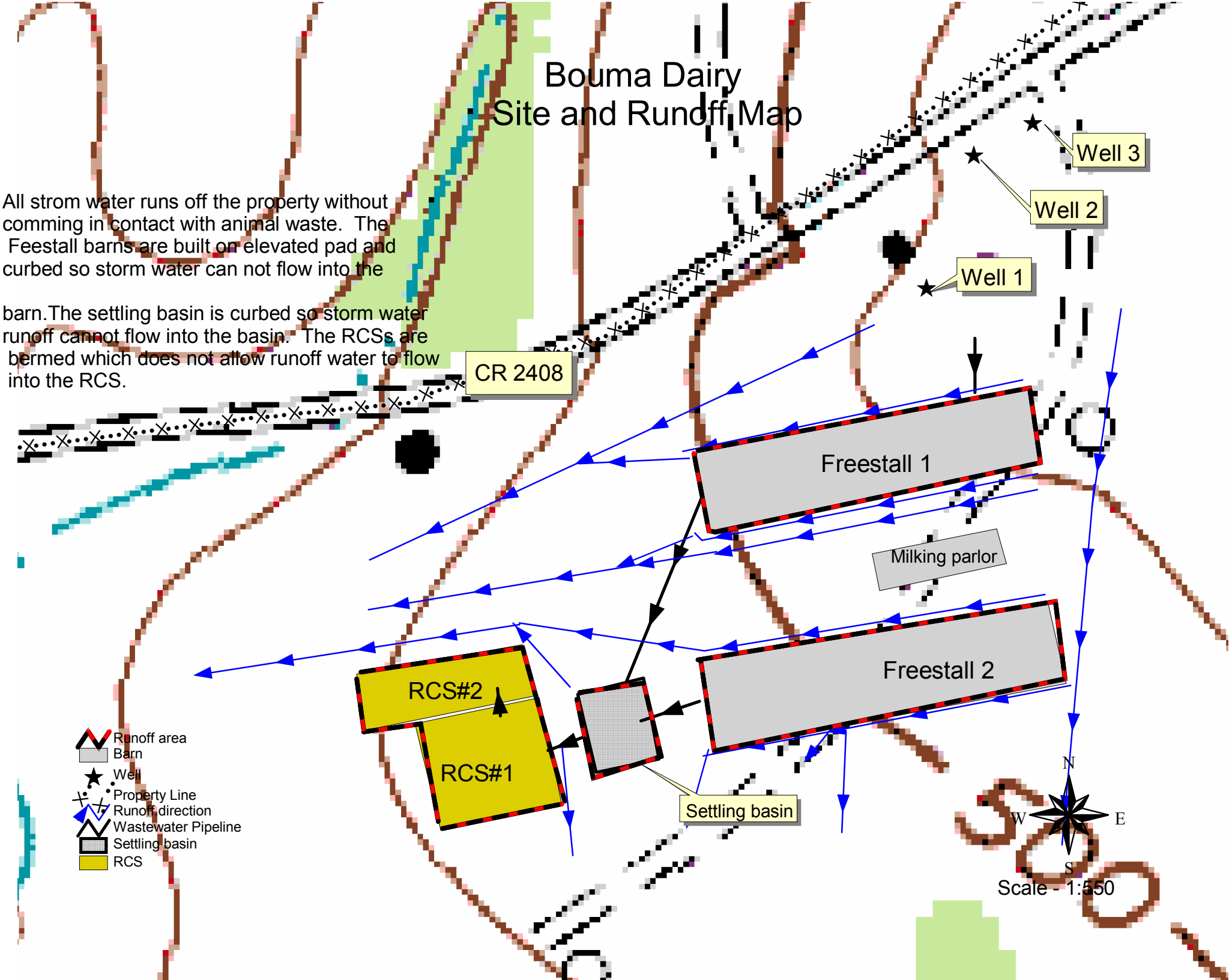
Bouma Dairy
Vicinity Map

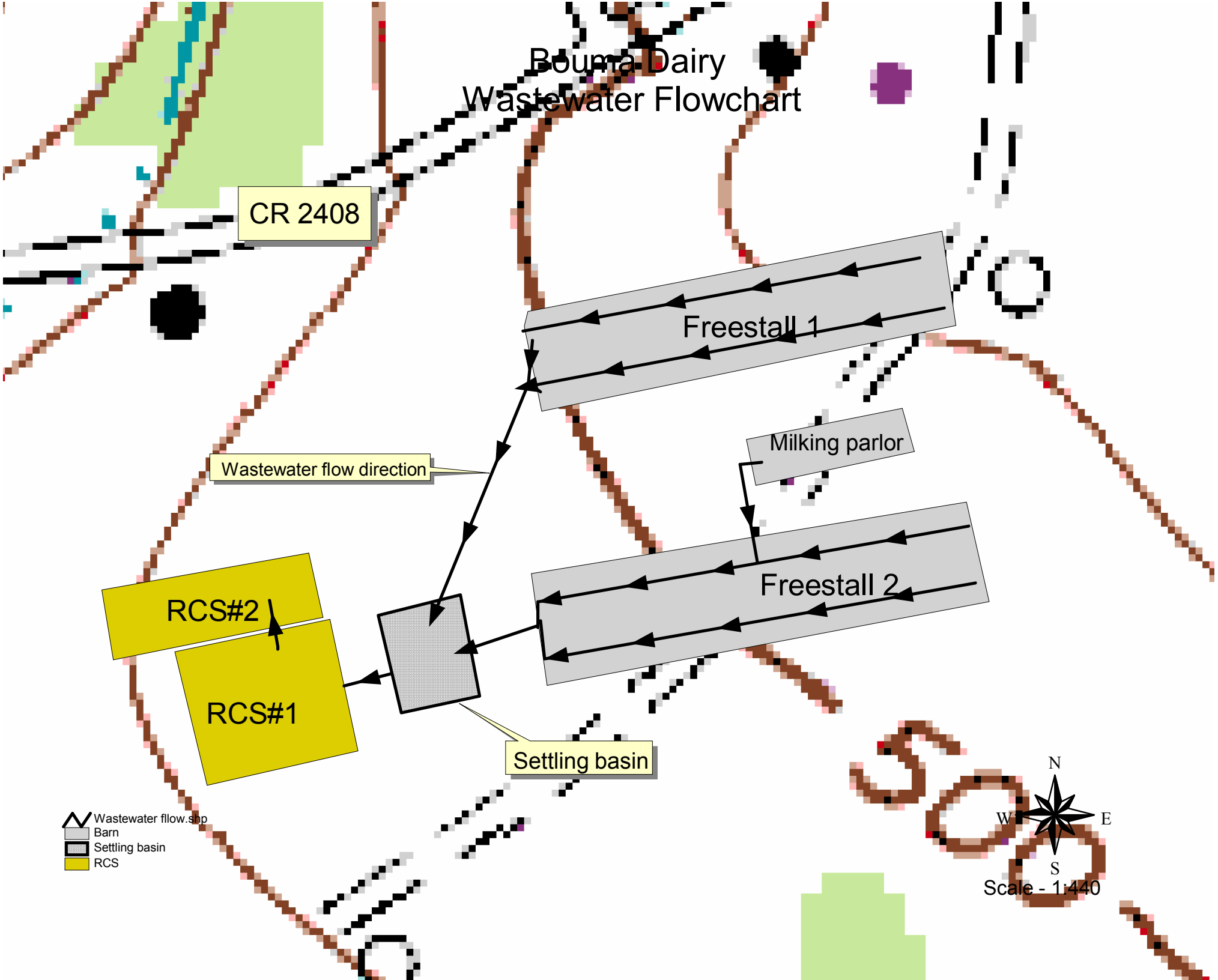


Bouma Dairy
Site and Runoff Map

All strom water runs off the property without comming in contact with animal waste. The Feestall barns are built on elevated pad and curbed so storm water can not flow into the

barn.The settling basin is curbed so storm water runoff cannot flow into the basin. The RCSs are bermed which does not allow runoff water to flow into the RCS.




Bouma Dairy
Wastewater Flowchart
CR 2408
Freestall 1
Milking parlor
Wastewater flow direction
Freestall 2
RCS#2
RCS#1
Settling basin
Wastewater fllow.shp
Barn
Settling basin
RCS
N
W
E
S
Scale - 1:440

BOUMA DAIRY - SLUDGE VOLUME

D.A. #1 - DAIRY BARN & FREESTALL BARN

All of the waste from the dairy barn and freestalls at Bouma Dairy removed by a Honey Vacuum that is proved to be at least 50-90% effective according to the NRCS Practice Standard Code 6632 - "Solid/Liquid Waste Separation Facility". In this case 90% vacuum efficiency was used. The remaining solids go into settling basins that removes 45% of the remaining solids produced. Any manure separating facilities have 40%-65% total solids efficiency according to NRCS Practice Standard Code 632 - "Solid/Liquid Waste Separation Facility". The adjusted total live weight contributing to the waste volume is 990,675 pounds @ 1400lbs/cow. The sludge from the free stall barns is calculated below:

Adjusted Total Live weight Contributing Manure	990,675 lbs
Honey Vacuum Efficiency	90%
Adjusted Live weight	99,067 lbs
Settling Basin Efficiency	45%
Adjusted Live weight	54,487 lbs
Sludge Accumulation Rate cu ft/year/lbs live weight	0.25

$$\text{Sludge Volume} = \frac{(54{,}487 \text{ lbs})\,(0.25 \text{ cu ft/year/lbs live weight})}{43{,}560 \text{ cu ft/ac-ft}} = 3.1 \text{ Ac-Ft/ 10years}$$

STATE OF TEXAS
MAX NORTON BERRY
44452
REGISTERED
PROFESSIONAL ENGINEER

F-21204
11/29/24

BOUMA DAIRY

SLUDGE VOLUME FROM OPEN LOTS

OPEN LOT:

Sludge storage for a ten year period may be calculated using the following equation:

Sludge Volume = 25% x (25yr-24hr storm volume runoff from open lots)

For this facility the 25yr-24hr storm volume from open lots = 1.31 ac-ft

Open Lot Volume = .25 x 1.31 = .33 for a ten year period.

The planned sludge cleanout interval for open lots is 1 year; therefore, allotted sludge volume is as follows:

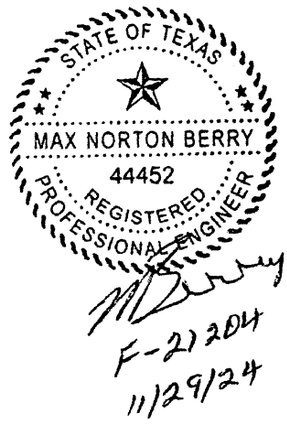
$$\frac{.33 \text{ ac-ft}}{10 \text{ years}} (5 \text{ years}) = .33 \text{ac-ft}$$

MANURE PRODUCTION DATA
FOR CONFINED ANIMAL FEEDING OPERATIONS

TYPE OF ANIMAL (Dairy=0, Swine=1, Laying Hens=2, Beef Feedlot=3, Sheep Feedlot=4, Horses=5, Turkeys=6, Broilers=7) => 0

Feeding Facilities For: Dairy

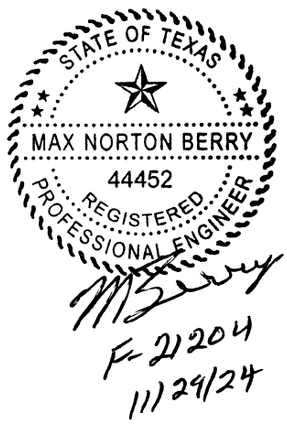
	Buildings, Concrete Pens & Alleys	Open Lots	Total
Number of Animals	999	999	
Average Liveweight per Head, lbs/hd	1,400	1,400	
Total Liveweight,lbs	1,398,600	1,398,600	
Confinement Period, hours/hd/day	17.0	7.0	24.0
Adjusted Total Liveweight, lbs	990,675	407,925	1,398,600
Wet Manure Production, lbs/day	101,049	41,608	142,657
Dry Manure Production, lbs/day	14,563	5,996	20,559
Dry Manure Production, tons/year	2,658	1,094	3,752
Volatile Solids (VS) Production, lbs/day	10,689	4,402	15,091
Total Nitrogen Production, lbs/day	542	223	765
Total Phosphorus (P2O5), lbs/day	267	110	378
Total Potassium (K2O), lbs/day	459	189	648
Sodium Production, lbs/day	77	32	109
COD Production, lbs/day	13,275	5,466	18,741
BOD5 Production, lbs/day	2,061	848	2,909



VOLUME OF MANURE & WASTEWATER FROM CONFINEMENT BUILDINGS

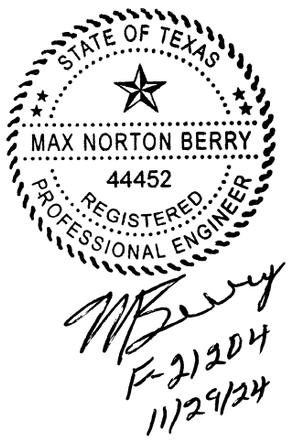
Wet Manure Production	=	12116	gal/day
Water Used for Manure Removal			
a. Dry Manure Production	=	14563	lbs/day
b. Water Volume Required for Manure Removal			
1. Flush Systems:			
(Enter gallons water per pound of dry manure production, range 8-12 gal/lb)	=>	5	
Total flush water	=	72815	gal/day
2. Manual Scrape/Wash System (Enter gallons of water per pound of dry manure production, Range: 3 - 6 gal/lb)	=>	0	
Total manual wash water	=	0	gal/day
Cleanup and Washwater (Default=10 gal/hd/day)	=>	5	gal/hd/day
	=	4995	gal/day
Other Water That Enters Wastewater System	=>	5.000	gal/hd/day
[e.g. drinking water, etc.(12 gal/hd/day)]	=	4995	gal/day
Total Process Generated Wastewater Volume Daily Volume	=	94921	gal/day
Less Volume of Recycled Wastewater Used for Manure Removal	=>	58252	gal/day
Design Wastewater Storage Volume, Minimum Allowable			
Minimum Storage Days (Use Exhibit 2)*	=>	21	days
Minimum Design Storage Volume	=	2.36	ac-ft
Net Manure and Wastewater Volume for Land Application			
Monthly Volume	=	3.42	ac-ft/month
Annual Sludge Accumulation Rate, ac-ft	=	0.31	
Desired Sludge Storage Volume in Pond	=>	3.41	ac-ft
Sludge Cleanout Interval	=	10.0	years
Design Sludge Accumulation Storage Volume (Not to be less than 1 Year accumulation)	=	3.41	ac-ft

* Use Exhibit 2 of Texas Water Commission regulations for your particular location.



ESTIMATED VOLUME OF RUNOFF FROM OPEN LOTS

Total area draining into Runoff Control Structure (RCS)				
a. Area of open lot surface		=>	1.31	acres
b. Area between open lot surface and RCS		=>	0.17	acres
c. Surface area of RCS		=>	1.32	acres
d. Total area (#1.a + #1.b + #1.c)		=	2.80	acres
Design rainfall (25-year frequency, 24-hour duration storm), inches (Use Exhibit 1)	1)	=>	8.00	inches
Design runoff depth, inches (Use exhibit 3)				
a. For Open Lot Surface * CN		=>	90	
			6.81	inches
b. For Area Between Lots and RCS ** CN		=>	85	
			6.21	inches
c. For Surface Area of RCS		=	8.00	inches
Design runoff volume from 25-year, 24-hour storm				
a. For Open Lot Surface		=	0.7	ac-ft
b. For Area Between Lots and RCS		=	0.1	ac-ft
c. For Surface Area of RCS		=	0.9	ac-ft
d. Total Design Runoff Volume		=	1.7	ac-ft



NOTE: Runoff Control Structures must be capable of storing Design Runoff Volume plus Design Storage Volume, if runoff and process generated wastewater streams are combined.

* Use NRCS soil cover complex curve No. 90 for unpaved (soil) lots and curve No. 95 for concrete surfaces.

** Use appropriate NRCS soil cover complex curve number for particular type of cover. Contact local Natural Resources Conservation Service field office for assistance.

SUMMARY OF REQUIRED AND DESIGNED STORAGE PONDS

Minimum Design Wastewater Storage Volume	2.36	ac-ft
Minimum Design Runoff Storage Volume	1.71	ac-ft
Sludge Accumulation Storage Volume	3.41	ac-ft
Additional Capacity Allowance	5.00	ac-ft
Total Capacity Designed	12.48	ac-ft

Primary Anaerobic Manure Treatment Lagoons, Sheet 5 of 10., Use Where Applicable.

DESIGN BASIS FOR
PRIMARY ANAEROBIC MANURE TREATMENT LAGOONS

(WHERE APPLICABLE)

Design Factor		Dairy	
Adjusted Total Liveweight Contributing Manure to Lagoon	=	990675	lbs
Recommended Unit Treatment Volume (see footnote) =>		0.00	
(RUTV), cubic feet/pound liveweight	=	3.00	
Total Treatment Volume	=	68.23	ac-ft
Design checks (see footnotes):			
a. Volatile Solids (VS) Loading Rate, /lbs/day/cu ft	=	0.0036	
b. Hydraulic Retention Time (HRT),	=	234	ys
c. Estimated Sludge Cleanout Interval,			
1. Sludge Accumulation Rate, cu ft/year/lb liveweight	=	0.250	
2. Sludge Cleanout Interval	=	6.0	ye
Additional Capacity Allowance for:			
a. Design Runoff Volume, (one st e goons	=>	1.0	ac-ft
b. Sludge storage		0.3	ac-ft
c. Additional Storage	=	0.2	ac-ft
Total Primary Lago Capacity	=	69.7	ac-ft

THIS PAGE IS NOT APPLICABLE TO THIS PLAN

Notes: 2. If u ery are qu s 0, th e ault values are used
(dai y=3, sw =1.75, p ltry,aying hens=2.5, beef=2, sheep=2, horses=2).
ser ma cify alterna value which will override template default.

4.a. VS Loading Rate--Volatile Solids Production (Worksheet I, #10) / Total Treatment Volume. Desired range is 0.0025-0.0040 lbs VS/day/cu ft for odor control.

4.b. Hydraulic Retention Time--Total Treatment Volume / Total Manure and Wastewater Volume. Desired range is 160-400 days for good treatment.

4.c. Sludge Cleanout Interval (when half full)

$$\text{Interval} = \frac{\text{Total Treatment Volume (cuft)} \times 0.5}{\text{Adj. Total Live Wt.} \times \text{Sludge Accum. Rate}}$$

LAND AREA FOR DISPOSAL OF MANURE OR EFFLUENT FROM TREATMENT LAGOONS,

BASED ON PLANT-AVAILABLE NITROGEN (PAN)

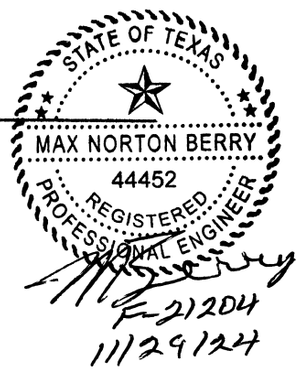
		Buildings		Open Lots	
Total Daily Nitrogen Production	=	542	more->	223	lbs/day
Total Annual Nitrogen Production	=	197793	more->	81444	lbs/yr
Percent Nitrogen Loss from manure storage or treatment system*	=>	20	more->	0	percent
Annual Nitrogen Loss from manure storage or treatment system	=	39559	more->	0	lbs/yr
Total Annual Nitrogen Remaining	=	158235	more->	81444	lbs/yr
Availability of Nitrogen in Manure or Effluent,% (Normal range is 80-95% in lagoon effluent; 50-80% in fresh or pit-stored manure; or 40-50% in feed lot manure)	=>	80	more->	0	percent
Annual Plant-Available Nitrogen (PAN) Applied to Soil		126588	more->	0	lbs/yr
PAN Losses from Soil Surface Application**	** =>	20	more->	0	percent
PAN Losses from Soil Surface Application	=	25318	more->	0	lbs/yr
PAN Entering Soil	=	101270	more->	0	lbs N/yr

Land Required for Various PAN Application Rates:

Assumed PAN Application Rate, lbs/ac/yr	Buildings Acres		Open Lots Acres		Total Acres
100	1013	+	0	=	1013
150	675	+	0	=	675
200	506	+	0	=	506
300	338	+	0	=	338
400	253	+	0	=	253

* Nitrogen Loss from Lagoon Surface--Normal loss is 40-65% for primary treatment lagoons with 200 days or more storage; 10-20% from liquid manure settling basins or storage pits; and 40-50% from open feedlot surface.

** Normal range of nitrogen loss from soil surface is 15-35% for surface application or, 5% for soil injection. Losses are highest in warm weather and on high pH soils.



WATER BUDGET ANALYSIS

DRAINAGE AREA	2.80	ACRES	RUNOFF CONTROL STRUCTURE DATA		
MANURE PROD. RCS AREA	1.32	ACRES	LOCATION NO.	12	FIELD OFFICE SULPHUR SPRGS
					COUNTY HOPKINS
SLUDGE ACCUMULATION	3.41	AC-FT	30-DAY CURVE NUMBERS		CROPS FOR WATER DEMAND
MIN. WASTEWATER STORE	2.36	AC-FT	POND	74.0	Bermudagrass 0.00 AC
ADDITIONAL STORAGE	5.00	AC-FT	FIELD	48.0	Bermuda/SmGr 381.00 AC
SUBTOTAL	10.77	AC-FT	IRRIG. EFFICIENCY, %	75.00	Sorghum/SmGr 0.00 AC
25YR-24HR RUNOFF	1.71	AC-FT	IRRIGATION DEPTH, IN/YR	1.02	Small Grain 0.00 AC
TOTAL POND CAPACITY	12.48	AC-FT	EVAPORATION. COEFF.	71.50	Assumed Seepage 0.0 ACFT

MONTH	RAINFALL (1) IN	RUNOFF (2) IN	INFLOW TO POND (3) AC-FT	OTHER INFLOW (3a) AC-FT	EFFECTIVE RAINFALL (4) IN	GROSS EVAP (5) IN	NET POND EVAP (8) AC-FT	CROP DEMAND (10) AC-FT	ACTUAL WITHDRAWL (10b) AC-FT	STORAGE at E.O.M (11) AC-FT	SURF AREA at E.O.M (12) AC	SPILL (13) AC-FT
										10.72	1.25	0.00
JAN	2.70	0.03	0.17	3.42	2.67	2.20	0.00	18.89	10.90	3.41	0.91	0.00
FEB	3.20	0.09	0.24	3.42	3.11	2.30	0.00	24.76	3.67	3.41	0.91	0.00
MAR	3.90	0.24	0.36	3.42	3.66	3.20	0.04	145.39	3.74	3.41	0.91	0.00
APR	4.80	0.51	0.51	3.42	4.29	3.60	0.05	188.75	3.88	3.41	0.91	0.00
MAY	5.20	0.66	0.59	3.42	4.54	4.50	0.11	190.93	3.90	3.41	0.91	0.00
JUN	3.70	0.19	0.32	3.42	3.51	5.60	0.21	159.39	3.53	3.41	0.91	0.00
JUL	3.10	0.07	0.23	3.42	3.03	7.10	0.33	131.26	3.32	3.41	0.91	0.00
AUG	2.40	0.00	0.13	3.42	2.40	7.60	0.39	139.86	3.16	3.41	0.91	0.00
SEP	3.50	0.15	0.29	3.42	3.35	6.20	0.26	60.20	3.45	3.41	0.91	0.00
OCT	4.00	0.27	0.37	3.42	3.73	5.20	0.18	15.73	3.62	3.41	0.91	0.00
NOV	3.40	0.13	0.27	3.42	3.27	3.80	0.10	0.00	0.00	7.01	1.08	0.00
DEC	3.60	0.17	0.31	3.42	3.43	2.70	0.02	0.00	0.00	10.72	1.25	0.00
TOTALS	43.50	2.51	3.79	41.07	40.99	54.00	1.69	1075.15	43.17		Reset:	0
	43.50					54.00			43.17	Checks		

STORAGE-AREA TABLE FOR RUNOFF CONTROL STRUCTURE

STORAGE DATA TYPE R (C - CIRCULAR, R - RECTANGULAR, or S - STAGE DATA)

CIRCULAR		RECTANGULAR	
DEPTH, FT	0.0	DEPTH, FT	12.35
SIDE SLOPE, RATIO	0.00	SIDE SLOPE, RATIO	2.50
TOP DIAMETER, FT	0.00	END SLOPE, RATIO	2.50
FREE BOARD, FT	0.00	TOP WIDTH, FT	240.00
BOTTOM DIAMETER, FT	0.00	TOP LENGTH, FT	240.00
SURFACE AREA, AC	0.00	FREE BOARD, FT	2.00
VOLUME, ACFT	0.00	BOTTOM WIDTH, FT	178.25
		BOTTOM LENGTH, FT	178.25
		SURFACE AREA, AC	1.32
		VOLUME, ACFT	12.49

THIS WATER BUDGET VERIFIES THAT 25YR - 24 HR STORM RUNOFF STORAGE ALLOCATION IS MAINTAINED THROUGHOUT THIS CLIMATIC CYCLE.

NOTE: USER INPUT VALUES FOR NUTRIENTS USED IN NUTRIENT BALANCE WORKSHEET!

DEPTH, FT 0.0 STAGE

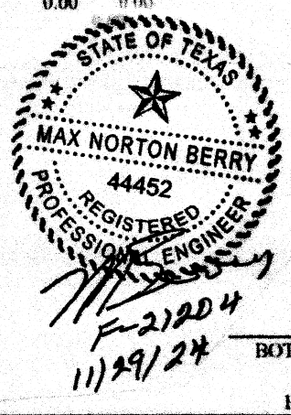
FREE BOARD, FT 0.00

Leave Extra Rows at Bottom with Blanks or Zeros.

STAGE STORAGE DATA SUMMARY

METHOD: RECTANGULAR

ROW #	DEPTH FT	AREA AC
BOTTOM	0.00	0.00
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		



F-21204

11/29/24

ROW #	DEPTH FT	AREA AC	STORE ACFT	WIDTH FT	LENGTH FT
0	0.00	0.73	0.00	178.25	178.25
1	1.24	0.78	0.93	184.43	184.43
2	2.47	0.83	1.93	190.60	190.60
3	3.71	0.89	2.99	196.78	196.78
4	4.94	0.95	4.13	202.95	202.95
5	6.18	1.00	5.33	209.13	209.13
6	7.41	1.06	6.61	215.30	215.30
7	8.65	1.13	7.96	221.48	221.48
8	9.88	1.19	9.39	227.65	227.65
9	11.12	1.26	10.90	233.83	233.83
10	12.35	1.32	12.49	240.00	240.00
11	13.35	1.38	13.84	245.00	245.00
12	14.35	1.43	15.25	250.00	250.00
BOT. 25YR-24HR	11.01	1.25	10.77	233.83	233.83
SPILLWAY	12.35	1.32	12.49	240.00	240.00
FREE BOARD	14.35	1.43	15.25	250.00	250.00

WATER BUDGET ANALYSIS

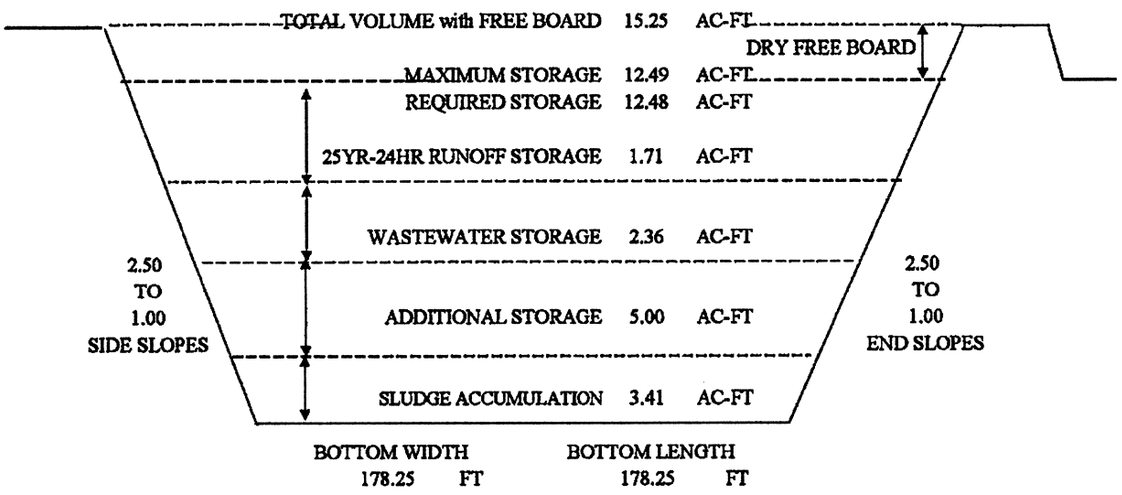


DIAGRAM OF RUNOFF CONTROL STRUCTURE

	CONSUMPTIVE USE FOR SPECIFIC CROP AREAS (IN/MONTH)						NET CROP DEMAND (C.U.-EFF.RAINFALL) (IN/MONTH)					
FIELD	0	1,2,3	3	4	5	6	0	1,2,3	3	4	5	6
VEGETATION	Bermudagrass Pastureland	Bermuda/SmGr Pastureland	Sorghum/SmGr Cropland	Small Grain Cropland	Grain Sorghum Cropland	Alfalfa Pastureland	Bermudagrass Pastureland	Bermuda/SmGr Pastureland	Sorghum/SmGr Cropland	Small Grain Cropland	Grain Sorghum Cropland	Alfalfa Pastureland
JAN	1.92	3.27	2.44	2.44	0.00	0.90	0.00	0.60	0.00	0.00	0.00	0.00
FEB	2.31	3.89	2.87	2.87	0.00	1.20	0.00	0.78	0.00	0.00	0.00	0.00
MAR	3.76	8.24	4.48	4.48	0.00	3.00	0.10	4.58	0.82	0.82	0.00	0.00
APR	4.81	10.23	8.74	5.42	3.32	3.70	0.52	5.94	4.45	1.13	0.00	0.00
MAY	5.50	10.55	10.49	5.05	5.44	6.60	0.96	6.01	5.95	0.51	0.90	2.06
JUN	6.27	8.53	9.40	2.26	7.14	6.90	2.76	5.02	5.89	0.00	3.63	3.39
JUL	7.16	7.16	7.82	0.00	7.82	7.60	4.13	4.13	4.79	0.00	4.79	4.57
AUG	6.80	6.80	1.75	0.00	1.75	5.30	4.40	4.40	0.00	0.00	0.00	2.90
SEP	5.25	5.25	0.00	0.00	0.00	5.50	1.90	1.90	0.00	0.00	0.00	2.15
OCT	4.47	4.23	1.16	1.16	0.00	3.80	0.74	0.50	0.00	0.00	0.00	0.07
NOV	2.54	3.27	1.82	1.82	0.00	1.70	0.00	0.00	0.00	0.00	0.00	0.00
DEC	1.98	2.93	1.93	1.93	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00



F-21204
11/29/24

PLANTILLA DE IDIOMA ESPAÑOL PARA SOLICITUDES DE PERMISO CAFO

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

1. Nombre del Solicitante: BOUMA, MAIKO HESSEL
2. Introduzca el Número de Cliente: CN601231814
3. Nombre de la Instalación: BOUMA DAIRY
4. Introduzca el Número de Entidad Regulada: RN102334539.
5. Proporcione su Número de Permiso: AÚN NO EMITIDO
6. Negocio de Instalación: PRODUCCIÓN DE LECHE. ESTA INSTALACIÓN CONFINA 999 CABEZAS DE GANADO LECHERO, DE LAS CUALES 999 CABEZAS SON VACAS DE ORDEÑO. EL ÁREA DE PRODUCCIÓN DE LA INSTALACIÓN ESTÁ UBICADA EN 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. LA INSTALACIÓN LÁCTEA TIENE 9 UNIDADES DE GESTIÓN DE TIERRAS (LMUS) CON LA SIGUIENTE SUPERFICIE: LMU N.º 1 - 75, LMU N.º 2 - 44, LMU N.º 3 - 39, LMU N.º 4 - 64, LMU N.º 5 - 30, LMU N.º 5 - 30, LMU N.º 6 - 41, LMU N.º 7 - 113, LMU N.º 8 – 31, LMU N.º 9 – 101 , Y 2 ESTRUCTURAS DE CONTROL DE RETENCIÓN (RCSS) Y CUENCAS DE SEDIMENTACIÓN DE CONCRETO. LAS CAPACIDADES TOTALES REQUERIDAS POR RCSS SIN FRANCOBORDO (ACRE-PIES) SON RCS N.˚ 1: 5,56 Y RCS N.˚ 2: 6,92. HAY 3 POZOS DE AGUA EN EL LUGAR (POZOS N.˚ 1 A N.˚ 3). LA INSTALACIÓN ESTÁ UBICADA EN EL ÁREA DE DRENAJE DEL SEGMENTO N.˚ 0514 DE BIG SANDY CREEK
7. Ubicación de la Instalación: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100.
8. Tipo de Solicitud: NUEVO
9. Descripción de su solicitud: SOLICITUD DE NUEVA IP
10. Las fuentes potenciales de contaminantes en la instalación incluyen (liste las fuentes contaminantes): ESTIÉRCOL, AGUAS RESIDUALES, POLVO, LUBRICANTES, PIENSOS, ALMACENAMIENTO DE COMBUSTIBLE, MEDICAMENTOS, PRODUCTOS QUÍMICOS DE LIMPIEZA
11. Las siguientes mejores prácticas de gestión se implementarán en el sitio para gestionar los contaminantes de las fuentes contaminantes listadas (describa las mejores prácticas de gestión que se utilizan): EL ESTIÉRCOL SE ALMACENARÁ DENTRO DEL ÁREA DE DRENAJE DE RCS #1, Y RCS #2. LAS AGUAS RESIDUALES SE ALMACENARAN EN RCS #1 Y RCS #2 HASTA QUE SE RIGUEN CORRECTAMENTE A TRAVÉS DE UN SISTEMA DE RIEGO DE PIVOTE CENTRAL Y DE ARRASTRE. EL ESTÉRICO SERÁ TRANSPORTADO A LOS LMUS APROPIADOS, FUERA DEL SITIO, DE ACUERDO CON EL PLAN DE MANEJO DE NUTRIENTES. Los RCS #1 y RCS #2 ESTARÁN DISEÑADOS PARA ALMACENAR Y MANTENER LOS LODOS Y LAS LLUVIAS DE 25 A 24 HORAS. TODOS LOS DEMÁS LIMPIADORES, LUBRICANTES, COMBUSTIBLES Y

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: - BOUMA, MAIKO HESSEL
2. Enter Customer Number: CN601231814
3. Name of facility: BOUMA DAIRY
4. Enter Regulated Entity Number: RN102334539
5. Provide your permit Number: NOT ISSUED YET
6. Facility Business: DAIRY MILK PRODUCTION. THIS FACILITY CONFINES 999 HEAD DAIRY CATTLE, OF WHICH 999 HEAD ARE MILKING COWS. THE FACILITY PRODUCTION AREA IS LOCATED 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100. THE DAIRY FACILITY HAS 9 LAND MANAGEMENT UNITS (LMUS) WITH THE FOLLOWING ACREAGE: LMU #1 - 75, LMU # LMU #2 - 44, LMU #3 - 39, LMU #4 – 64, LMU #5 – 30, LMU #5 – 30, LMU #6 – 41, LMU #7 – 113, LMU #8 - 31 and LMU #9 – 101., AND 2 RETENTION CONTROL STRUCTURES (RCSS), AND A CONCRETE SETTLING BASINS. THE RCSS TOTAL REQUIRED CAPACITIES WITHOUT FREEBOARD (ACRE-FEET) ARE RCS #1 – 5.56 AND RCS #2 – 6.92. THERE ARE ONSITE 3 WATER WELLS (WELLS #1- #3). THE FACILITY IS LOCATED IN THE DRAINAGE AREA OF SEGMENT NO. 0514 OF BIG SANDY CREEK
7. Facility Location: 4252 COUNTY ROAD 2408 WINNSBORO TX 75494 4100
8. Application Type: NEW
9. Description of your request: APPLYING FOR A NEW IP
10. Potential pollutant sources at the facility include (list the pollutant sources): Manure, Wastewater, Dust, lubricants, Feed, Fuel Storage, Medicines, Cleaning Chemicals
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): MANURE WILL BE STORED WITHIN THE DRAINAGE AREA OF RCS #1. WASTEWATER WILL BE STORED IN RCS #1, AND RCS #2. UNTIL PROPERLY IRRIGATED THROUGH A DRAGHOSE SYSTEM IRRIGATION SYSTEMS. MANURE WILL BE HAULED TO THE APPROPRIATE LMUS, OFFSITE, IN ACCORDANCE WITH THE NUTRIENT MANAGEMENT PLAN. RCS #1, AND RCS #2 ARE DESIGNED TO STORE AND MAINTAIN THE SLUDGE AND 25YR-24HR RAINFALL. ALL OTHER CLEANERS, LUBRICANTS, FUELS AND MEDICINES WILL BE MAINTAINED AND ALL MANUFACTURERS' DIRECTIONS FOLLOWED. DEAD COWS WILL BE BURIED WITHIN 72 HOURS

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;

TPDES Permit No. WQ0005477000
This Permit supersedes and replaces
General Permit Authorization No. TXG920057
issued on February 5, 2020
[For TCEQ use only EPA ID No. TX0148253]

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

I. Permittee:

A. Owner: Maiko Hessel Bouma
B. Business Name: Bouma Dairy Farm
C. Owner Address: 4252 County Road 2408
Winnsboro, Texas, 75494

II. Type of Permit: New / 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: 999 total head, all of which are milking

Site Plan: See Attachment A

Retention Control Structures (RCSs) total required capacities without freeboard (Acre-Feet): RCS #1 – 5.56, RCS #2 – 6.92; RCS #1 and #2 act in-series

Land Management Units (LMUs) (Acres): LMU #1 – 75, LMU #2 – 44, LMU #3 – 39, LMU #4 – 64, LMU #5 – 30, LMU #6 – 41, LMU #7 – 113, LMU #8 – 31, LMU #9 - 101; See Attachment B for locations

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

Location: The facility is located at 4252 County Road 2408, Winnsboro, Hopkins County, Texas 75494. Latitude: 32.980666° N and Longitude: 95.328666° W. See Attachment C

Drainage Basin: The facility is located in the drainage area of the Big Sandy Creek in Segment No. 0514 of the Sabine River Basin, and the Lake Cypress Springs in Segment No. 0405 of the Cypress Creek 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. This facility meets the requirements of a permit by rule under 30 TAC §106.161 for air quality authorization.

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;
     - (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; 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.

(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 herbicides and pesticides in accordance with label instructions. There shall be no disposal of herbicides, 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 24 hours day duration (25 year/24 hour)), constructed, operated and maintained RCS whenever chronic or catastrophic rainfall events, 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 RCS(s) 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. 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)
RCS #1	March 01, 2007	January 06, 2000	5.56
RCS #2	To Be Certified Upon Construction	To Be Certified Upon Construction	Proposed

(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 shall be designed and constructed to meet or exceed the volume of runoff and direct precipitation from the 25 year/24 hour rainfall event. The design rainfall event for this CAFO is **8.0** inches.
  (3) Any RCS capacity that is greater than the minimum required capacity listed on page 1 of 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 PPP.

(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.

(f) Embankment Design and Construction. RCS(s) that have a depth of water impounded against the embankment at the spillway elevation of three feet

or more 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 percent (%) Standard Proctor Density (ASTM D 698) 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) D 1556, D 2167 or D 2937 for density and D 2216, D 4643, D 4944 or D 4959 for moisture, and D 2922 or D 6938 for moisture and density, or equivalent testing standards. Compaction tests will provide support for the liner certification required by Section VII.A.3(g) of this permit.

(5) Spillway or Equivalent Protection. RCS(s) 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. 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. RCS(s) 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, thickness, and specific discharge as described in Section VII.A.3(g)(2)(ii) 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 shall ensure that the required capacity in the RCS is available to contain rainfall and rainfall runoff from the design rainfall event. The permittee shall restore such capacity after each rainfall event or accumulation of manure or process generated wastewater that reduces such capacity, when conditions are favorable for irrigation. Favorable

conditions shall be when the soil moisture level decreases so that irrigation will not cause runoff.

(b) The permittee shall maintain the normal operating wastewater level in the RCS in accordance with the design of the RCS. If the water level in the RCS encroaches into the storage volume reserved for the design rainfall event, the PPP must document the conditions that resulted in this occurrence. As soon as irrigation is not prohibited, the permittee shall irrigate until the water level is at or below the design rainfall level.

(c) 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 wastewaters 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.

(d) 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 volume for the design rainfall event.

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

(f) Sludge Removal. The permittee shall monitor sludge accumulation and depth, based upon the design sludge storage volume in the RCS. (See Special Provision X.B for additional requirements related to sludge monitoring.) Sludge shall be removed from the RCS(s) in accordance with the design schedule for cleanout 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 exported from the facility. A sludge sample must be collected and analyzed in accordance with Section VII.A.9(a) prior to each clean out.

(g) 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.

(h) 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.
      (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.
      (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 near water courses or near recharge features is prohibited unless protected by berms or other structures to prevent inundation or damage that may occur.

(e) Composting. Composting on-site is prohibited on this CAFO unless this permit is amended to include composting requirements.

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) 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
1	Producing	Maintain 150 ft buffer
2	Producing	Maintain 150 ft buffer
3	Producing	Maintain 150 ft buffer

*Well Numbers correspond with Attachment A

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

Table 4: Soil Limitations and Best Management Practices

Soil Series and Map ID	Potential Limitations	BMPs*
Freestone: FrB	Depth to saturated zone Slow water movement	Permanent Vegetation, High residue crop
Kirvin: KvD	Slow water movement	
Nahatche: Na	Flooding Depth to saturated zone	
Pickton: PkC Wolfpen: WoC	Filtering Capacity	

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

(c) Pollutant Sources and Management. The permittee shall implement the following procedure 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, bury onsite in accordance with Section X.K.

Potential Pollutant Source	BMPs*
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 guidance for Practice Standard 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 D and E.
      (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 the major amendment process as set in 30 TAC §§305.61-305.72.
   (b) Buffer Requirements. The permittee shall meet the following buffer requirements for each LMU:
      (1) Water in the State. The permittee shall maintain vegetative buffer strips in accordance with NRCS Practice Standard Code 393. The minimum buffer shall be no less than 100 feet of vegetation to be maintained between all manure, sludge, slurry and wastewater application areas and all surface water in the state.
      (2) Water Wells. The permittee shall comply with the well protection requirements listed in Section VII.A.7.(a).
   (c) 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 manure, sludge, slurry and wastewater is prohibited from the LMU(s), unless authorized under Section VII.A.5.(c).
         (ii) Where 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.

(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).

(d) Nighttime Application. 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 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 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.

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 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 permittee shall have soil samples collected annually for each 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 by the permittee or their designee and analyzed by a soil testing laboratory annually, except when crop rotations or inclement weather require a change in the sampling time. The PPP shall contain documentation to explain the reasons for adjusting the sampling timeframe.

(iii) Obtain one composite sample for each LMU and per uniform soil type (soils with the same characteristics and texture) within the LMU.
(iv) Composite samples shall be comprised of 10 - 15 randomly sampled cores at a depth of zero to six (0 – 6) 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 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 nutrient management plan and nutrient utilization plan (if required), and appropriate updates to these plans;
(d) the RCS liner certification(s);
(e) any written agreement with a landowner which documents the allowance of nighttime application of manure, sludge, slurry and wastewater;
(f) documentation of employee and operator training, including verification of the date, time of attendance, and completion of training; and
(g) the capacity of each RCS as certified by a licensed Texas Professional Engineer.

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 and herbicide contaminated waters into surface 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 and open lots designated on the site map.

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.

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 all measurable rainfall events.
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 manure, sludge, slurry and wastewater applied on the LMU(s). Such records must include the following information:

(i) date of 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 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 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 LMUs.
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 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 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 D;
   (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, the Enforcement Division (MC 224), and the Water Quality Assessment Team (MC 150) soil testing analysis 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 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 Construction / Volumes.

1. The permittee shall construct RCS #2 to meet the total required capacity as listed on page 1 of this permit. Modifications shall comply with Section VII.A.3 of this permit. The permittee shall maintain the wastewater volumes in each RCS in accordance with Table 6.

Table 6: Volume Allocations for RCSs (Acre-feet)

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 #1	0.85	2.36	0	1.96	0.39	5.56	5.56
RCS #2	0.86	0	0	0.72	5.34	6.92	Proposed

2. Compliance Schedule. All RCS construction required by this permit shall be completed within 180 days after the issuance date of this permit; and the number of total dairy cattle shall be decreased from 1,200 head to 999 head. Upon written request to the TCEQ Regional Office, the Executive Director may grant an extension to the 180 day requirement for the RCS construction.
3. All certifications required by Section VII.A.3(a) of this permit shall be submitted to the TCEQ Regional Office and CAFO Permitting Team, Water Quality Division (MC 150) within 30 days of completing construction.

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

C. 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.

D. 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.

E. Table 7 below 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	100	0
LMU #2	100	0
LMU #3	100	0
LMU #4	100	0
LMU #5	100	0
LMU #6	100	0
LMU #7	100	0
LMU #8	100	0
LMU #9	100	0

F. 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.
4. At a minimum, settling basins shall be cleaned out annually, unless the permittee furnishes certification by a licensed Texas P.E. that the settling basin continues to perform according to the design removal efficiency.

G. Slurry from freestall barns
   1. For the purpose of this permit, slurry from freestall barns shall be defined as manure.
   2. If slurry from 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 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.

H. 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.)

I. 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 45% designed removal efficiency.

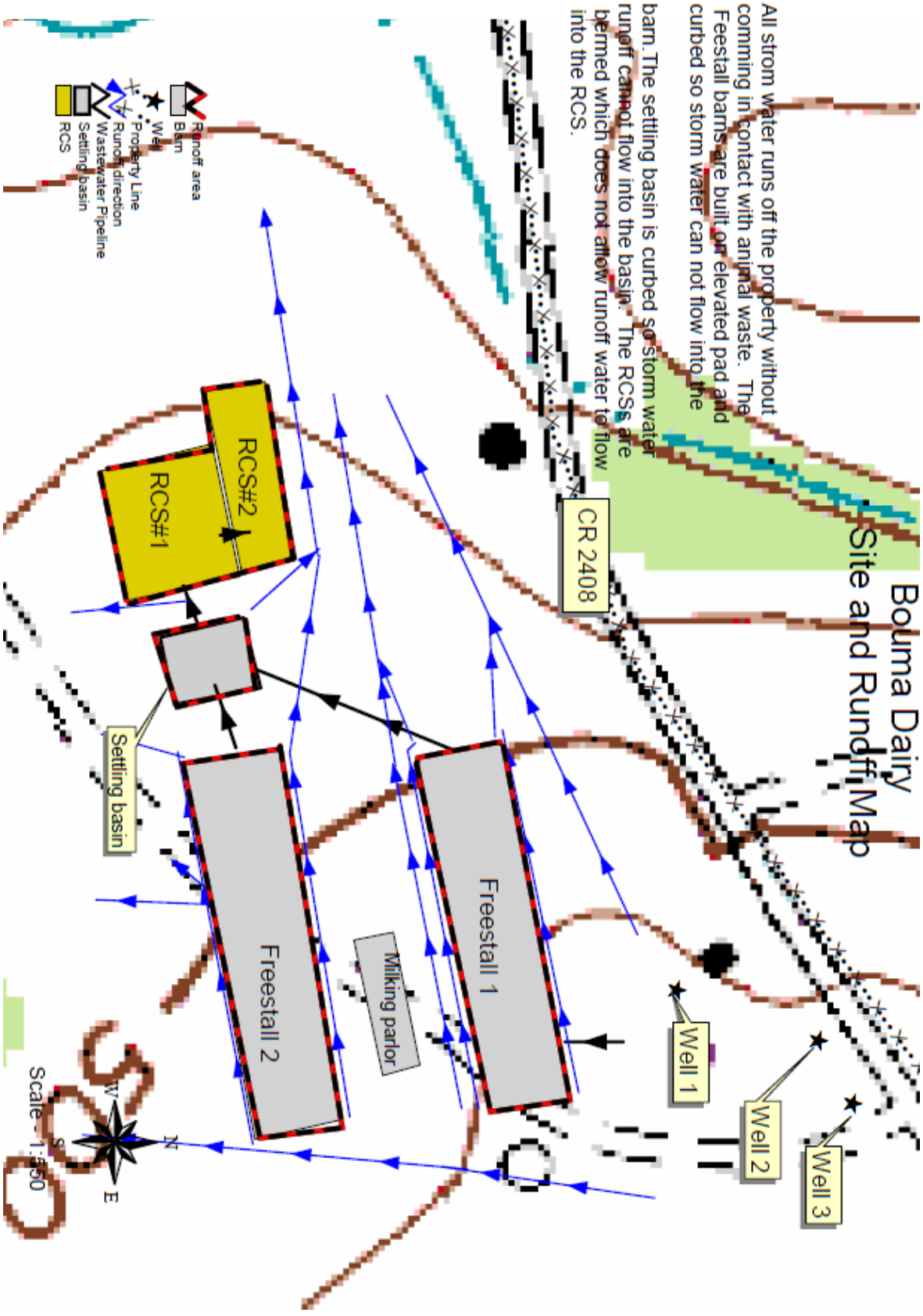
J. RCS management requirements:
   1. The permittee shall update records daily to include the wastewater level in each RCS, as shown on the depth marker.
   2. Chronic Rainfall Discharge. In the event of a discharge of manure, sludge or wastewater from a RCS or a LMU due to chronic rainfall, the permittee 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.

K. Onsite Burial.
   1. The permittee shall collect non-diseased carcasses within 24 hours of death and properly dispose of them within three days of death, in accordance with Texas Water Code Section 26.0405; Texas Health and Safety Code Section 361.090; and 30 TAC 335.4–335.6, unless otherwise provided for by the TCEQ.
   2. The permittee shall comply with the following requirements:
      (a) The permittee shall properly design or install the pit or trench, and shall not cause contamination of ground water, seepage, or contamination of stream systems from surface drainage or floodwater.
      (b) Animal burial sites that have highly permeable soils, fractured or cavernous bedrock, or a seasonal high water table are not suitable.
      (c) Depth to ground water table shall be at least 5 feet below the bottom of the excavation. The site shall not be subject to flooding and surface water should be diverted from the excavation.
      (d) The soil for the final cover of the pit or trench shall be of soil material that favors revegetation and shall not contain excess sodium or salts and shall not be too acid. It is recommended that topsoil from the excavation be set aside for the top layer of final cover.

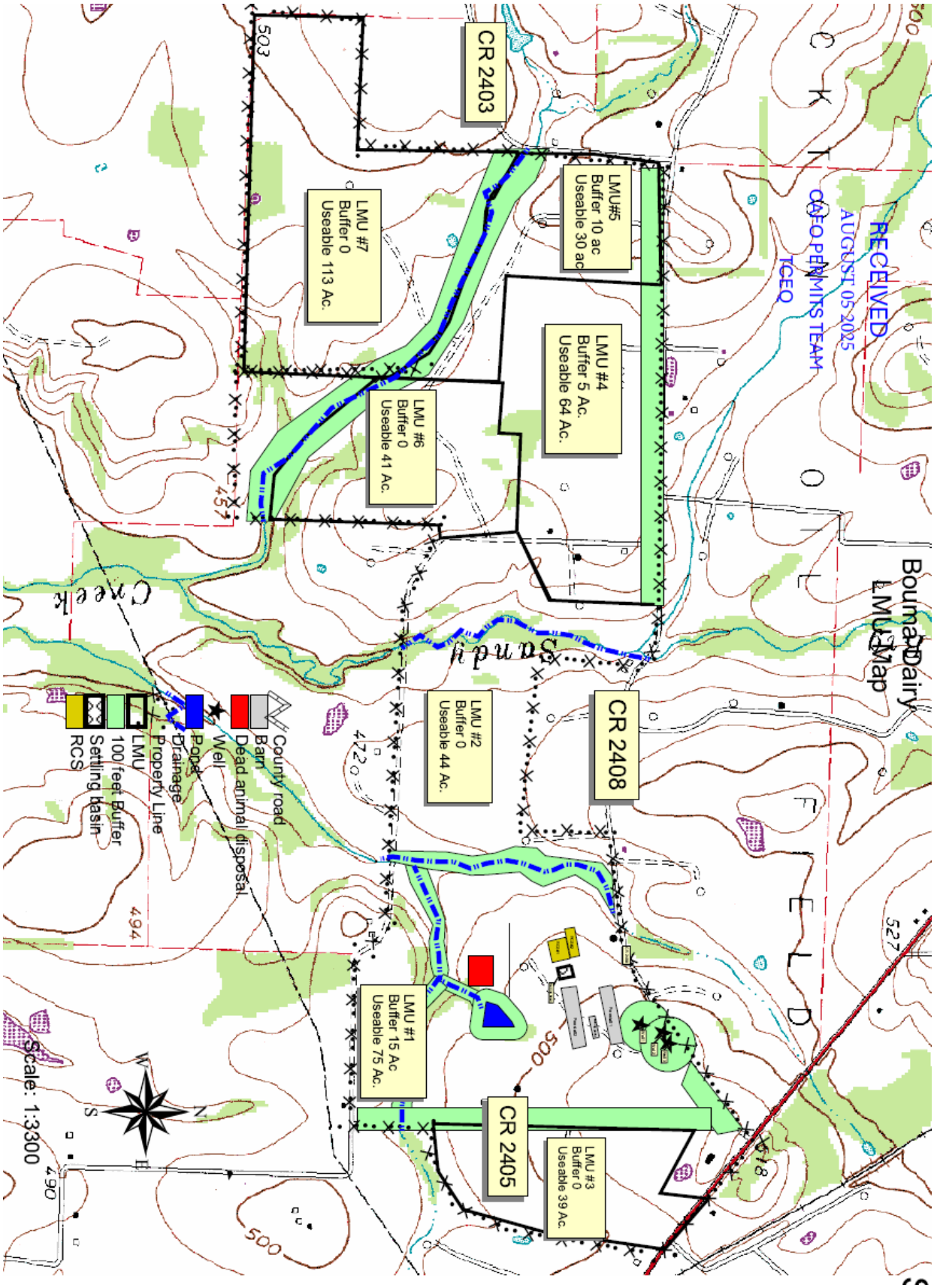
(e) Burial sites should be located in an area not likely to be disturbed in the near future.
(f) The permittee shall maintain the following setbacks for burial:
(i) Minimum of 300 feet downgradient from any ground water supply source and nearest drinking water well.
(ii) Minimum of 300 feet from the nearest surface water including but not limited to creek, stream, pond, lake, or river, and not in a floodplain.
(iii) Minimum of 200 feet from adjacent property lines.
(iv) Depth of burial shall be at least 3 feet below the natural surface of the ground, with at least 3 feet of earthen material (soil) over the carcass.

L. All berms and any other runoff control structures or measures necessary to convey all contaminated runoff to the RCS, and minimize entry of uncontaminated runoff into the RCS must be constructed and certified by a licensed Texas Professional Engineer prior to use of the RCS.
M. A LMU map showing historical LMUs shall be maintained in the PPP.
N. The discharge of wastewater from the RCSs is prohibited. The Permittee shall implement control measures necessary to limit the discharge of pollutants to surface water in the state; and gutter all roof runoff and route uncontaminated stormwater outside the RCS drainage area.
O. All RCS shall be designed, maintained, and constructed in accordance with 30 TAC 321.38(e) and (g).
P. The surface waters in the state shall be appropriately buffered in accordance with 30 TAC 321.40(h).
Q. All well buffers shall be maintained in accordance with 30 TAC 321.38(b) and 30 TAC 321.40(g).

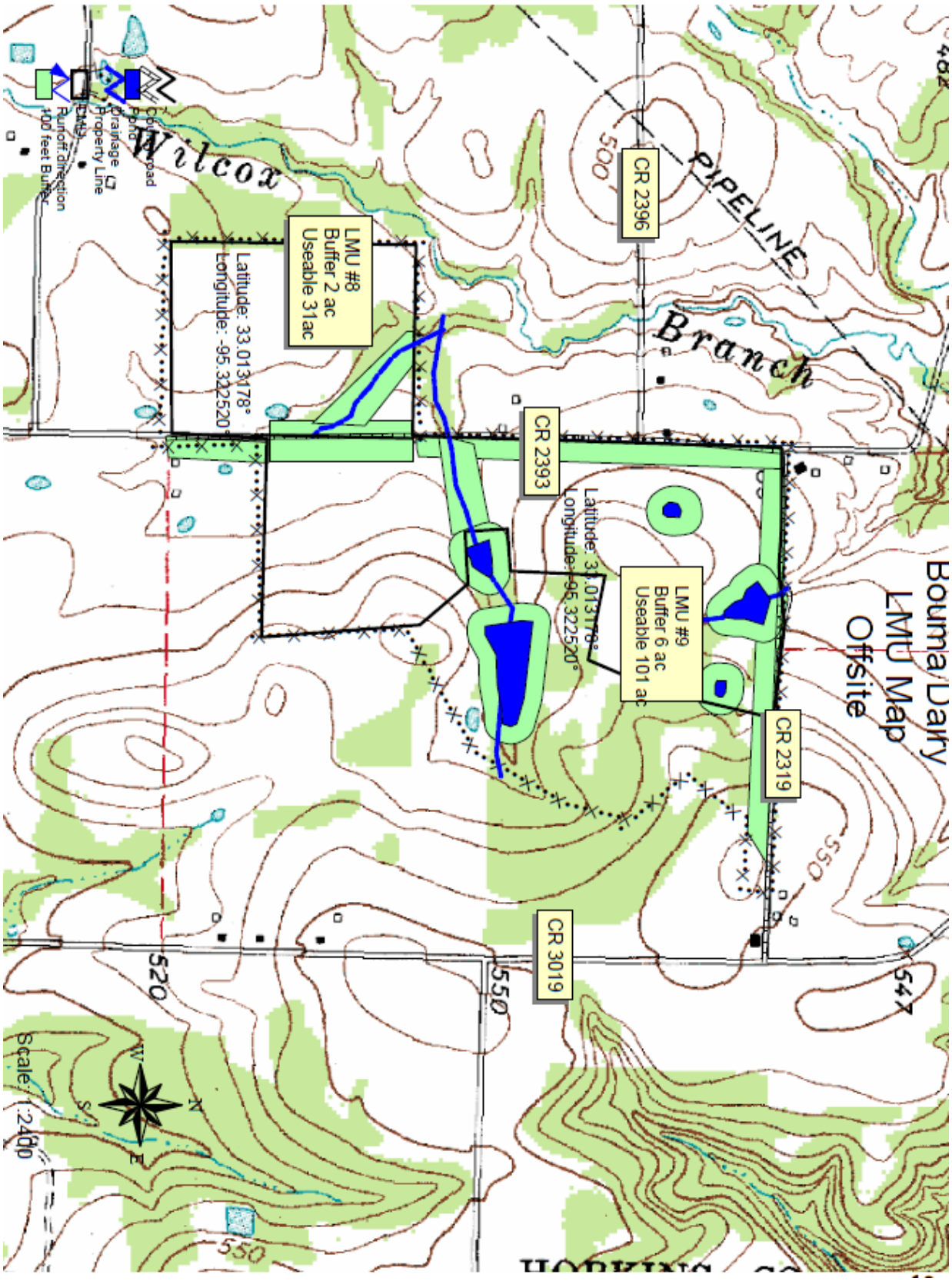
ATTACHMENT A - SITE & WELL LOCATION MAP



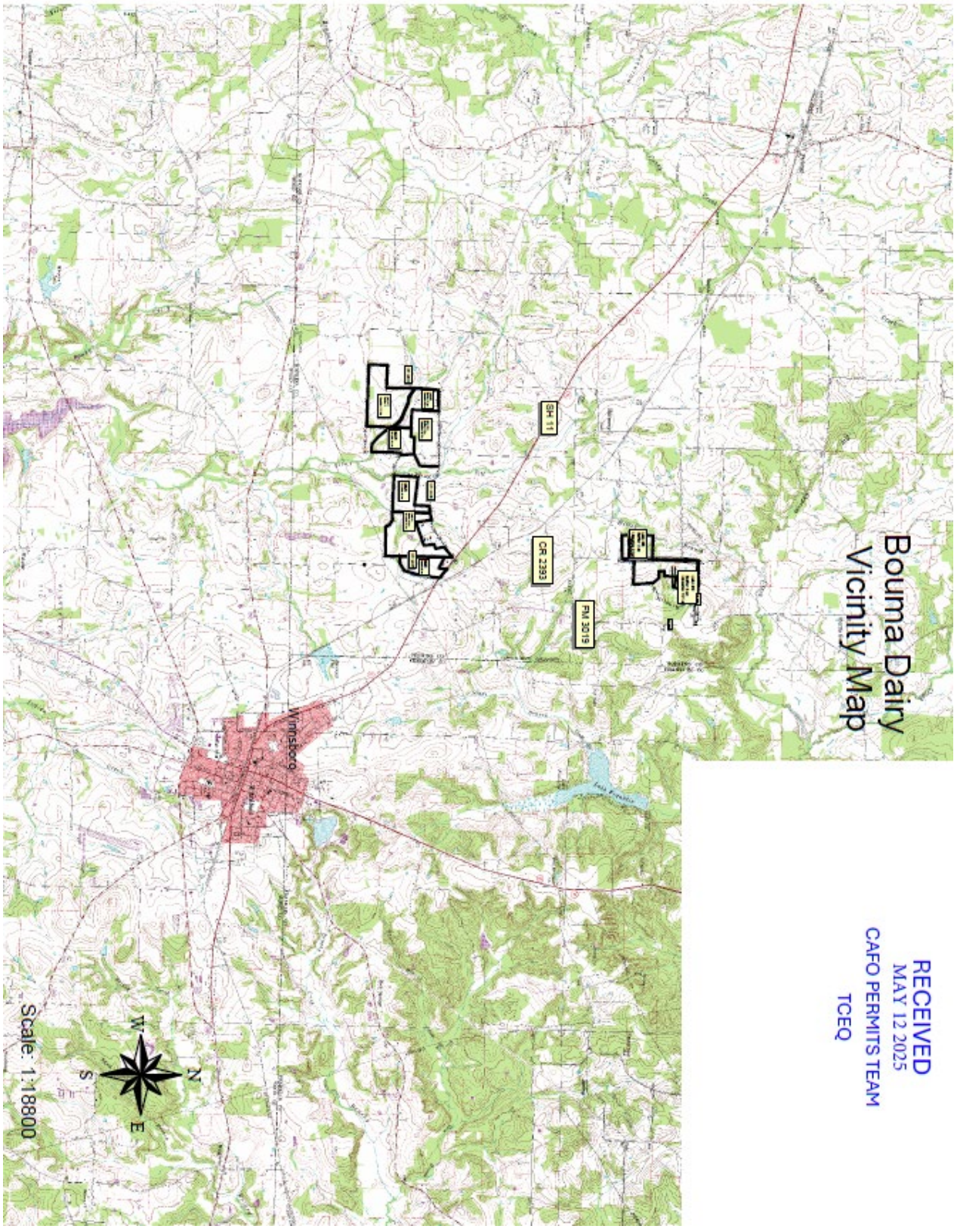
ATTACHMENT B - LAND MANAGEMENT UNITS – ONSITE LMUS



ATTACHMENT B - LAND MANAGEMENT UNITS – OFF- SITE LMUS



ATTACHMENT C - VICINITY MAP



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ATTACHMENT D

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

1. Identify the Soil Test P Level (Very Low, Low, Medium, High, Very High) on your 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 D:
   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) 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 P2O5 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 D

TABLE 1: PHOSPHORUS INDEX WORKSHEET FOR WEST 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)	**0**	**[Weighting Factor Times the Column Factor] 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	Incorporated immediately before planting	Incorporated >4 months before planting, or surface applied < 4 months before planting	Surface applied >4 months before planting	
(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	Incorporated immediately before planting	Incorporated >4 months before planting, or surface applied < 4 months before planting	Surface applied >4 months before planting	
(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:	

ATTACHMENT D

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.

ATTACHMENT E

SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS FROM NUTRIENT MANAGEMENT PLAN

Table 1: Alternative Crops and Yield Goals
Applicable to All Land Management Units: -538 Acres

TCEQ

Crop	
Coastal 3 Cut + Graze H	Coastal GC (30%DM) 18-20 Ton VH
Coastal 3 Cut + Graze M	Coastal GC (30%DM) 18-20 Ton VL - L
Coastal 3 Cut + Graze VH	Coastal GC (30%DM) 21-23T; SG GC 6-7T H
Coastal 3 Cut + Graze VL - L	Coastal GC (30%DM) 21-23T; SG GC 6-7T M
Coastal 3 Cut Hay H	Coastal GC (30%DM) 21-23T; SG GC 6-7T VH
Coastal 3 Cut Hay M	Coastal GC (30%DM) 21-23T; SG GC 6-7T VL - L
Coastal 3 Cut Hay VH	Coastal Hay 3 cut, RG mod graze H
Coastal 3 Cut Hay VL - L	Coastal Hay 3 cut, RG mod graze M
Coastal 4 Cut Hay H	Coastal Hay 3 cut, RG mod graze VH
Coastal 4 Cut Hay M	Coastal Hay 3 cut, RG mod graze VL - L
Coastal 4 Cut Hay VH	Coastal Hay 3 cut, SG mod graze H
Coastal 4 Cut Hay VL - L	Coastal Hay 3 cut, SG mod graze M
Coastal graze 1 AU/1 ac, RG mod graze H	Coastal Hay 3 cut, SG mod graze VH
Coastal graze 1 AU/1 ac, RG mod graze M	Coastal Hay 3 cut, SG mod graze VL - L
Coastal graze 1 AU/1 ac, RG mod graze VH	Coastal Hay 4 cut, RG mod graze H
Coastal graze 1 AU/1 ac, RG mod graze VL - L	Coastal Hay 4 cut, RG mod graze M
Coastal graze 1 AU/1 ac, SG mod graze H	Coastal Hay 4 cut, RG mod graze VH
Coastal graze 1 AU/1 ac, SG mod graze M	Coastal Hay 4 cut, RG mod graze VL - L
Coastal graze 1 AU/1 ac, SG mod graze VH	Coastal Hay 4 cut, SG mod graze H
Coastal graze 1 AU/1 ac, SG mod graze VL - L	Coastal Hay 4 cut, SG mod graze M
Coastal Grazing + 1 Hay H	Coastal Hay 4 cut, SG mod graze VH
Coastal Grazing + 1 Hay M	Coastal Hay 4 cut, SG mod graze VL - L
Coastal Grazing + 1 Hay VH	Common graze 1 AU/1 ac, RG mod graze H
Coastal Grazing + 1 Hay VL - L	Common graze 1 AU/1 ac, RG mod graze M
Coastal Grazing 1 AU/1 ac H	Common graze 1 AU/1 ac, RG mod graze VH
Coastal Grazing 1 AU/1 ac M	Common graze 1 AU/1 ac, RG mod graze VL - L
Coastal Grazing 1 AU/1 ac VH	Common graze 1 AU/1 ac, SG mod graze H
Coastal Grazing 1 AU/1 ac VL - L	Common graze 1 AU/1 ac, SG mod graze M
Coastal Grazing 1 AU/2 ac H	Common graze 1 AU/1 ac, SG mod graze VH
Coastal Grazing 1 AU/2 ac M	Common graze 1 AU/1 ac, SG mod graze VL - L
Coastal Grazing 1 AU/2 ac VH	Common Grazing + 2 Hay H
Coastal Grazing 1 AU/2 ac VL - L	Common Grazing + 2 Hay M
Coastal Grazing 1 AU/3 ac H	Common Grazing + 2 Hay VH
Coastal Grazing 1 AU/3 ac M	Common Grazing + 2 Hay VL - L
Coastal Grazing 1 AU/3 ac VH	Common Hay 3 cut, RG mod graze H
Coastal Grazing 1 AU/3 ac VL - L	Common Hay 3 cut, RG mod graze M
Coastal GC (30%DM) 21-23 Ton H	Common Hay 3 cut, RG mod graze VH
Coastal GC (30%DM) 21-23 Ton M	Common Hay 3 cut, RG mod graze VL - L
Coastal GC (30%DM) 21-23 Ton VH	Common Hay 3 cut, SG mod graze H
Coastal GC (30%DM) 21-23 Ton VL - L	Common Hay 3 cut, SG mod graze M
Coastal GC (30%DM) 18-20 Ton H	Common Hay 3 cut, SG mod graze VH
Coastal GC (30%DM) 18-20 Ton M	Common Hay 3 cut, SG mod graze VL - L

ATTACHMENT E

SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS FROM NUTRIENT MANAGEMENT PLAN

Table 1: Alternative Crops and Yield Goals Applicable to All Land Management Units: -538 Acres

SG Green Chop(25% DM) 6 to 7 tons H	Silage - Sorg21-25T;SG GreenChop-6-7T H
SG Green Chop(25% DM) 6 to 7 tons M	Silage - Sorg21-25T;SG GreenChop-6-7T M
SG Green Chop(25% DM) 6 to 7 tons VH	Silage - Sorg21-25T;SG GreenChop-6-7T VH
SG Green Chop(25% DM) 6 to 7 tons VL - L	Silage - Sorg21-25T;SG GreenChop-6-7T VL - L
SG Silage(35% DM) 12 to 14 tons H	Silage - Sorg26-30T;SG GreenChop-6-7T H
SG Silage(35% DM) 12 to 14 tons M	Silage - Sorg26-30T;SG GreenChop-6-7T M
SG Silage(35% DM) 12 to 14 tons VH	Silage - Sorg26-30T;SG GreenChop-6-7T VH
SG Silage(35% DM) 12 to 14 tons VL - L	Silage - Sorg26-30T;SG GreenChop-6-7T VL - L
Silage - Corn(35% DM) 11 - 15 Ton H	Silage - Sorg31-40T;SG GreenChop-6-7T H
Silage - Corn(35% DM) 11 - 15 Ton M	Silage - Sorg31-40T;SG GreenChop-6-7T M
Silage - Corn(35% DM) 11 - 15 Ton VH	Silage - Sorg31-40T;SG GreenChop-6-7T VH
Silage - Corn(35% DM) 11 - 15 Ton VL - L	Silage - Sorg31-40T;SG GreenChop-6-7T VL - L
Silage - Corn(35% DM) 21 - 25 Ton H	Silage - Sorg26-30T;SG GreenChop-4-5T H
Silage - Corn(35% DM) 21 - 25 Ton M	Silage - Sorg26-30T;SG GreenChop-4-5T M
Silage - Corn(35% DM) 21 - 25 Ton VH	Silage - Sorg26-30T;SG GreenChop-4-5T VH
Silage - Corn(35% DM) 21 - 25 Ton VL - L	Silage - Sorg26-30T;SG GreenChop-4-5T VL - L
Silage - Corn16-20T;SG GreenChop-6-7T H	Silage - Sorg31-40T;SG GreenChop-4-5T H
Silage - Corn16-20T;SG GreenChop-6-7T M	Silage - Sorg31-40T;SG GreenChop-4-5T M
Silage - Corn16-20T;SG GreenChop-6-7T VH	Silage - Sorg31-40T;SG GreenChop-4-5T VH
Silage - Corn16-20T;SG GreenChop-6-7T VL - L	Silage - Sorg31-40T;SG GreenChop-4-5T VL - L
Silage - Corn16-20T;SG GreenChop-8-9T H	Silage - Sorg41-50T;SG GreenChop-4-5T H
Silage - Corn16-20T;SG GreenChop-8-9T M	Silage - Sorg26-30T;SG Silage-12-14T H
Silage - Corn16-20T;SG GreenChop-8-9T VH	Silage - Sorg26-30T;SG Silage-12-14T M
Silage - Corn16-20T;SG GreenChop-8-9T VL - L	Silage - Sorg26-30T;SG Silage-12-14T VH
Silage - Corn21-25T;SG GreenChop-8-9T M	Silage - Sorg26-30T;SG Silage-12-14T VL - L
Silage - Corn21-25T;SG GreenChop-8-9T VH	Silage - Sorg31-40T;SG Silage-12-14T H
Silage - Corn21-25T;SG GreenChop-8-9T VL - L	Silage - Sorg31-40T;SG Silage-12-14T M
Silage - Corn21-25T;SG Silage-8-9T H	Silage - Sorg31-40T;SG Silage-12-14T VH
Silage - Corn21-25T;SG Silage-8-9T M	Silage - Sorg31-40T;SG Silage-12-14T VL - L
Silage - Corn21-25T;SG Silage-8-9T VH	Silage - Sorg26-30T;SG Silage-10-11T H
Silage - Corn21-25T;SG Silage-8-9T VL - L	Silage - Sorg26-30T;SG Silage-10-11T M
Silage - Sorg(35% DM) 21 - 25 Ton H	Silage - Sorg26-30T;SG Silage-10-11T VH
Silage - Sorg(35% DM) 21 - 25 Ton M	Silage - Sorg26-30T;SG Silage-10-11T VL - L
Silage - Sorg(35% DM) 21 - 25 Ton VH	Silage - Sorg31-40T;SG Silage-10-11T H
Silage - Sorg(35% DM) 21 - 25 Ton VL - L	Silage - Sorg31-40T;SG Silage-10-11T M
Silage - Sorg(35% DM) 26 - 30 Ton H	Silage - Sorg31-40T;SG Silage-10-11T VH
Silage - Sorg(35% DM) 26 - 30 Ton M	Silage - Sorg31-40T;SG Silage-10-11T VL - L
Silage - Sorg(35% DM) 26 - 30 Ton VH	Silage - Sorg41-50T;SG Silage-10-11T H
Silage - Sorg(35% DM) 26 - 30 Ton VL - L	Silage - Sorg41-50T;SG Silage-10-11T M
Silage - Sorg26-30T;SG GreenChop-8-9T H	Silage - Sorg41-50T;SG Silage-10-11T VH
Silage - Sorg26-30T;SG GreenChop-8-9T M	Silage - Sorg41-50T;SG Silage-10-11T VL - L
Silage - Sorg26-30T;SG GreenChop-8-9T VH	Sorg Forage Hay/Graze 7500 #, SG mod graze H
Silage - Sorg26-30T;SG GreenChop-8-9T VL - L	Sorg Forage Hay/Graze 7500 #, SG mod graze M
Silage - Sorg31-40T;SG GreenChop-8-9T H	Sorg Forage Hay/Graze 7500 #, SG mod graze VH
Silage - Sorg31-40T;SG GreenChop-8-9T M	Sorg Forage Hay/Graze 7500 #, SG mod graze VL - L
Silage - Sorg31-40T;SG GreenChop-8-9T VH	
Silage - Sorg31-40T;SG GreenChop-8-9T VL - L	

ATTACHMENT E

SITE SPECIFIC INFORMATION FOR LAND MANAGEMENT UNITS (LMUs) FROM 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	75	Coastal: Graze 1 AU/1 ac Small Grain: Moderate Graze	293	135	293	135
LMU #2	44	Coastal: Graze 1 AU/1 ac Small Grain: Moderate Graze	400	184	400	184
LMU #3	39	Coastal: 4 Cut Hay Ryegrass: Moderate Graze	546	251	546	251
LMU #4	64	Common: Graze 1 AU/1 ac Small Grain: Moderate Graze	426	196	426	196
LMU #5	30	Common: Graze 1 AU/1 ac Small Grain: Moderate Graze	426	196	426	196
LMU #6	41	Common: Graze 1 AU/1 ac Small Grain: Moderate Graze	426	196	426	196
LMU #7	113	Common: Graze 1 AU/1 ac Small Grain: Moderate Graze	426	196	426	196
LMU #8	31	Common: Graze 1 AU/1 ac Small Grain: Moderate Graze	420	217	420	217
LMU #9	101	Common: Graze 1 AU/1 ac Small Grain: Moderate Graze	420	217	420	217

NOTE- see page 34.

NOTE

*Nutrients Applied When Application is At Maximum Rates from NMP 590-633 Plan V 4.0_5 with the Print Date 07/21/2025. 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 manure and wastewater analyses dated 12/04/2024 and the soil analysis dated 11/13/2024 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: Maiko Hessel Bouma

Permit No.: WQ0005477000

Regulated Activity: Concentrated Animal Feeding Operation; Dairy Cattle

Permit Action: New

Authorization: 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. 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 new Texas Pollutant Discharge Elimination System Permit No. WQ0005477000, for a Concentrated Animal Feeding Operation (CAFO), to authorize the permittee to operate an existing dairy cattle facility at a maximum capacity of 999 head, all of which are milking (decreasing from the current 1,200 head under the GP), with a total land application area of 538 acres, and a list of alternative crops that includes Coastal, Corn, Common Grass, Ryegrass, Small Grain, and Sorghum with their various yield goals.

Bouma Dairy Farm is currently operating under the CAFO general permit with authorization number TXG920057, which will be terminated upon the approval of this individual permit.

This facility has an unsatisfactory compliance history classification with 275.00 rating and could not renew under the CAFO general permit. Therefore, the permittee is required to operate under a CAFO individual permit in accordance with the limitations in Part II.B.1(e) of the GP:

"Any CAFO that has a site or customer classification that is "unsatisfactory performer" under 30 TAC § 60.3 (relating to Use of Compliance History)," and the denial in Part II.B.3.(c) which states:

"The Executive Director may deny, cancel, revoke, or suspend authorization to discharge under this general permit based on a finding of historical and significant noncompliance."

IV. Facility Description and Location

Maximum Capacity: 999 total head, all of which are milking)

Land Management Units (LMUs) (acres): LMU#1- 75, LMU#2- 44, LMU#3- 39, LMU#4 – 64, LMU #5 – 30, LMU #6 – 41, LMU #7 – 113, LMU #8 – 31, LMU #9 - 101

Location: The facility is located at 4252 County Road 2408, Winnsboro in Hopkins County, Texas 75494. Latitude: 32.980555° N and Longitude: 95.328611° W.

Drainage Basin: The facility is located in the drainage area of the Big Sandy Creek in Segment No. 0514 of the Sabine River Basin, and the Lake Cypress Springs in Segment No. 0405 of the Cypress Creek Basin.

The facility consists of 2 Retention Control Structures (RCSs) and 1 Settling Basin. The table below indicates the volume allocations for the RCS(s):

RCS #1 and #2 act in-series.

Table 1: Volume Allocations for RCSs (Acre-feet)

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 #1	0.85	2.36	0	1.96	0.39	5.56	5.56
RCS #2	0.86	0	0	0.72	5.34	6.92	Proposed

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.

The Design Rainfall Event is the volume of runoff from the 25 year, 24 hour storm event. The RCS is required to include adequate capacity to contain this amount of runoff 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.

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 #1 is designed to contain 21 days of process generated wastewater for this permit.

This facility is not required to maintain a treatment volume in the RCS because it meets the requirements of a permit by rule under 30 TAC Chapter 106.161.

Sludge accumulation volumes are required in the RCS that receives runoff from open lots, flushwater from freestall barns, and flushwater from the milking parlor. The sludge accumulation volume for flushwater entering the RCS is calculated using the following equation: Adjusted Live Animal Weight (LAW) multiplied by a sludge accumulation rate of 0.25 cu-ft/lb of LAW, then multiplied by the design sludge accumulation period. The sludge accumulation volume allocated for runoff from open lots is estimated as 25% of the design storm volume from the open lots. A minimum of one year of sludge storage is

required in the RCS. Design sludge volumes in this permit reflect a five (5) year sludge accumulation period.

The RCS volume designated as Water Balance is the capacity needed to store all wastewater that cannot be irrigated, under normal monthly rainfall conditions, due to limitations of the consumptive use of the crop in the irrigation area. 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 evapo-transpiration 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 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.

V. Summary of Changes from Existing Authorization

The authorization type is being converted from a general permit to an individual permit. The permittee is requesting to operate an existing dairy cattle facility at a maximum capacity of 999 head, all of which are milking cows, with a total land application area of 538 acres, and a list of alternative crops that includes Coastal, Corn, Common Grass, Ryegrass, Small Grain, and Sorghum with their various yield goals.

The permittee is required to comply with the following additional requirements:

A. The sludge volume in each RCS will be measured and recorded in the PPP as necessary, but at least annually.
B. The permittee shall notify the appropriate TCEQ regional office at least ten working days before collecting soil samples from LMUs.
C. Annual soil samples must be collected by a certified nutrient management specialist or other qualified individual identified by the permit.
D. The permanent pond marker must show one foot increments.
E. The permittee must record RCS wastewater levels daily.
F. The permittee must provide supporting documentation to substantiate chronic rainfall discharges.

VI. Proposed Permit Conditions and Monitoring Requirements

A. Effluent Limitations

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:

1. discharge resulting from a catastrophic condition other than a rainfall event that the permittee cannot reasonably prevent or control;

2. a discharge resulting from a catastrophic rainfall event from a RCS;

3. a discharge resulting from a chronic rainfall event from a RCS; or
4. 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

For a discharge resulting from a chronic rainfall event, the permittee shall submit a report to the appropriate TCEQ regional office that includes 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.

All waste including any manure, bedding or feedwaste from the CAFO and any water contaminated by waste contact must be stored or utilized to comply with the permit and TCEQ Rules. The proposed permit satisfies the Environmental Protection Agency effluent limitation guidelines in 40 Code of Federal Regulations, Parts 412 and 122.

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

Instead of numeric water quality based effluent limitations, the proposed permit would only allow a discharge to surface water when chronic or catastrophic rainfall or catastrophic conditions result in an overflow of a properly designed, operated and maintained RCS. Discharges occurring during these conditions would be highly intermittent in nature and should be significantly diluted by rainfall runoff. The following requirements ensure that the RCS(s) is properly designed, operated and maintained:

1. RCS design criteria must include volumes for the design rainfall event, sludge, and process generated wastewater. The design rainfall event, at which time the CAFO is authorized to discharge, is based on a 25–year, 24–hour rainfall event (inches). These design criteria must be supplemented with a water balance analysis that demonstrates that wastewater can be sufficiently stored and irrigated and that consumption of the wastewater will not induce runoff or create tailwater. The application includes design calculations, certified by a professional engineer, which determine the design criteria for the RCS(s).
2. The RCS(s) must be adequately lined and certified by a Texas Professional Engineer; alternatively, certification must document a lack of hydrologic connection between wastewater in the RCS and groundwater. 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 was submitted with the application. Table 2 below lists the information for the existing RCS.

Table 2: Existing RCS Liner Certifications

RCS Name	Liner Certification Date
RCS #1	March 1, 2007
RCS #2	To Be Certified Upon Construction

3. 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.

4. 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).
5. The amount of sludge in the RCS(s) must be maintained at or below the design sludge volume. Excessive sludge accumulation can reduce the available wastewater storage 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 wastewater level in the RCS(s) must be recorded daily. This requirement will assist the permittee in the managing the wastewater levels and will provide a visual indication of compliance.
7. The pond marker must have one foot increments. This requirement identifies the level of wastewater storage to assist the permittee in the managing the wastewater levels. It also acts as an enforcement tool for TCEQ to determine compliance with RCS operational requirements.

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. The land application of commercial fertilizer, manure, sludge, slurry and wastewater must be in accordance with a NMP (developed by a certified nutrient management specialist, based on United States Department of Agriculture/Natural Resource Conservation Service (NRCS) Practice Standard 590) which provides the permittee the necessary information to properly manage the amount, form, placement and timing for the application of nutrients to the LMUs. The proposed permit requires a NMP to be implemented upon issuance of this permit. This plan involves a site specific evaluation of the land management unit to include soils, crops, nutrient needs 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. In determining the application rate, the NMP also considers the nitrogen and phosphorus inputs from the organic wastes, the soil content of these plant nutrients and the phosphorus loading potential into watercourses for each LMU. Once the nutrients are in balance, 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 equal to or greater than 200 ppm in Zone 1 (0-6 inches if incorporated, 0-2 or 2-6 inch if not incorporated) depth, the permittee must develop and implemet a nutrient utilization plan (NUP) based on crop removal. A crop removal application rate is the amount of nutrients contained in and removed by the proposed crop. The NUP is a revised NMP developed utilizing the same NRCS 590 Practice Standard tool to evaluate the site specific elements in the LMU such as slope and distance to water courses, the rates, methods, schedules of manure, sludge, slurry and wastewater application, and best management practices including physical structures and conservation practices utilized by the CAFO to assure the beneficial use of manure, sludge, slurry and wastewater is conducted in a manner that prevents phosphorus impacts to water quality. After a NUP is implemented, the permittee shall land apply in accordance with the NUP until the soil phosphorus is reduced below 200 ppm. This approach to nutrient management, when implemented, should minimize the potential for nutrients to accumulate in the soil and reduce nutrient concentrations in LMUs. Failure to operate in accordance with a NMP or NUP may constitute a violation of state law and this permit and may subject the permittee to enforcement action.

3. 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.

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

   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 submitted with the application. The permittee is required to recalculate these values annually based on the most recent analyses of wastewater, manure, and soil.

   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. 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.

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).

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 not 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 a major amendment process.

VII. Additional Water Quality Requirements

The approved recharge feature certification submitted in the permit application must be updated and maintained in the onsite pollution prevention plan (PPP). The recharge feature certification describes the location of the CAFO relative to certain natural and artificial features that could result in adverse ground water impacts. Groundwater has the potential to resurface as surface water. Therefore, preventing impacts to groundwater also provides protection to surface water.

Table 4 below shows potential soil limitations identified in the recharge feature evaluation and the proposed management practices to address those limitations.

Table 4: Soil Limitations and Best Management Practices

Soil Series and Map ID	Potential Limitations	BMPs*
Freestone: FrB	Depth to saturated zone Slow water movement	Permanent Vegetation, High residue crop
Kirvin: KvD	Slow water movement	
Nahatche: Na	Flooding Depth to saturated zone	
Pickton: PkC Wolfpen: WoC	Filtering Capacity	

Table 5 below lists all wells on the facility, their status, and what BMP will be taken to protect groundwater.

Table 5: Well Status and Best Management Practices

Well Number	Status	BMPs
1	Producing	Maintain 150 ft buffer
2	Producing	Maintain 150 ft buffer
3	Producing	Maintain 150 ft buffer

VIII. Recordkeeping, Reporting and Monitoring Requirements

A. Recordkeeping and reporting requirements

Recordkeeping and reporting requirements are designed to help ensure that the permittee complies with the permit provisions. Some of these 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 manure, sludge, slurry and wastewater land applied. The permittee is required to submit an annual report to the TCEQ which includes a subset of the permit recordkeeping requirements.

The permittee shall take all steps necessary to prevent any adverse effect to human health or safety, or the environment. The permittee shall provide the following notifications:

1. Any noncompliance which may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ, orally or by facsimile transmission within twenty-four (24) hours and in writing within five (5) days of becoming aware of the noncompliance.
2. 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.

B. Monitoring Requirements

Monitoring requirements were established based on TCEQ rules, and 40 Code of Federal Regulations Part 412. 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). Soil samples must be taken annually from LMUs and analyzed for Nitrate, Phosphorus, Potassium, Sodium, Magnesium, Calcium, Soluble salts/electrical conductivity, and pH. Discharges and soil analyses are reported to TCEQ.

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

The facility is located within the watershed of Big Sandy Creek in Segment No. 0514 of the Sabine River Basin, and the Lake Cypress Springs in Segment No. 0405 of the Cypress Creek Basin. The designated uses and dissolved oxygen criterion as stated in Appendix A of the Texas Surface Water Quality Standards (30 Texas Administrative Code 307.10) for Segment Nos. 0514 and 0405 are primary contact recreation, public water supply, and high aquatic life use, and 5.0 mg/L dissolved oxygen.

Segment 0514, Big Sandy Creek, is listed on the State's inventory of impaired and threatened waters (the 2024 Clean Water Act Section 303(d) list) for pH and bacteria, Segment 0405, Lake Cypress Springs, is listed for excessive algal growth and pH, and Segment 0405A, Big Cypress Creek, is listed for bacteria and depressed dissolved oxygen.

The effluent limitations, RCS operational requirements, and nutrient management practices, which are incorporated into the draft permit, are designed to reduce the potential for this CAFO to contribute to further impairment from bacteria.

X. 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.

XI. 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 Kayla Robichaux at (512) 239-4742.

XII. Administrative Record

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

1. The application received on December 31, 2024 and subsequent revisions
2. TCEQ CAFO General Permit No. TXG920000 issued July 1, 2019, and the Authorization No. TXG920057 issued January 9, 2020.
3. Interoffice Memorandum for Groundwater review from the Water Quality Assessment Team, Water Quality Assessment Section, Water Quality Division, dated August 21, 2025
4. Interoffice Memorandum for NMP review from the Water Quality Assessment Team, Water Quality Assessment Section, Water Quality Division, dated July 25, 2025
5. Interoffice Memorandum from the Water Quality Standards Team, Water Quality Assessment Section, Water Quality Division, dated March 18, 2025
6. TCEQ rules
7. NRCS Animal Waste Management Field Handbook, Nutrient Management Practice Standard Code 590, and the Field Office Technical Guidance for Texas
8. Texas 2024 Clean Water Act Section 303(d) List, Texas Commission on Environmental Quality, June 26, 2024; approved by EPA on November 13, 2024.
9. Environmental Protection Agency rules